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4 Basic Computer Skills

Introduction U N I T 1 I N T R O D U C T I O N Computers! An amazing machine! We are living in the computer age today and most of our day to day activities cannot be accomplished without using computers. Sometimes knowingly and sometimes unknowingly we use computers. Whether we have to withdraw money from the ATM (Automated Teller Machines retranslated as Any Time Money), publish a newsletter, drive a motorbike, design a building or even a new dress, go to a grocery shop and buy from cookies to tyres for our car - all involve computer in one way or the other. We are breathing in the computer age and gradually computer has become such a dire necessity of life that it is difficult to imagine life without it. Computer is affecting every sphere of our life. Be it government, business, education, legal practice, entertainment, defense or home - computer has become an indispensable and multipurpose tool. Whereas supercomputers can forecast weather, embedded computers make smart devices like washing machines that beep when washing is complete or the automobiles that give you warning before breaking down. In this unit we will see how computers affect our daily lives, its positive and negative effects, characteristics, history, the various types of computers and the tasks associated with them. Need for Computer Literacy Computers have shaken up the world. They have made us dependent upon them. We expect them to be present at every place: be it the reservation counter, the microwave

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Introduction ? Characteristics of Computers ? Evolution of Computers ? Early Electronic Computers ? Computer Generations

2 Basic Computer Skills cooking or even driving a car. Now that computers have moved in our society so rapidly, one needs, at least the basic computer skills to pursue one's career goals and function effectively and efficiently. We can say that computer literacy is the need of today and voice of tomorrow to survive in the fast changing world of computers. For most of the people computer literacy is restricted to using the keyboard for typing a document or making use of it for the calculations. But this is not enough. One must know the fundamental concepts about what computers constitute of and how do they work. Take an example, you drive a motorbike and you take it for the servicing. There is one way that you tell the service boy to service the motorbike and I will collect it in the evening. The another way could be that you tell him that, apart from servicing, please change the engine oil and clean the carburetor too. This way the service man would be more careful while doing the job of your motorbike and you too will be able to solve at least some of the small problems when the mechanic is not available. The lack of knowledge sometimes leads to getting into great troubles. Lack of knowledge can cause mistakes while using the computer also. Sometimes this lack of knowledge causes some fear in the people. This fear is termed as CYBERPHOBIA. (This is not a technical term, it is just used for the people who are scared of using the computers.) Computer: The Definition For most of the people, computer is a machine used for calculations or computation, but actually, it is much more than that. Precisely, "Computer is an electronic device for performing arithmetic and logical operations", or "Computer is a device or flexible machine to process data and convert it into information". Now, in the above two definitions, three words are tricky that need some explanation. Let us start with logical operations-these are the type of operations in which decision(s) is/are involved. Data is simply raw facts or figures collected whereas the information is what one gets after processing the data. Information is always useful and meaningful for the user. Let us consider an example in which marks of various subjects are collected for a particular group of students. Now, these marks independently (data) are of no use as such for the class teacher, but once she he adds the marks of all the students and calculates their respective percentages, this becomes information and it serves her/him in finding out the answer for the queries like Who has stood 1st in the class? or How many people have got distinctions in the class? or What is the overall performance of the class? Computers are not only used for the purpose of calculations. An accountant, a grocery shop owner, a bank or an ATM uses it like a computational device, where as an author uses it as a writing tool, a musician as a device for controlling the music, kids as a machine for playing games and so on. Now, you must be thinking that what is so special about this machine that people from diversified fields can use it so flexibly for entirely different functions. The answer is that "computer is programmable" meaning that it all depends upon what program computer is using for performing a particular function.

3 Introduction Now, the next question that comes into one's mind is, what is a program? In a very simple language we can say that "A Program is

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a set of instructions telling the computer what to do."

Broadly computer can be said to be made up of hardware and software. The computer hardware (actual machine) is defined in such a way that it does whatever the software (computer programs) tells it to do. There are 4 basic operations which a computer performs irrespective of the program which is running on it. They are classified as: - Figure 1.1 1. Input: This is for the purpose of inserting or feeding data into the computer by means of an input device like keyboard. 2. Processing: Some kind of processing is done in the computer to take out or transform the data in some way. 3. Output: The computer produces output on a device, such as printer or a monitor, that shows the result of processing operations. 4. Storage: The computer stores the result of processing operations for future use in some storage device like hard disk or a floppy disk. These operations are often referred to as IPOS cycle. But, the four steps of IPOS cycle - input, processing, output and storage - may not necessarily appear in the same sequence as they are defined. Figure 1.2 4 Basic Computer Skills C H A R A C T E R I S T I C S O F C O M P U T E R S ? Speed: A computer is a very fast and accurate device. It can process thousands of instructions within a few seconds for which a human being can take several days or months. ? Accuracy: Degree of accuracy of the computer is very high. Errors can occur in computerized system also but most of them occur due to human mistakes rather than technical problems in the computer. ? Versatility: We can perform many different tasks on the computer. One moment it might be busy in calculating the statistical data of a business organization for annual performance evaluation and at next moment it is capable of working on inventory control. ? Permanent Memory: We can store very large amount of information in the secondary storage devices. This information stays with the computer for further use where as humans tend to forget things. ? No Intelligence: A computer can perform the information processing and reasoning only on the basis of the intelligence provided by human beings (in terms of programs developed) but it cannot make decisions on its own. ? Diligence: Computer is free from problems like exhaustion, lack of concentration, confusion, etc., unlike human beings. E V O L U T I O N O F C O M P U T E R S History of Computers Actually speaking electronic data processing doesn't go back more than just half a century i.e. they are in existence merely from early 1940's. The very first modern electronic computer became operational only in early 1940's. Infact, its only a little more than just five decades ago since the first modern electronic computer was brought into existence for the purpose of business data processing. Computers before that were only used in scientific and technological field. Although the present modern electronic computers are very recent but the idea was conceived far back. The same could be seen by the advents of the history. In early days when our ancestors used to reside in caves the counting was a problem. Still it was easier as he could count on his fingers but gradually it started becoming difficult. As the belonging and possession increased, the need of more counting tools grew. It was not possible to have more fingers. The record keeping switched to number of stones and then to scribbling on the walls of their caves . But it was not possible to restrict oneself to stones and walls and they had to look out for some other counting devices. As the civilization grew in mid-seventh century, the adding tools and devices started developing across the world. Thus we can say that idea of computing is as old as the

5 Introduction civilization itself. It is very important to learn how people attempted to create early computers as they played very important role in reaching this stage. When they stared using stones to count their animals or the possessions, they never knew that this will lead to a computer of today. People started following a set of procedures to perform calculations with these stones, which later led to creation of a digital counting device, which was the predecessor of a computer. 1450 B.C. Abacus—China The abacus is the first known calculating device. This illustrates how the ancient computers worked. It was invented by the Chinese and is still widely used in the far east for commercial calculations. In its primitive form, it consists of a wooden frame with a number of wires with beads strung through them. The beads are used for counting and calculations. To show a number, beads are pulled down so that each rod represents a digit. 1600 Napier Bones Another counting device "John Napier", a Scottish mathematician, invented it. The "bones" were strips of ivory with numbers written in them. When the bones were arranged properly, the user could read the numbers in adjacent columns to get the answer of a multiplication operation. During the 16th to 19th centuries, Europeans contributed in calculating machine by inventing several machine that used existing technologies like clockwise gears and levers. 1642 A.D. Adding Machines—Blaise Pascal—France The well known French Scientist and Mathematician, Blaise Pascal invented the first machine which could add, carry digits automatically. He was only nineteen years old at that time. His machine was so revolutionary that the principle behind it is still used in most of the mechanical counters being used today. He became European great philosopher and mathematician. His father was a tax commissioner and he used to accompany his father to his office. There he felt the need of some calculating device, which could save people like his father from that boring and tedious job of doing sums over and again. He came out with a machine "Pascaline" that worked with clockwise gears and levers. The machine was basically developed to perform addition and subtraction operations. The machine rotated wheels to register values and lever was used to perform the carrying operations from one wheel to another. Although the machine was not accepted by the business but it initiated a series of inventions. To give honour to Pascal, a computer programming language was named after him. This language, Pascal, is generally used to teach programming to budding programers.

6 Basic Computer Skills 1692 A.D. Multiplying Machine—Gottfried Leibnitz— Germany Gottfried improved upon Pascal's machine and introduced a mechanism to carry out automatic multiplication of numbers. Leibnita is best known for his work with Sir Isaac Newton in developing a branch of mathematics known as calculus. The calculator invented by him could add, subtract, multiply and divide accurately. It could even perform square root function, although not always accurately. 1813 A.D. Difference Engine—Charles Babbage— England Since early 19th Century, Charles Babbage, an Englishman, had been working on the development of a machine, which could perform complex calculations. In 1813 A.D., he invented the 'Different Engine' which could perform complex calculations and print them out as well. This machine was a steam - powered machine. While Babbage was working on his doctorate, he had to solve many complex formulae and he found it difficult to cope up with them in the given time period. Early 1800's Jacquard Loom—Joseph Marie Jacquard In the early nineteenth century, a French weaver Joseph Marie Jacquard developed a programmable loom, which used large cards and holes punched in them to control the pattern automatically. The output was a thick rich cloth with repetitive floral or geometric patterns. Jacquard patterns are still produced to this day. Others adapted the punched cards and used as the primary form of input. They were used till about 20-25 years ago. 1862 "Arithrometer"— Charles Xavier Thomas— France This was the first calculator with commercial prospects. Frenchman Charles Xavier Thomas (known as Charles of Colmar) developed it. He won a gold medal at the International Exhibition in London. The machine performed addition, subtraction, multiplication, division and square root functions accurately. 1863 A.D. Analytic Engine—Charles Babbage— England Babbage had been working on a very elaborate machine all this time. By 1863 he had all the plans ready for the machine, which he named the Analytic Engine. He had conceived of a mechanism, which could carry out long sequence of complex calculations under automatic control. It would have the ability to store 1000, 50-digit numbers in one second and multiply 20-digit numbers in three minutes.

7 Introduction Babbage used a form of punched cards for inputting the data. That would have been a complete modern computer but technology at that time was not advanced enough to provide him with the hardware he required. He was thinking too far ahead of his time and his ideas could not be implemented. However, he was the first person to conceive of the "Stored Program Concept". Babbage worked on his plans for years. He was accompanied by Augusta Ada Byron (the daughter of famous poet Lord Byron), a brilliant mathematician whose contribution to Babbage's work is tremendous. She is the first female computer scientist and a programer. A computer programming language, Ada has also been named in her honour. Charles Babbage is recognized as "the father of Computers". Although his plans could not be materialized and his analytical engine could not be completed in his life span but a working analytical engine was finally developed from his plans in year 1991 and is on the display at the Charles Babbage Institute at Minnesota. 1896 A.D. Punch Card Machine— Dr. Hermann Hallerith—USA Dr Hallerith is also a great figure in the history of computers. Dr Hallerith used the idea of using cards and punching holes in them for speeding up the collation job of the American Census of 1880 (The US Constitution calls for the census of the population after every ten years so as to determine the representation in the US House of representatives). He devised a card in which holes would be punched to indicate the presence of a particular criteria in a respondent. Using wire brushes in his machine the hole punched earier in the card, enabled a wire to touch a metal plate which carried on electric charge. The charge was transmitted to respective electric counters which automatically incremented the numbers. After the census was completed, Hallerith perfected his punched card equipment and marketed it. He founded the Tabulating Machine company in 1896 to continue his work. Although the machines were in great demand but then Hallerith was not happy as he could not pursue his research work. In 1911 the Tabulating- Machine Company merged with other two companies to form Computing-Tabulating-Recording Company. Then Hallerith again started concentrating in inventing better equipment. One of the partners, the marketing expert named Thomas Watson Sr, led the new company. Under his guidance, the company wrote a great success story. Finally in 1924, management decided a new name for the company and then Computing- tabulating-Recording Company converted to International Business Machines Corporation (IBM) Corp. His idea has been refined and improved and punch cards are still used for recording data items to be input to computers. During the Second World War, an acute need for fast calculating machines was felt to carry out complex defense calculations. The British and the American Governments sponsored a number of projects in major Universities for the development of fast and accurate calculators and computers. This proved to be a boon for the industry which has never looked back since then.

8 Basic Computer Skills E A R L Y E L E C T R O N I C C O M P U T E R S 1930s' Turing Machine Alan Turing in late 1930s the English mathematician wrote a paper describing the capabilities and limitations of a hypothetical general purpose-computing machine "Turing Machine". Turing also helped constructing Robinson, the British Computer used during the World War II to decode German messages that were encrypted by the German Enigma machine. In 1950, Turing also published a book titled "Computer machinery and Intelligence", in which he proposed the Turing test of Artificial Intelligence. That test is still used by scientists. Turing test basically explains that computer is capable of "interacting" with the user. 1939 ABC (Atanasoff berry Computer) John Atanasoff Professor John Atanasoff is remembered because of his contribution of some concepts, which led to the development of the electronic computer. He with a graduate student, Clifford Berry built an electronic calculating machine that could solve the problems of equations. ABC was first special purpose, electronic computer. 1944 Mark I—Dr. Howard Aiken Dr Howard Aiken, who read the notes of Ada Byron was keenly interested in constructing an "Analytical Engine". He approached IBM. In spite of doing very well with punched card equipments, IBM hired Aiken and allocated $1 million for the Research. Aiken, with his team members, came out with Mark I. Mark I was partly electronic and partly mechanical. It was bulky- 8 feet high and 55 feet long. It took 3 to 5 seconds to perform a single multiplication operation. 1940s A.D. Mark I – University of Pennsylvania—USA A group of scientists devised the Mark-I, which was the first Electromechanical calculators in the world. It utilized the punch-card concepts the Hallerith and powers, and it functioned by a series of electromagnetic relays and mechanical arithmetic counters. During the World War II American Military asked Dr John Mauchy of University of Pennsylvania to develop a machine which can quickly calculate the trajectories for missiles. A graduated student Presper Eckert helped him in building the device. This is another thing that the computer could not be completed until the two months after the war ended.

9 Introduction 1943 A.D. ENIAC—Harvard University—USA Closely following on the heels of Mark-I, scientists of Harvard University brought out

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Electronic Numerical Integrator and Calculator (ENIAC) which was the first electronic computer.

Electronic Numerical Integrator and Calculator (ENIAC) which was the first electronic computer. It

weighed nearly 5 tons and occupied space equivalent to 2 big rooms and could perform all the calculations that a small pocket calculator of today can perform. It used vacuum tubes and was able to do 300 multiplications per second. This was faster than Mark I but the major problem of using this computer was that the staff had to rewire the machine completely for carrying out the new instructions. 1947 A.D. EDSAC–Cambridge University– England Electronic delayed Storage and Calculation was the name given to the first electronic computer in the world. It was the first one to implement the 'stored program concepts'. Known later as the 'Von Neumann Concept', it proposed the use of binary numbers and the internal storage of instructions in digital form. 1951 A.D. UNIVAC – I – USA By now number of commercial companies were working on the development of computing systems. Sperry Rand Corporation of USA introduced the first commercial computer to the world and named it UNIVAC-I. Its introduction was followed by the entrance of IBM into the computer field with IBM-701 Computer. C O M P U T E R G E N E R AT I O N S In recent years, the computer industry has grown at a phenomenal pace. In a short time of 35 years or so computers have improved tremendously. In the last decade the speed of computer has increased 200 times. Not only that the reliability curve has also taken a sharp increase. The cost per unit of calculating has gone down by 500 times. The storage capacity is increasing so fast that now it seems that nothing is impossible to store. Large data can be stored in very small devices. The term "generations" was initially introduced to distinguish between different hardware technologies. Gradually it shifted to both hardware and software as the total systems consists of both of them. The computers can be divided in five past generations, i.e, depending upon the technologies used. The five generations of computer are: First Generation Until 1951, electronics computers were the exclusive possession of scientists and the military. Till then nobody tried to use them for business purpose. The idea of marketing them was conceived by Mauchly and Eckert, creators of ENIAC's. As US census bureau was already using IBCP cards, they were the pioneers in buying this computer for the 10 Basic Computer Skills first time in 1951. The company created by M and ETS became UNIVAC division of Sperry and Corporation (later known as UNISYS). The bringing of first UNIVAC (Universal automatic computers) general purpose electric digital computer, marks the beginning of the first generation of electronic computers. These computers used valves and all the components were joined by copper wires. Due to large size of the components and due to the facts that the components had to be spaced apart as the valves dissipated a lot of heat, the computers were very bulky and required huge electric power, airconditioners, maintenance and space for their installation. Further, the speed of operation was very slow and had a very low reliability factor as vacuum tubes failed frequently. They were still given the name of "electronic brains " by the journalist. They also said that these electronic brains will change the world one-day. Later IBM corporation developed IBM 701, IBM 702 and IBM 650 and few other systems. These were called the first generation computers. The popular brand of first generation computer was IBM 650, which had a magnetic drum memory and utilized punch cards for input and output. This type of computer was of an intermediate size and was designed to meet the requirements of business and scientific applications. The available memories ranged from a few hundred thousand words of main storage. The cycle time was of the order of few milli seconds. It was only after 1957 that magnetic tapes were introduced as a faster and convenient storage medium. A single tape could hold approximately 1100 P cards (i.e. about 2 pages of information). IBM made 19 IBM 701 computers and at that time industry felt that these 19 computers are sufficient enough to take care of American business. These computer required special facilities and highly trained personnel. The instructions given to FGC were in machine language (i.e. 0's and 1's). As the language was tough and understood by very few people. There were very few personnel available for it. Computer belonging to this generation had the following characteristics: i. Comparatively large in size as compared to present day computers. ii. Generated lot of heat, they were not consistent and reliable as the valves tended to fail frequently. iii. Low capacity internal storage. iv. Individual, non-related models. v. Processors operated in the milliseconds speed range. vi. Internal storage consisted of magnetic drum and delay lines. Second Generation FGC were very unreliable, mainly because of vacuum tubes which kept on burning out. Users had to be prepared all the time with dozen of extra tubes to replace them. The 11 Introduction computers of this generation were characterized by the use of Solid State devices (transistors) instead of vacuum tubes.

Transistorized circuits were smaller, generated little heat, were less expensive and consumed less power than vacuum

tube circuits and were much greater in processing capacity. Since transistors had a faster switching action, this generation computers were significantly faster and smaller and were more reliable too than first generation computers. The use of magnetic cores as the primary internal storage medium and the introduction of removable magnetic disc pack were other major developments of the second generation. Although magnetic tapes were still used commonly. These computers had built in error detecting devices and more efficient means were developed to input and retrieve from the computer. They were easier to work with. More efficient programming methods and higher level languages like FORTRAN and COBOL become available. It was easily understandable by people especially because no codes (like Assembly language) had to be remembered by the programers. Moreover unlike Assembly language the high level language were not machine specific i.e. same set of programs could be used on computers produced by different manufactures. The instruction cycle time dropped from several hundred microseconds of the first generation in tens of micro- seconds of the second generation. The main memory in these systems could store several hundred thousand words. This generation of computers could communicate with others using telephone lines. Transmission of data from one computer to another was possible in this generation of computers. Although the processing was very slow but the idea was convenient which was further developed in next generations. The problems which second-generation computer faced was that input and output devices were too slow. The projects started in second generation to solve these problems. They used second generation technology but finally proposed results in third generation. Dr Daniel Slotnick worked out first solution. He was working with Burroughs Corporation, at that time. He designed a computer for the US department of Defence and tried to solve the problem of machines sitting idle waiting for input and output. The computer known as ILLIAC IV was developed. It has 4 control units and thus was able to perform input/output and processing (mathematical operation) at the same time. Slotnick was granted a patent for "Parallel Processing". They were also called as first super computer. The second super computer was proposed by MIT (Massachusetts Institute of Technology) by a group of students and professors. The name of the project was MAC (Multiple Access Computer) and concept of multiprogramming was developed there. The system could process the programs concurrently which were run by different users. Some of the popular models in this generation of computer systems, we IBM-1401, IBM-1620, BURROUGHS B-200 SERIES, HONEY-WELL H-400, NATIONAL CASH REGISTER NCR-315, 500 AND UNIVAC-1004. Many of these computers were used for business applications.

12 Basic Computer Skills Computers of this generation had the following characteristics: i. Smaller in size compared to the first generation computers. ii. Generated a lower level of heat, as components were much smaller. iii. Greater degree of reliability because of solid state technology. iv. Higher capacity of internal storage. v. Use of core storage instead of magnetic drum and delay lines. vi. Related series of processors -the family concept. vii. Processor operated in the microsecond speed. viii. High cost direct accesses storage. Third Generation A revolution in the computer developments took place with the development of Integrated Circuits (IC) on a single silicon chip.

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In 1958, Jack St Clair Kelby and Robert Noyce invented the first IC.

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In 1958, Jack St Clair Kelby and Robert Noyce invented the first IC.

IC incorporated number of transistors and electronic circuits on a single wafer or chip of silicon. IC is called chip because of the way they are made. They are also called as semi conductors as combining layers of materials that have varying capacity to conduct electricity form them. This ushered in the third generation of computer systems in 1964. The integrated circuits enhanced considerably the processing capability and the speed of the computer. During the period 1964 to 1970, capability of placing 12 or more logic gates on a single chip was developed into a well-defined technology of Small-Scale Integration (SSI). A logic gate is a circuit to perform arithmetic of addition, subtraction, multiplication or division. In 1970 this technology was redefined to a point where hundreds or more gates could be placed on a chip of silicon and incorporated as functional logic block in an overall system. This technology was termed as Middle Scale Integration (MSI). There was intense pressure on the semiconductor manufacturer to provide greater densities of gates on a single integrated circuit chip. Consequently more complex chips were developed with the ultimate goal of obtaining a central processor on a single physical circuits element. These circuits had higher reliability and lower power consumption and substantially reduced size. Component densities of 1,000 to 10,000 gates on a single silicon chip became possible. The technology consisting of 1,000 gates per chip, termed Large- Scale Integration (LSI), started to become commercially viable in 1975. The later technology consisting of more than 10,000 gates per chip is called Very Large Scale Integration (VLSI) or Grand Scale Integration (GSI). These circuit became very useful in assembling computers.

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Some of the popular third generation computers are-IBM- 360, series, IBM-370 series

and ICL-2900 series. The large advanced computer systems are usually called 'Main Frame'. Integrated circuits technology is responsible for bringing in revolution in the computer industries. Scientists were aware that more powerful computers can be built by building more complex circuits, but as these circuits had to be wired by hand, these computer were too complex and expensive. IC solved this problem by introducing a computer
13 Introduction that costed lower then first generation computer and offered more memory and faster processing. In 1962, a new company built a plant in "Silicon Valley", near Sanjose, California. DEC (Digital Equipment Corporation) revolutionised the total computer industry with this computer which used IC's. The first commercially available minicomputer was introduced in 1965. The PDB-8 (Programmed Data Processor) could fit easily in the corner of a room and did not require any attendant to it. The computer could be accessed by number of users from different locations of the building. (That was actually implementing time-sharing, which was developed in second generation). The price was one tenth of the traditional main frame, which made it possible for smaller companies to afford. IBM was dominant in the market by releasing 360 series of computer. They were of different sizes of main frame computers. The main advantage of using this computer was use of same machine language compatibility thus making it easy and cost effective specially when upgraded. By 1967, IBM decided to change its track as number of programming language came in the market. This was the beginning of software industry as the languages grew and people who had the skills to translate user requirements in these languages were high on demand now. One more technology development which look place now was the launching of first telecommunications satellite. The communication stations on the earth were now in a position to send and receive data by means of satellite enabling communications between the computer systems around the world. Admiral Grace Nurray Hopper, also known as "the mother of COBOL" and "Amazing Grace" was sent to Harvard to work on the first large scale digital computer. She travelled to various computer conferences and gave lectures in various colleges about the data processing insights. She wrote more than 50 papers and articles on software and programming language. Dr Hopper tells about the origin of Bug and Debug in her book "understanding computers". It was 1945, when students were working on Mark II and it stopped working. Programmers kept trying to figure out what's wrong with the computer, finally discovered that there was a moth caught in one of the relays causing the whole trouble. They removed it and the computer started working fine. There the terms "Bug" and "Debug" were introduced. The first bug can still be seen taped on a page in a logbook at the Naval Weapons Museum in Dahlgren, Virginia. Computers of this generation have the following characteristics: 1. Smaller in size as compared to second generation computers. 2. Higher capacity internal storage. 3. Remote communication facilities.

14 Basic Computer Skills 4. Multiprogramming facilities. 5. Reduced cost of direct access storage. 6. Processors, which operate in nanosecond speed range. 7. Ranges of computers with a common architecture whereby models were upward compatible. 8. Use of high level languages such as COBOL. 9. Wide range of optional peripherals. Fourth Generation The 1970's marked the beginning of a new generation of computers, produced by computer giants like IBM, ICL, NCR and Burrought. From design viewpoint, the new generation provided increased input-output capability, longer component life as well as greater system reliability. From the functional view point, new powerful language were developed to broaden the use of multiprogramming and multiprocessing and major shift from batch processing to on line, remote interactive processing. The development of microprocessor chip, which contains an entire central processing unit (CPU) on a single silicon chip led to the mushroom growth of inexpensive computers. They are not computers by themselves but they can perform all the functions of arithmetic logic unit and control units of the CPU. When these microprocessors are connected with memory and input-output devices, they become microcomputers. The semiconductor memories are also very small and very cheap. There are several types of memory chips. Three of the most commonly used are - (a) Random Access Memory (RAM) in which data can be read or written corresponding to the main memory of the conventional computer, (b) Read Only Memory (ROM) and (c) Programmable Read Only Memory (PROM). In the ROM chips, the data is 'burnt' into the chip at the manufacturing time. It cannot be changed. These chips are used in systems where the data need not to be changed. Even when power supply fails, the data remains in the memory. In case of PROM a user can program and even correct the data if necessary. The fourth generation of computers may be called microcomputer generation. The input-output devices used with the fourth generation computers are quite advanced. Among the advanced input-output devices employed in fourth generation computers are optical readers by which whole documents can be led into the computer, audio response terminals by which an operator can vocally introduce data or instructions and graphic display terminals by which an operator can feed pictures into the computer. The use of very large integrated circuits (VLSI) has made the fourth generation (micro) computers very compact, much less expensive, faster, more reliable and of much greater data processing capacity than equalized third generation computers. Some computers belonging to fourth generation are DEC-10, STAR-1000, PDP-11 and APPLE Series Personal Computers. 15 Introduction Fifth Generation Till fourth generation of computers, the major stress was on improving the hardware from valves to transistors and then to integrated circuits, which resulted in miniaturization and fast speed of computers. However, the lack of thinking power has forced the scientists to work further for fifth generation computers. The concept of "Artificial Intelligence" is being used in these computers and Japanese call them "Knowledge Processors".

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Automatic programming, computational logic, pattern recognition and control of robots, the processes

and which need skill and intelligence are examples of Artificial Intelligence. These computers, when developed, will be able to execute

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billions of instructions per second and will have unimaginable storage capacities.

The present day high level languages will become obsolete on these machines and new computer languages and related software will be needed. The fifth generation gives the highest priority to making systems that are easy and natural to use. Its other objective relates to the types of technological support needed to support "problem solving systems" according to the fifth generation committee. "In these systems", the Committee adds," Intelligence will be greatly improved to approach that of a human being. When compared to conventional systems, the man -machine interface will be closer to that of human behaviour." The fifth generation has three functional requirements: ? easy to use computers with high intelligence and natural human input and output mechanism; ? reliable and efficient software development by new languages, new computer architectures and systems software which overcome previous problems and ? improved overall functions and performance aimed at making computers smaller, lighter, faster, of greater capacity, more flexible and more reliable. It is these objectives which set the main themes for the future of computing, whatever techniques are used to achieve them. E X E R C I S E Fill in the blanks: a. _____ can forecast weather. b. _____ invented the first machine which could add, carry digits automatically. c. Sperry Round corporation of _____ introduced UNIVAC–I. d. The computer known as ILLIAC IV has _____ control units. e. _____ tells about the origin of Bug and Debug.

16 Basic Computer Skills Unsolved Questions 1. What do you understand by the Word computer? 2. Write down the basic characteristics of a computer. 3. Describe the evolution of computers. 4. What are the features of first generation computers? 5. What are the advantages of second generation computers over first generation computers? 6. Describe about the third generation computers. 7. What are the main features of fourth generation computers? 8. Write a short-note on fifth generation computers.

Structure of Computer U N I T 2 In the

last unit, we discussed that there are many types of computers.

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The internal architectural design of computers differs from one model to another, however the basic

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internal architectural design of computers differs from one model to another, however the basic

components of a computer remain the same for all models.

In this unit, we will discuss

the basic structure of a computer system. The diagram of a generalised architecture of a computer system is shown in Figure 2.1.

Before discussing the details of computer architecture, we would define the computer system as follows:

A complete computer installation including the central processing unit, the peripherals such as hard disk drives, floppy disk drives, monitor, printer, mouse and operating system which are designed to work and interact with each other and with the user is called a computer system. A computer system has the following main components: a. Input/Output Unit b. Central Processing Unit c. Memory Unit

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Input/Output Unit ? Central Processing Unit ? Memory Unit ? Logic Gates/ Circuits ? BITS and BYTES ? Number System for Data Representations ? Hardware and Software

18 Basic Computer Skills Input Device Output Device Arithmetic Logic Unit Control Unit Registers Primary Memory Secondary Memory USER

Figure 2.1 Functional diagram of a generalised architecture of a computer system.

I N P U T / O U T P U T U N I T

We know that the computer is a machine that processes the input data according to

a

given set of instructions and gives the output. Before a computer does processing, it must be given data and instructions. After processing, the output must be displayed or printed by the computer. The unit used for getting the data and instructions into the computer and displaying or printing output is known as an Input/Output Unit (I/O Unit). The

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Input Unit is used to enter data and instructions into a computer.

There are many peripheral devices which are used as input/ output units for the computer. The most common form of input device is known as a terminal. A terminal has an electronic typewriter like device, called keyboard along with a display screen, called Visual Display Unit (VDU) or monitor. Keyboard is the main input device while

the

monitor

can be considered both as an input as well as

an output device. There are some other common input devices like mouse, punched card, tape, joystick, scanner, modem etc., which

are explained

in

the next chapter.

Monitor, printer and plotter are the main peripheral devices used as output units for the computer.

C E N T R A L P R O C E S S I N G U N I T

Central Processing Unit (

CPU) is the main component or "brain" of a computer, which performs all the processing of input data. Its function is to fetch, examine and then execute the instructions stored in the

main

memory of

a

computer. In microcomputers, the CPU is built on a single chip or Integerated Circuit (IC) and is called as a Microprocessor. The CPU consists of the following distinct parts: 1. Arithmetic Logic Unit (

ALU) 2. Control Unit (CU)

19 Structure of Computer 3. Registers 4. Buses 5. Clock

Arithmetic Logic Unit The arithmetic and logic unit of CPU is responsible for all arithmetic operations like addition, subtraction, multiplication and division as well as logical operations such as less than, equal to and greater than. Actually, all calculations and comparisons are performed in the arithmetic logic unit.

C o n t r o l U n i t

The control unit

is considered

as

the "

Central Nervous System"

also performs the physical data transfer between memory and the peripheral device.

R e g i s t e r s

Registers are small high speed circuits (memory locations)

memory location numbers), when ALU performs arithmetic and logical operations. Registers can store one word of data (1 word = 2 bytes & 1 byte = 8 bits.

Details of BITS & BYTES are discussed later in this chapter) until it is overwritten by another word. Depending on the processor's

capability, the number and type of registers vary from one CPU to another.

Registers can be divided into six categories viz. General Purpose Registers, Pointer Registers, Segment Registers, Index Registers, Flags Register and Instruction Pointer Register, depending upon their functions. The detailed functions of each and every register

is beyond the scope of this book.

Buses Data is stored as a unit of eight bits (BIT stands for Binary Digit i.e. 0 or 1) in a register. Each bit is transferred from one register to another by means of a separate wire. This group of eight wires, which is used as a common way to transfer data between registers is known as a bus. In general terms, bus is a connection between two components to transmit signal between them. Bus can be of three major types viz. Data Bus, Control Bus and Address Bus. The data bus is used to move data, address bus to move address or memory location and control bus to send control signals between various components of a computer.

98% **MATCHING BLOCK 18/291** W

Clock Clock is another important component of CPU, which measures and allocates a fixed time slot for processing each and every micro-operation (smallest functional operation). In simple terms, CPU is allocated one or more clock cycles to complete a micro-operation. CPU executes the instructions in synchronization with the clock pulse. The clock speed of CPU is measured in terms of Mega Hertz (MHz) or Millions of Cycles per second. The clock speed of CPU varies from one model to another in the range 4.77 MHz (in 8088 processor) to 266 MHz (in Pentium II). CPU speed is also specified in terms of Millions of Instructions Per Second (MIPS) or Million of Floating Point Operations Per Second (MFLOPS).

M E M O R Y U N I T

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Memory Unit is that component of a computer system, which is used to store the data, instructions and information before, during and after the processing by ALU. It is actually a work area (physically a collection of integerated circuits) within the computer, where the CPU stores the data and instructions. It is also known as a Main/Primary/Internal Memory. It is of

the

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following three types: a. Read Only Memory (ROM pronounced as "Ra-om") b. Random Access Memory (RAM pronounced as "R-aem") c. Complementary Metal Oxide Semiconductor Memory (CMOS)

R e ad On l y M e m o r y

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Read Only Memory is an essential component of the memory unit. We know that the computer, being a machine, itself has no intelligence or memory and requires instructions which are given by man. Whenever the computer is switched on, it searches for the required instructions. The memory, which has these essential instructions, is known as Read Only Memory (ROM). This memory is permanent and is not erased when

the

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system is switched off. As appears with its name, it is read type of memory i.e. it can be read only and not be written by user/ programmer. The memory capacity of ROM varies from 64 KB to 256 KB (1 Kilobyte = 1024 bytes) depending on the model of computer. ROM contains a number of programs (set of instructions). The most important program of ROM is the Basic Input Output System (BIOS, pronounced as "bye-os") which activates the hardware (physical components of computer) such as keyboard, monitor, floppy disk etc. in communicating with the system and application software (set of instructions or programs). Types of ROM There are many types of ROM available for microcomputers like Mask ROM, PROM, EPROM, EEPROM and EAPROM. 21

Structure of Computer i.

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Mask ROM: Mask ROM is the basic ROM chip. In this type of ROM, the information is stored at the time of its manufacturing. So, it cannot be altered or erased later on. ii. PROM:

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PROM: PROM stands for Programmable Read Only Memory. In this type of ROM, the information is stored by programmers after its manufacturing. It

also
cannot
be altered or erased later on. iii.
EPROM: EPROM stands for Erasable Programmable Read Only Memory. It is similar to PROM, but its information can be erased later on by ultra violet light and it can be reprogrammed.
iv.

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EEPROM: EEPROM stands for Electrically Erasable Programmable Read Only Memory. It is similiar to EPROM, but its information can be erased by using an high voltage current. v. EAPROM: EAPROM stands for Electrically Alterable Read Only Memory. As compared to EPROM and EEPROM, the information stored in EAPROM can be altered later.

R a n d o m A c c e s s M e m o r y
Random Access Memory (RAM) is another important component of the

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Memory Unit. It is used to store data and instructions during the

execution
of programs. Contrary to ROM, RAM is temporary and is erased when
the

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computer is switched off. RAM is a read/ write type of memory, and thus can be read and written by

the

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user/ programmer. As it is possible to randomly use any location of this memory, therefore, this memory is known as random access memory. The memory capacity of RAM varies from 640 KB to several megabytes (1 Megabyte = 1024 KB) with different models of PC. Types of RAM There are two types of RAM used in PCs - Dynamic and Static RAM.

i.

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Dynamic RAM (DRAM): The information stored in Dynamic RAM has to be refreshed after every few milliseconds, otherwise it is erased. DRAM has higher storage capacity and is cheaper than Static RAM.

ii.

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>
> Static RAM (SRAM): The information stored in Static RAM need not be refreshed, but it remains stable as long as power supply is provided. SRAM is costlier but has higher speed than DRAM.

C o m p l e m e n t a r y M e t a l O x i de S e m i c o n d u c t o r M e m o r y

> **100%**   **MATCHING BLOCK 31/291**   W
>
> Complementary Metal Oxide Semiconductor (CMOS) memory is used to store the system configuration, date, time and other important data. When

the

> **100%**   **MATCHING BLOCK 33/291**   W
>
> computer is switched on, BIOS matches the information of CMOS with the peripheral devices and displays error in case of mismatching. 22

Basic Computer Skills L O G I C G AT E S /C I R C U I T S We have discussed that all the computer operations are performed by passing signals in 0s and 1s. The computer has a block of built-in-devices through which these signals are generated and passed. These hardware devices are basically electronic digital circuits and are known as Logic Gates or Logic Circuits. There are two more names for these devices - Switching Circuits and Digital Circuits. To understand how these devices work, let us discuss what is meant by binary logic and its application in making logic gates. D e f i n i t i o n o f B in ar y Lo g i c Binary logic deals with binary variables and logical operations. The binary variables are denoted by x,y,z,A,B,C etc., which can have two and only two distinct values (e.g. 1 and 0, TRUE or FALSE, YES or NO, etc.). There are three basic logical operations - AND, OR and NOT. In binary logic, if x and y are two binary variables, then x.y (read as x AND y) represents AND operation and x+y (read as x OR y) OR operation. The NOT operation is represented by x'. It follows that for each combination of the values of x and y, there is a value for x+y, x.y and x' as specified by the definition of logical operations. The definitions of AND, OR and NOT logical operations is demonstrated in tables, called truth tables and are shown in Table 2.1. Table 2.1 Truth tables of logical operations. Binary Variables AND OR NOT x y x.y x+y x' y' 0 0 0 0 0 1 1 0 1 0 1 1 0 1 0 0 1 0 1 1 1 1 1 0 0 It is clear from the truth tables that the value of - AND operation, x.y is 1 only if x=1 and y=1. OR operation, x+y is 1 only if either value of x or y is 1 or values of both x and y are 1. NOT operation, x' is 1 if x=0. A p p l i c a t i o n o f B i n ar y Lo g i c The use of binary variables and definition of logical operations can be better understood by considering an example of simple switching circuits as shown in Figure 2.2. We consider two types of switching circuits - switches in serial and switches in parallel.

23 Structure of Computer The switches in serial represent AND and the switches in parallel OR operation. P and Q are two switches that represent two binary variables x and y respectively. When the switch is open, then the value of binary variable is 0 and when the switch is closed, then the value is 1. There is a lamp (L) in each circuit that represents a third variable, z with a value 1 if it is on and 0 when off. The lamp turns on only if both switches P and Q are closed in the circuit with switches in serial. It follows that the value of z is 1 only if the values of both x and y are 1. In the case of circuit with switches in parallel, the lamp turns on only when one or both of the switches are closed. It follows that the value of z is 1 only if either x or y is 1 or both x and y are 1. Logic gates that perform the logical operations AND, OR and NOT are known as AND gate, OR gate and NOT gate (inverter circuit) respectively. The symbols for representing these logic gates are shown in Figure 2.3. Figure 2.2 Demonstration of binary logic by Switching circuits Figure 2.3 Symbols of AND, OR and NOT logic gates. BITS A N D

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>
> BYTES BIT stands for Binary Digit. It is single digit in a binary number which can be either 0 or 1. Within the computer, a single bit can be stored

in many ways, generally by using transistor, multivibrator (flip-flops - circuits made of Logic Gates) or a capacitor as on/off switch. If a bit is OFF then its value is considered 0 and if it is ON, its value is 1. BIT is the smallest unit of data in a computer. A single bit alone does not provide much information, but a combination of 8 bits is enough to store all alphabets, numbers and other characters used by the computer. Voltage Source Voltage Source Q P Q P L L Switches in Serial Switches in Parallel z = x.y z = x + y x x' AND Gate OR Gate NOT Gate y x x y

24 Basic Computer Skills The group of 8 BITS is known as a BYTE. For example, when the user types A (1 byte) on the keyboard, the system delivers a signal which sets the input location to the bit value 01000000.

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In memory, each byte occupies a unique address (storage location). Byte is considered as the smallest unit of memory.

There are higher units of memory such as Word, Kilobyte, Megabyte, Gigabyte and Terabyte which are illustrated in tabular form in Table 2.2. Table 2.2 Different

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units of memory along with their equivalents. Unit of Memory Equivalent Units Byte 8 BITS Word 2 Bytes Doubleword 4 Bytes Quadword 8 Bytes Paragraph 16 Bytes

Kilibyte (K) 1024 Bytes Megabyte (MB) 1024 K Gigabyte 1024 MB Terabyte 1024 GB N U M B E R S Y S T E M F O R D ATA R E P R E S E N TAT I O N The number system that is commonly used for calculations is the Decimal Number System. It has 10 symbols or digits i.e. 0,1,2,3...9 which are known as Arabian numerals. It has a base or radix (number of different digits which can occur in each position) of 10. Although this number system provides a great advantage to man as compared to earlier used binary numbers, it is not considered suitable for data representation in computers. The memory cells used in computers are bistable in operation. They are capable of storing only one bit (either 0 or 1). Therefore, the Binary Number System is used to store and represent numbers in computers. The binary number system has only two digits or symbols (0 and 1) and base of 2. Each decimal number can be represented in its equivalent

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binary number. Two other number systems which are used in computers are Octal (base of 8) and Hexadecimal (base of 16) Number Systems. These

number systems are useful in representing binary numbers in a compact form. The octal number has 8 digits i.e. 0,1,2,3...7 and the hexadecimal number has 10 digits i.e. 0,1,2,3...9 and 6 alphabets i.e. A,B,C,D,E and F Some of the examples of binary number along with their equivalent hexadecimals, octals and decimals are shown in Table 2.3. 25 Structure of Computer Table 2.3 Some examples of equivalent decimal, binary, hexadecimal and octal numbers.

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Decimal Binary Hexadecimal Octal 0 0000 0 0 1 0001 1 1 2 0010 2 2 3 0011 3 3 4 0100 4 4 5 0101 5 5 6 0110 6 6 7 0111 7 7 8 1000 8 10 9 1001 9 11 10 1010 A 12 11 1011 B 13 12 1100 C 14 13 1101 D 15 14 1110 E 16 15 1111 F 17

Conversion of Numbers One number system of data representations can be converted into others by several methods. We are discussing on the following pages the most easiest methods for converting a number from one system to another. Figure 2.4 A method for converting a decimal number to binary. 2 54 Remainder 2 27 0 2 13 1 2 6 1 2 3 0 2 1 1 0 1 Hence, (54) 10 = (110110) 2

26 Basic Computer Skills Converting Decimal Number to Binary Number For converting a decimal number to a binary number, the decimal number (e.g. 54) is repeatedly divided by 2 as illustrated in Figure 2.4. The remainder obtained after each division indicates the various digits of the converted binary number. These digits are written from the bottom up to form the converted binary number. In the example illustrated above, the equivalent binary number of decimal number 54 is 110110. Converting Binary Number to Decimal Number For converting a binary number to decimal number, each of the digits of a binary number (e.g. 110110) is multiplied with 2 to the power of its position number (starting with 0 for the rightmost digit) as shown in Figure 2.5. Each of these calculated values are then added to derive the converted decimal number. In the example illustrated above, the equivalent decimal number of binary number 110110 is 54, Figure 2.5 A method for converting a binary number to decimal. Converting Decimal Real Numbers to Binary Real Numbers A decimal real number (e.g. 54.625) consists of two parts - an integer and a fraction. The binary equivalent is determined by the following steps: 1. Convert integer part (i.e. 54) to its binary equivalent as described above. 2. Convert fraction part (i.e. 0.625) to binary as explained below- To convert decimal fraction to its binary equivalent, the fraction number is repeatedly multiplied by 2 as illustrated in Figure 2.6. After multiplication by 2, the integral part is added to the right of the binary fraction being formed. The multiplication process is repeated until the remainder of new fraction becomes zero. If it does not become zero after several multiplications, then only 7 binary digits are added to form fraction part of binary real number. 1 1 0 1 1 0 0 x 2^0 = 0 1 x 2^1 = 2 1 x 2^2 = 4 0 x 2^3 = 0 1 x 2^4 = 16 1 x 2^5 = 32 54 Hence, $(110110)_2 = (54)_{10}$

27 Structure of Computer Figure 2.6 A method for converting a decimal fraction to binary. 3.The integeral and fractional parts are added to form converted binary real number. Converting Binary Real Numbers to Decimal Real Numbers A binary real number (e.g. 110110.101) consists of two parts - an integer and a fraction. The binary equivalent is determined by the following steps: 1. Convert integer part (i.e. 110110) to its decimal equivalent as described above. 2. Convert fraction part (i.e. .101) to decimal as explained below- To convert binary fraction to its decimal equivalent, each of the binary digit is multiplied by 2 to the power -1,-2,-3, etc...starting from the leftmost digit as illustrated in Figure 2.7. These values are then added to obtain the equivalent decimal fraction. Figure 2.7 A method for converting a binary fraction to decimal. 3. The integeral and fractional parts are added to form converted decimal real number. Converting Decimal Number to Octal Number The method for converting a decimal number to an octal number is similar to conversion method for decimal to binary as described above. The decimal number (e.g.153) is repeatedly divided by 8 as illustrated in Figure 2.8. The remainder obtained after each division indicates the various digits of the converted octal number. These digits are written from the bottom up to form the converted octal number. In the example illustrated above, the equivalent binary number of decimal number 153 is 231. 0.625 x 2 1.250 1 0.250 x 2 0.500 0 0.500 x 2 1.000 1 Hence, $(.625)_{10} = (.101)_2$ 1 x 2^{-3} = .125 0 x 2^{-2} = 0 1 x 2^{-1} = .500 .625 Hence, $(.101)_2 = (.625)_{10}$. 1 0 1

28 Basic Computer Skills Figure 2.8 A method for converting a decimal number to octal. Converting Octal Number to Decimal Number Again, the method for converting an octal number to a decimal number is similar to conversion method for binary to decimal. For converting an octal number to decimal number, each of the digits of an octal number (e.g. 110110) is multiplied with 8 to the power of its position number (starting with 0 for the rightmost digit) as shown in Figure 2.9. Each of these calculated values are then added to derive the converted decimal number. In the example illustrated above, the equivalent decimal number of octal number 231 is 153, Figure 2.9 A method for converting an octal number to decimal. Converting Decimal Number to Hexadecimal Number The method for converting a decimal number to hexadecimal is again similar to conversion method for decimal to binary as illustrated in Figure 2.10. It is important to note that the symbols A to F are written for the remainders 10 to 15. Figure 2.10 A method for converting a decimal number to hexadecimal. 8 153 Remainder 8 19 1 8 2 3 8 0 2 Hence, $(153)_{10} = (231)_8$ 2 3 1 1 x 8^0 = 1 3 x 8^1 = 24 2 x 8^2 = 128 153 Hence, $(231)_8 = (153)_{10}$ 16 2742 Remainder 16 171 6 16 10 11 16 0 10 Hence, $(2742)_{10} = (AB6)_{16}$

29 Structure of Computer Converting Hexadecimal Number to Decimal Number The method for converting a hexadecimal number to decimal number is similar to conversion method for decimal binary to decimal as illustrated in Figure 2.11. It is again important to note that the digits 10 to 15 are used for calculations in place of alphabets A to F. Figure 2.11 A method for converting a hexadecimal number to decimal. Converting Octal Number to Binary Number The method for converting an octal number to a binary number is very simple as illustrated in Figure 2.12. Conversion from octal to binary is done by converting each octal digit to its three-digit binary equivalent (Refer Figure 2.4). Figure 2.12 A method for converting a octal number to binary. Converting Binary Number to Octal Number Conversion from binary to octal is done by a procedure reverse to the above as illustrated in Figure 2.13. First, the binary number is partitioned into groups of three digits each and then the corrssponding octal digit (Refer Figure 2.4) is assigned to each group. Figure 2.13 A method for converting a binary number to octal. 6 x 16^0 = 6 11 x 16^1 = 176 10 x 16^2 =2560 2742 Hence, $(AB6)_{16} = (2742)_{10}$ A B 6 3 7 5 101 111 011 Hence, $(375)_8 = (011111101)_2$ 011 111 101 3 7 5 Hence, $(011111101)_2 = (375)_8$

30 Basic Computer Skills Converting Hexadecimal Number to Binary Number The method for converting a hexadecimal number to a binary number is similar to the method for converting octal to binary as illustrated in Figure 2.14. Conversion from hexadecimal to binary is done by converting each hexadecimal digit. (Refer Figure 2.7) Figure 2.14 A method for converting a hexadecimal number to binary. Converting Binary Number to Hexadecimal Number Conversion from binary to hexadecimal is done by a procedure reverse to the above as illustrated in Figure 2.15. First, the binary number is partitioned into groups of four digits each and then the corressponding hexadecimal symbol (Refer Figure 2.7) is assigned to each group. Figure 2.15 A method for converting a binary number to hexadecimal. Coding Schemes Besides various number systems for data representations, there are three coding schemes used to represent characters in computers, which are - a. BCD Code b. EBCDIC Code c. ASCII Code Coding Schemes Besides various number systems for data representations, there are three coding schemes used to represent characters in computers, which are – a. BCD Code: The decimal numbers can also be represented directly in computers by using a representation, called

| 92% | MATCHING BLOCK 42/291 | SA | 3-Introduction to Information Technology-Block ... (D142210333) |

BCD (Binary Coded Decimal) Code. These codes are derived by converting each digit of a decimal number into its 6 bits binary

A B 6 0110 1011 1010 Hence, (AB6) 16 = (101010110110) 2 1010 1011 0110 A B 6 Hence, (101010110110) 2 = (AB6) 16 31 Structure of Computer equivalent. Using this code, only 64 (2 6) characters can be represented, which are not sufficient to represent all characters used in computers. b. EBCDIC Code: Due to the problem in representing all the characters by using BCD Code, this code was extended from a 6 bit Code to 8 bit Code, which is known as Extended Binary Coded Decimal Interchange (EBCDIC) Code. Using this code, 256 (2 8) characters can be represented. c. ASCII Code: Microcomputer manufacturers have now adapted a standard code for representation of characters to facilitate the transfer of data between different computer components. This standard code is known as the ASCII (Amercian Standard Code for Information Interchange) code. ASCII is a 7 bit code providing 128 possible character representations. An extended version of ASCII is an 8 bit code, thus allowing 256 different character combinations. The equivalent ASCII/ EBCDIC codes of different alphabets and numbers are given in Table 2.4. Table 2.4 Equivalent ASCII/ EBCDIC codes of different alphabets and numbers. Character ASCII EBCDIC Charcater ASCII EBCDIC

| 52% | MATCHING BLOCK 39/291 | W |

A 10100001 11000001 S 10110011 11100010 B 10100010 11000010 T 10110100 11100011 C 10100011 11000011 U 10110101 11100100 D 10100100 11000100 V 10110110 11100101 E 10100101 11000101 W 10110111 11100110 F 10100110 11000110 X 10111000 11100111 G 10100111 11000111 Y 10111001 11101000 H 10101000 11001000 Z 10111010 11101001 I 10101001 11001001 0 01010000 11110000 J 10101010 11010001 1 01010001 11110001 K 10101011 11010010 2 01010010 11110010 L 10101100 11010011 3 01010011 11110011 M 10101101 11010100 4 01010100 11110100 N 10101110 11010101 5 01010101 11110101 O 10111111 11010110 6 01010110 11110110 P 10110000 11010111 7 01010111 11110111 Q 10110001 11011000 8 01011000 11111000 R 10110010 11011001 9 01011001 11111001 32

Basic Computer Skills H A R DWA R E A N D S O F T WA R E

| 94% | MATCHING BLOCK 40/291 | W |

Computer components can be broadly divided into two categories - Hardware and Software. Hardware refers to any physical component of a computer. For example, CPU, Monitor, Keyboard, Hard Disk, Floppy Disk etc. are physical components and thus, are hardwares. Software refers to the programs which are required to operate the computer. For example, DOS (Disk Operating System), BASIC, COBOL, dBASE, An Accounting Software etc. are all softwares. An analogy of hardware can be the book which you are reading and then software would be the text written on this book. Another analogy could be - 'brain' is a hardware but 'memory stored in brain' is a software. Both hardware and software are dependent on each other. CPU, Memory Unit, Hard Disk etc. are useless unless they are provided with instructions and data for storage and processing. Similarly, BASIC or COBOL language has no

importance unless they are used alongwith various hardware components of the computer.
The detailed discussion on various kinds of hardware and software is given in subsequent chapters. S U M M A R Y
A computer system has four main components – Input/ Output Unit, Central Processing Unit, Memory Unit

and Logic Gates/ Circuits.
The

100%   **MATCHING BLOCK 41/291**   W

input unit is used to enter data and instructions into a computer.

The output unit is used to display or print the information.

36%   **MATCHING BLOCK 43/291**   SA   Module 5.docx (D17190824)

Central Processing Unit, the main component of a computer consists of Arithmetic Logic Unit, Control Unit, Registers, Buses and Clock. The arithmetic and logic unit is responsible for all arithmetic and logical operations. The control unit controls the transfer of

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96%   **MATCHING BLOCK 44/291**   W

control unit controls the transfer of data and instructions among other units of

---

a computer.
Registers are the memory locations which store data, instructions and memory addresses. Bus is a connection between two components

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85%   **MATCHING BLOCK 45/291**   W

to transfer data between them. Clock measures and allocates a fixed time for processing each and every micro-operation. Memory

---

unit stores the data, instructions and information. It is of three types ROM, RAM and CMOS. ROM (Read Only Memory) contains those essential programs, which are not erased when the system is switched off. RAM(Random Access Memory) stores the
data and instructions during execution of programs and is erased when the computer is switched off.
Logic Gates or Circuits are electronic digital circuits through which data signals are generated and passed. Logic gates that perform the logical operations AND, OR and NOT are known as AND gate, OR gate and NOT gate respectively. BIT (Binary Digit) is a single digit in a binary number. The group of 8 bits is called a Byte. In computers, data is represented in various number systems viz. binary, octal and hexadecimal number systems. Besides these representations, BCD (Binary Coded Decimal),
ASCII (American Standard Code for Information Interchange) and EBCDIC (Extended Binary Coded Decimal Intechange) are various coding schemes used to represent characters in computers. Hardware and software are two broad categories of computer components. Hardware refers to the physical component while Software to the programs required to operate computers.
33 Structure of Computer E X E R C I S E Fill in the Blanks: a.
The

95%   **MATCHING BLOCK 46/291**   W

Input unit is used to enter data and _____ into a computer.

---

b. _____ is the 'brain' of a computer. c. The memory capacity of ROM varies from 64 KB to _____. d. _____ deals with binary variables and logical operations. Unsolved
Questions 1. What is a computer system? Describe in brief the architecture of a computer system. 2. Which component of a computer is generally called `brain' of computer and Why? Describe the functions of the distinct parts of this component. 3. What is ROM? How does it differ from RAM? 4. Name various types of ROM and describe their main characteristics. 5. How does a Static

ROM differs from a Dynamic ROM. Which RAM would you prefer in your computer and Why? 6. What are Logic Gates? Draw the diagrams of 3 basic logic gates. 7. What is binary logic? Define AND, OR and NOT logical operations by making truth tables. 8. Define the following memory units: a. BIT b. BYTE c. Kilobyte d. Megabyte e. Gigabyte f. Terabyte 9. Name various number systems and coding schemes used for data representaions in computers. 10. Define the following terms: a. Bus b. Register c. Hardware d. Software 11.

Write the full form of following abbreviations: a. VDU b. CMOS c. ASCII d.
PROM e. BCD f. EBCDIC g. EAPROM g. CPU 12.

97%	**MATCHING BLOCK 47/291**	SA	Computer Application.pdf (D166063658)

Convert the following decimal numbers to equivalent binary numbers: a. 64 b. 4096 c. 175.5695 d. 1231 13. Convert the following binary numbers to equivalent decimal numbers: 34

Basic Computer Skills

23%	**MATCHING BLOCK 53/291**	W

a. 11011 b. 101110 c. 0.001101 d. 1110101.11 14. Convert the following decimal numbers to equivalent octal numbers: a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following decimal numbers to equivalent hexadecimal numbers: a. 375 b. 55 c. 66.3 d. 1343 17. Convert the following hexadecimal numbers to equivalent decimal numbers: a. 15 b. AB4 c. 2AC5 d. 9.1A 18. Convert the following octal numbers to equivalent binary numbers: a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following hexadecimal numbers to equivalent binary numbers: a. 2AC5 b. CD c. AB2.1A d. 1B 20. Convert the following binary numbers to equivalent hexadecimal numbers: a. 11101 b. 101101111010 c. 1101.11010 d. 110110100 35

78%	**MATCHING BLOCK 48/291**	SA	Computer Application.pdf (D166063658)

numbers: a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following

45%	**MATCHING BLOCK 49/291**	SA	Computer Fundamentals.pdf (D166063527)

a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following decimal numbers to equivalent hexadecimal numbers: a. 375 b. 55 c. 66.3 d. 1343 17.

87%	**MATCHING BLOCK 50/291**	SA	Computer Application.pdf (D166063658)

numbers: a. 375 b. 55 c. 66.3 d. 1343 17. Convert the following hexadecimal numbers to equivalent decimal numbers: a. 15 b.

79%	**MATCHING BLOCK 51/291**	SA	Computer Application.pdf (D166063658)

Convert the following octal numbers to equivalent binary numbers: a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following

43%	**MATCHING BLOCK 52/291**	SA	Computer Fundamentals.pdf (D166063527)

a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following hexadecimal numbers to

Structure of Computer C A S E S T U D Y The Y2K Problem: The Biggest Computer Problem of 20th Century In the late 1960s and early 1970s, computer memory (RAM chips) and external storage devices (hard disks) were extremely expensive. In those days, bigger storage capacity meant higher costs. At that time, computers were still a new concept and had just begun to be used for large database applications. When huge databases (like the national census) were stored on mainframes, programmers faced a major problem with storage space. For solving the problem of storage space, they tried to reduce storage needs and costs by removing the data which they considered irrelevant. They thought that the 'century' part of the dates was irrelevant and could be removed. They stored dates as MM/DD/YY (two digits each for month, day and year) rather than MM/DD/ YYYY (two digits each for month and day, and four digits for year). This method saved two bytes per field, but now causes this century's biggest computer problem, which is commonly known as `The Year 2000' or `Y2K' problem. To understand what is the Y2K problem, consider that your personal data is stored on a computer. Just assume that you were born in 1980. In computer systems, your year of birth will be stored as just 80. To calculate your age in 1999, which would be stored as just 99, you will subtract 80 from 99. So, according to computer arithemetic, you are 19 years old which is the correct result. However, if you will calculate your age in 2001, the computer will subtract 80 from 01, so you are -79 years old (yet to be born). If your program consider a negative value as zero, then your age is 0. If the program considers negative value as absolute, then your age is 79 (perhaps much more than your parents). Hence, according to computers in your insurance company, or the one in your bank, or even the one handling your company's payroll, you are either not born yet or probably older than your parents. So, you will not be entitled to get any insurance premium, bank payments or interests and even your salary or provident fund. So, you can realise the serious impacts of Y2K problem. In the year 2000 or onwards, Y2K problem will be faced in all applications where some computation is done on any date field. The Y2K problem will be faced in almost all industries including railways, airlines, hotels, banks, hospitals, Govt. offices, public and private sectors. Many programs will generate weird results, probably in the form of massive amounts of interest due or pending payments. The railway and airline programs may be affected. A weekendonly train or airline may be scheduled for Monday (1-1-1900) instead of Saturday (1-1-2000). You may not get computerised reservations in trains and airlines for days starting from 1st January, 2000. Your bank's computers will be affected too. If you will open a fixed deposit account after 1st January, 1999 for the period of one year, on 1-1-2000 the bank might try to give you a negative 99 years of interest causing a negative balance in your account. The telephone department's computers may also be affected, so you might get a bill of lakhs of rupee for the duration of 99 years. Safes and strong-rooms with computerized door locks too will need modifications to work in 2000 AD. The Y2K problem goes well beyond a simple loss of money. Although the Y2K problem seems to be very serious, it is not impossible to be solved. However, there cannot be a single solution for all applications and moreover solutions are extremely expensive. As large corporate computer programs consist of millions of lines of code with amazing amounts of data, a large amount of money has to be spent for re-coding or fixing data and code. Moreover, a huge number of programmers are needed

36 Basic Computer Skills to be employed to rewrite or edit the parts of the program that have been affected. As each custom designed program was developed with differing specifications by different teams, no single solution can actually be applied. Therefore, there is no possibility for development of a single software which could convert the old programs into new programs automatically. It is estimated that affected companies may have to spend upto $600 billion to fix the Y2K problem. The solutions to the Y2K problem do exit, but the only problem is how to implement them without effecting their current working. The simplest approach could be to add one extra 'flag' byte with all the date fields. If the flag is `0' the date is considered to be between the year 1900 to 1999 otherwise it is taken as a date on or after the year 2000. Although this logic seems to be quite simple but it needs to be implemented for millions of lines of coding, which make it really difficult to implement. The other technique could be to assume all years lower than a certain value (such as 50) as of year 2000 and greater, as of year 1900. For example, if year is 21, consider it 2021 and if it is 56, take it as 1956. This approach could be just temporary until the permanent solution is found. The permanent and the most preferred solution to Y2K problem is to expand the storage of year from 2 to 4 bytes in all database applications. Although this technique is the best solution for Y2K problem, it is the most expensive and time consuming approach. Q u e s t i o n s 1. What is the Y2K problem? What is the basic cause of this problem? Discuss. 2. Will the Y2K problem effect you and your organisation? How is your organisation trying to tackle the problem? Discuss. 3. `In the year 2000, all computers will stop working.' Are you satisfied with this opinion? Discuss. 4. `The year 2000 is quite near, but nobody has yet found a single solution for the problem. The Y2K problem seems to be unsolvable in near future'. Discuss.

Hardware Concepts U N I T 3 In the last unit, we discussed that computer components are

broadly classified into
hardware and software.
Hardware refers to any physical component

91%   MATCHING BLOCK 55/291   W

of a computer. In today's computer industry, a wide variety of hardware components are available for microcomputers.

In order to make good decisions about the purchase of computer systems and also to repair/ maintain them, we

100%   MATCHING BLOCK 56/291   W

must be aware of the working and uses of different hardware components.

The hardware components of a microcomputer can be classified into the

100%   MATCHING BLOCK 57/291   W

following types : a. Motherboard b. Input Devices c. Output Devices d. Storage Devices e. Cards f. Ports and Cords g. Power Supply All these hardware devices except motherboard are called peripheral devices, as they are connected to the motherboard.

In this chapter, we will discuss about the structure and function of these devices along with the basic hardware concepts.

88%   MATCHING BLOCK 58/291   W

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

96%   MATCHING BLOCK 59/291   W

Motherboard ? Input Devices ? Output Devices ? Storage Devices ? Cards ? Ports and Cords ? Power Supply 38

Basic Computer Skills M O T H E R B O A R D

100%   MATCHING BLOCK 60/291   W

Motherboard, also called as System Board, is the most important hardware component of a microcomputer. Motherboard is so called as all the other boards (printed circuit boards having chips or other electronic components) of the computer are connected to this board, hence it is like

the

98%   MATCHING BLOCK 61/291   W

mother of all other boards. Components of Motherboard A motherboard contains the CPU chip, Memory chip (ROM and RAM chips), I/O interface, expansion slots and many other logic circuits

as shown in Figure 3.1.

100%   MATCHING BLOCK 62/291   W

It may also contain a maths co-processor chip. CPU or processor chip is the main component of

a

100%   **MATCHING BLOCK 63/291**   W

motherboard. The types of CPU chip (8088/ 80286/ 80386/ 80486 etc.) vary from one model of PC to another. The function of maths coprocessor chip (8088/ 80287 etc.) is to support the CPU chip in processing of mathematical calculations.

Figure 3.1 A
motherboard.

99%   **MATCHING BLOCK 64/291**   W

Memory chips are physically installed on the motherboard by different packing methods. There are three different types of packing of RAM chips - DIP, SIMM and SIPP. DIP (Dual Inline Package) is the most common packing, having a small rectangle box with leads on both sides. SIMM (Single Inline Memory Module) packing contains a number of chips soldered on an expansion board having an edge connector. SIPP (Single Inline Pin Package) is similar to SIMM, but uses pin rather than an edge connector. Expansion slots are connectors on motherboard where expansion cards like display card, hard disk controller card etc. can be connected. I/O interface is the channel between the CPU and peripheral devices (keyboard, monitor etc.).

I N P U T D E V I C E S
Input Devices are
used to input data, information and instructions into the RAM.
We may classify these devices into the following two broad categories -
39
Hardware Concepts i. Basic Input Devices ii. Special Input Devices We are discussing below
the structure and function of the common input devices of these two categories
in details. B a s i c In p u t D e v i c e s The input devices which have now-a-days
become essential to operate a PC, may be called as Basic Input Devices. These devices are always required for basic input operations. These devices include Keyboard and Mouse.
Today, every PC has
a keyboard and mouse as the basic input devices
as shown in Figure 3.2. Figure 3.2 A student using basic input devices of a PC. Ke y b o a rd
Keyboard (similar to a typewriter)
is the main input device of
a
computer.
It contains 3 types of keys - alphanumeric keys, special keys and function keys.
Alphanumeric keys are used to type all alphabets, numbers and special
symbols like $,%,@,^ etc. Special keys such as >Shift<,>Ctrl<,>Alt<,>
Home<,>
Scroll Lock<
etc are used for special functions. Function keys such as >F1<,>F2<,>F3< etc. used to give special commands depending upon the software used.
We can understand the function of each and every key actually by working on a PC.
When any key is pressed, an electronic signal is produced.
This signal is detected by
a keyboard encoder that sends a binary code corresponding to the key pressed
to the CPU. There are many types of keyboards but 101 Keys Keyboard,
as shown in Figure 3.3, is the most popular one.
40 Basic Computer Skills Figure 3.3 A 101 keys keyboard. M o u s e
Mouse (similar to a
mouse) is another important input device. It is a pointing device used to move cursor, draw sketches/ diagrams, selecting a text/object/menu item etc. on monitor screen while working on windows (
graphics based operating environment of
a
computer).
Mouse is a small, palm size box containing 3 buttons and a ball underneath
as shown in Figure 3.4,

61%	**MATCHING BLOCK 65/291**	SA	SLM FOC.pdf (D46702471)

which senses the movement of the mouse and sends the corresponding signals to CPU on pressing the buttons.

61%	**MATCHING BLOCK 66/291**	SA	SLM FOC.pdf (D46802927)

which senses the movement of the mouse and sends the corresponding signals to CPU on pressing the buttons.

Figure 3.4 A
mouse. S p e c i a l I n p u t D e v i c e s
The input devices which are not essential to operate a PC, are called as Special Input Devices. These devices are used for various special
purposes and are generally not required for basic input operations. These devices
include Trackball, Light Pen, Touch Screen, Joystick, Digitizer, Scanner, OMR, OCR, Bar Code Reader, MICR and Voice Input Devices.
41 Hardware Concepts
Trackball A trackball looks like a mouse, as the roller is on the top with selection buttons on the side
as shown in Figure 3.5.
It is also a pointing device used to move the cursor and works like a mouse.
For moving the cursor in a particular direction, the user spins the ball in that direction. It is sometimes considered better than mouse, because it requires little arm movement and less desktop space.
It is generally used with portable computers.
Figure 3.5 A trackball. Li g h t Pe n
Light pen (similar to a
pen) is a pointing device which is used to select a displayed menu item or draw pictures on the monitor screen
as shown in Figure 3.6.
It consists of a photocell and an optical system placed in a small tube. When its tip is moved over the monitor screen and pen button is pressed, its photocell sensing element detects the screen location and sends the corresponding signal to the CPU.
Figure 3.6
Demonstration of a light pen.
T o u c h S c r e e n
Some special VDU devices have touch sensitive screens. These screens are sensitive to human fingers and act as tactile input devices. Using touch screen,
the
user can point to a selection on the screen instead of pressing keys
as shown in Figure 3.7. Touch screen helps the user in getting the information quickly. It is mainly used in hotels or airports to convey information to visitors. 200
Light Pen
42 Basic Computer Skills Figure 3.7 Demonstration of touch screen. J o y s t i
c k

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Joystick is also a pointing device which is used to move cursor position on a monitor screen. Joystick is a stick having a spherical ball at its both lower and upper ends

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is a stick having a spherical ball at its both lower and upper ends

100%	**MATCHING BLOCK 68/291**	SA	SLM FOC.pdf (D46802927)

is a stick having a spherical ball at its both lower and upper ends

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games. Figure 3.8

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games. Figure 3.8

A Joystick. D i g i t i z e r

Digitizer

is used to create drawings and pictures using a digitizer tablet by a process called digitizing. Digitizing is a process by which graphic representations are converted into digital data. The

digitizer consists of 3 main parts - a flat surface called tablet, a small hand held mouse-like device called puck and a special pen like device called stylus as shown in Figure 3.9. The puck is used to input existing drawings into the computer. The stylus is used to trace existing drawings placed on the tablet. It is also used to draw new drawings on a piece of paper placed on the

tablet. The user makes contact to the

tablet with stylus. As the stylus is connected to the tablet by a wire, the traced image is stored in RAM and displayed on the monitor. 200

Touch Screen

43 Hardware Concepts Figure 3.9 A digitizer. S c a n n e r

Scanner is widely used in Desktop Publishing (

DTP) applications. It

is used for digitizing images such as photographs, forms, documents etc. into computer memory.

There are many types of scanners as illustrated in Figure 3.10.

Some scanners can also read text by converting them to digital code.

The

scanners are very useful for converting the typed pages into word-processing files. Graphic scanners convert a printed image into video image without converting

it to digital code.

Figure 3.10 Various types of scanners. O p t i c al M ar k R e ad e r (OM R)

Optical Mark Reader (OMR) is a special type of optical scanner used to recognise the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked. It is especially used for checking the answer sheets of examination having multiple choice questions.

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Optical Mark Reader (OMR) is a special type of optical scanner used to recognise the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked. It is especially used for checking the answer sheets of examination having multiple choice questions.

The answer sheet contains special marks such as squares or bubbles. The student fills in these squares with soft pencil or ink to indicate the correct choice as illustrated in Figure 3.11. The OMR detects these marks and sends corressponding signals to the processor. If a mark is present, the amount of reflected light is reduced and thus, OMR detects the presence of mark for each and every answer. Optical Mark Readers are widely used for almost all competitve examinations having objective type questions.

Stylus Puck Window Function buttons Tablet

44 Basic Computer Skills Figure 3.11 A

sample of answer sheet that is checked by Optical Mark Reader (OMR).

Bar Code Reader

Bar Code Reader is an optical scanner

used for reading bar-coded data (data in form of light and dark lines)

as illustrated in Figure 3.12.

The bar-coded data consists of a number of bars of varying thickness and spacing between them. The bar code reader reads the bar coded data and converts

it

into electrical pulses, which are then processed by

the

computer.

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Bar-coded data is generally used in labelling goods, numbering the books

100%	MATCHING BLOCK 77/291	SA	Trainer Guide Fundamentals of Computers.docx (D21534917)

Bar-coded data is generally used in labelling goods, numbering the books

or encoding ID or A/c numbers.

Figure 3.12 A bar code

reader. Optical Character Reader (OCR)

Optical Character Reader (OCR) is an optical scanner, which is capable of detecting alphanumeric characters typed or printed on paper using an OCR font.

The text, which is to be scanned is illuminated by a low-frequency light source. The dark areas on the text absorb the light while light areas reflect it. The photocells of OCR device receive

A B C D 1 2 3 4 5 1 4 6 2 3 1 0 9 1 6 1 5 0 2 9 0 1 8 7 3 7 2 Bar Code Reader Bar Code

45 Hardware Concepts

this reflected light and provide binary data corrssponding to dark and light areas.

OCR devices are used for large volume applications like reading of passenger tickets, computer printed bills of credit card companies and reading of ZIP codes in postal services.

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Magnetic Ink Character Recognition (MICR) Magnetic Ink Character Recognition (MICR) is

used to recognise the magnetically- charged characters, mainly found on bank cheques

as shown in Figure 3.13. The magnetically-charged characters are written by a special ink called magnetic ink. MICR device reads the patterns of these characters and compares them with special patterns stored in memory. Using MICR device, a large volume of cheques can be processed in a day. MICR is widely

used by the banking industry for

the

processing of cheques.

Figure 3.13 A cheque showing magnetically-charged characters that can be read by an MICR device.

Voice-input Devices Voice-Input Devices are the latest

input devices that can recognise the human voice. They

seem to be

very useful but are not popular due to storage of limited vocabularies and variations in

the way of pronouncing words by different persons.

O U T P U T D E V I C E S

Output devices are hardware components which are used to display or print the processed information.

We are discussing below

the structure, working and uses of

the common output devices: Monitor Visual Display Unit (VDU), commonly called

as

monitor is the main output device of

a

computer. It consists of a Cathode Ray Tube (CRT), which displays characters as

an

output.

It forms images from

tiny dots, called pixels, that are arranged in a rectangular form.

The sharpness of the image (

screen resolution) depends upon the number of pixels.

46

Basic Computer Skills

Types of Monitors There are

different kinds of monitors depending upon the number of pixels. Depending upon the resolution, monitors can be classified as follows :

a. CGA (Colour Graphics Adapter) b. MDA (Monochrome Display Adapter)

100%	MATCHING BLOCK 78/291	W

c. HGA (Hercules Graphics Adapter) d. EGA (Enhanced Graphics Adapter) e. VGA (Video Graphics Adapter) f. SVGA (Super VGA)

The differences between these monitors are summarised in Table 3.1. Depending upon

the

colour

78%	MATCHING BLOCK 79/291	W

of display, monitors can be classified as Monochrome (with single colour black/white display) and Colour (with all colours display) Monitors.

The pictures of two different models of color monitors are shown in Figure 3.14. Figure 3.14 Two models of color monitors Table 3.1 Comparison among different types of monitors. Type

of Monitor Display Type Text Resolution Graphics Resolution (Pixels) CGA Text & Graphics Fair quality 320 X 200 MDA Text only Good quality - HGA Text & Mono Graphics Fair quality 320 X 200 EGA Text & Enhanced Good quality 640 X 350 Graphics VGA Text & Video Graphics Much better than all 640 X 480 the above SVGA Text & Video Graphics Best quality 1600 X 1280 15" Multimedia Color Monitor 20" Color Monitor

47 Hardware Concepts Figure 3.15 Classification of Printers.

94%   **MATCHING BLOCK 80/291**   W

Printer Printer is the most important output device, which is used to print information on paper. Printers are essential for getting output of any computer based application. Types of Printers There are many types of printers which are classified on various criteria as illustrated in Figure 3.15. Printers can be broadly categorised into

the following two types :

100%   **MATCHING BLOCK 81/291**   W

a. Impact Printers: The printers that print the characters by striking against the ribbon and onto the paper, are called Impact Printers. These printers are of two types - i Character;

and ii Line printers. i.

93%   **MATCHING BLOCK 82/291**   W

Character Printers: These printers print one character at a time. These printers are again of two types - Daisy Wheel and Dot Matrix Printers. Daisy Wheel Printers: These printers print the characters by a mechanism that uses a plastic or metal hub with spokes, called daisy wheel. The characters are embossed on the radiating spokes and printed by striking these spokes against the ribbon and paper. Daisy Wheel printers give a good quality but they are more expensive than Dot Matrix printers.

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Dot Matrix Printers: These printers print the characters by putting dots onto the paper. They do not give better printing quality than daisy wheel printers, but are faster in speed. The printing speed of a dot matrix printer can be upto 360 cps (characters per second). They are widely used with microcomputers in most of the offices.

Classification of Printers Impact Printers Non-impact Printers Character Printers Line Printers Daisy Wheel Printers Dot Matrix Printers Drum Printers Chain Printers Laser Printers Inkjet Printers Thermal Printers
48 Basic Computer Skills

100%   **MATCHING BLOCK 84/291**   W

ii. Line Printers: These printers print one line at a time. Their printing speed is much more than character printers. They are again of two types - Drum Printers and Chain Printers. Drum Printers: These printers print the line by a rotating drum having a ring of characters for each print position. The hammers strike each character of the drum simultaneously, so that entire line is printed for one full rotation of the drum. These printers are also called as Barrel Printers. The printouts obtained from these printers, have even character spacing but uneven line height. Chain Printers: These printers print the line by a rotating chain having ring characters for each print position. Their printing mechanism is similar to drum printers. The printouts obtained from these printers, have uneven character spacing but even line height b. Non-impact Printers: The printers that print the characters without striking against the ribbon and onto the paper, are called Non-Impact Printers. These printers print a complete page at a time, therefore, also called as Page Printers. Page printers are of three types– i Laser Printers,

ii Ink Jet Printers, and iii Thermal Printers. i.

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Laser Printers: These printers look and work like photocopiers. They are based on laser technology, which is the latest development in high speed & high quality printing. In these printers, a laser beam is used to write the image on a paper. First, the image is formed by electrically charging thousands of dots on a paper by laser beam. Then, the paper is sprayed with a toner having the opposite charge and is passed over a heated roller to make the image permanent. Laser printers are very popular and have become an essential part of Desk Top Publishing (DTP). Although laser printers are costlier than dot matrix, they are generally preferred in all offices due to their high quality of printing. There are many models of laser printers depending upon the speed and number of dots printed. The latest model of laser printer is 1200 DPI (Dots Per Inch), which can print 10 pages/minute. Some high speed laser printers give a speed of upto 100 pages/minute. ii. Ink Jet Printers: These printers print the charcters by spraying the paper with electrically charged ink. These printers give better quality than character printers but not better than laser printers. They are cheaper than laser printers, hence used widely in many offices. They also offer an option of using colour cartridges for multi-colour printing. iii. Thermal Printers: These printers print the characters by melting a

wax-based

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ink off a ribbon onto a special heat sensitive paper. They give Letter-quality printing but are relatively expensive in maintenance than other printers. 49

Hardware Concepts The pictures of some of the printers are shown in Figure 3.16. Figure 3.16 Various types of printers. P l o t t e r

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Plotter is an important output device, used to print high quality graphics and drawings. Although the graphics can be printed on printers, the resolution of such printing is limited on printers. Plotters are generally used for printing/ drawing graphical images 50

Basic Computer Skills

100%   **MATCHING BLOCK 88/291**   W

such as charts, drawings, maps etc. of engineering and scientific applications. Some important types of plotters are

shown in Figure 3.17 and

95%   **MATCHING BLOCK 90/291**   W

are discussed below: i Flat Bed Plotters: These plotters print the graphical images by moving the pen on stationary flat surface material. They produce very accurate drawings. ii Drum Plotters: These plotters print graphical images by moving both the pen and the drum having paper. They do not produce as accurate drawings as printed by flat bed plotters. iii Inkjet Plotters: These plotters use inkjets in place of pens. They are faster than

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Plotters: These plotters print graphical images by moving both the pen and the

flat bed plotters and can print multi-coloured large drawings.
Figure 3.17 Various types of plotters. Co m p u t e r Ou t p u t M i c r o f i l m

Computer Output Microfilm (COM) is a technique to produce output on a microfilm media (microfilm reel or microfiche card) as illustrated in Figure 3.18. A microfilm is a continuous film strip that can store several thousands miniaturized document pages. A microfiche card is a 4 X 6 inch film sheet, which can store several hundred pages. The process of producing microfilm or microfiche takes place on a special COM unit. The information recorded on the microfilm is read with the help of a microfilm viewing system. It is generally easier to read a microfiche than microfilm. Computer Output Microfilm is particularly useful for organisations which need to store and manipulate large amount of data. It helps them in tremendous savings in paper and document handling costs.

Drum Plotter Pen Paper Controls Drum Paper Flatbed Flatbed Plotter
51 Hardware Concepts Figure 3.18 Computer Output Microfilm. S T O R A G E D E V I C E S In the last chapter, we discussed about the primary memory of the
computer.
Primary memory (especially RAM) stores the data, instructions and information temporarily during processing by CPU. When
the
computer is switched off, this memory gets erased. How does a computer store the data, information and software permanently, so that they can be retrieved whenever required ? Certainly, there must be some storage devices in the
computer.
Now,
we will discuss about different Storage Devices, sometimes also called as Secondary Memory
Devices. There are many storage devices used with microcomputers.
Some of the common storage devices are
explained below and
are shown in Figure 3.19. Figure 3.19 Common Storage Devices INVNO DATE AMT 100101/01/99100.00 100201/02/99124.50 Floppy Disk Drives (3.5" & 5.25") Hard Disk Drive CD ROM Drive
52 Basic Computer Skills
Winchester
Disk (Hard Disk) Winchester Disk is the most common storage device of present day microcomputers. It is popularly called as
the
Hard Disk Drive (HDD) or sometimes
as
Fixed Disk Drive. It is fixed inside the computer and is not easily removable. It is used for storing the software and data inside
the
computer. It is also known as 'Winchester Disk', probably because this drive was first made by IBM at Hursley Laboratory, located near Winchester in England.
Winchester Disk consists of one or more disk platters, an access mechanism and read/ write heads which are sealed in a case
as shown in Figure 3.20.
Hard disk size depends upon the disk platter's diameter. There are many different
platter sizes (such as 5 1 / 2 , 3 1 / 2 , 2 1 / 2 inch etc.). The 3 1 / 2 inch size platter is common with PCs and 2 1 / 2 inch with laptop/ portable computers.
Read/
write head is used to write any information on the disk surface or to read it back.
Figure 3.20 Internal Structure of a
Winchester
Disk.
There are different types of hard disks depending upon their storage capacities. Storage capacities of hard disks range from 10 MB to several GBs, but 1.2 GB to 4.1 GB are now-a-days a common part of Pentium computers.

Floppy Disk Floppy Disk (FD) is another common storage device which is small, flexible and easily removable. It is made of a plastic disk coated with magnetic material, which is sealed

Figure 3.21 Structure of a floppy disk Read/write head Movable Central shaft Label S.No. Protective Jacket Visible

inside a square plastic jacket as shown in Figure 3.21.

It is called as 'Floppy' because it is soft having flexible physical property. Data can be written on or read from this floppy by a drive, called Floppy Disk Drive (FDD), which is fixed inside the computer.

There are many types of floppies depending upon their sizes and storage capacities
as summarised in Table 3.2.

The original floppy, developed by IBM, is an 8" floppy, but the most popular sizes available for present day PCs are 5 1 / 4 " and 3 1 / 2 ". The storage capacity of floppies vary from 360 KB to 1.44 MB. The floppies can store data on both sides (Double-sided

Floppies) or on single side (Single-sided Floppies) depending upon the floppy drive. Double-sided floppy drives are most frquently used in present day PCs. The latest floppy drive, that packs two high density floppy

drives (5.25 & 3.5 inch) into a single package, is known as Combo Drive.

Table 3.2

Comparison among different types of floppies. Type of Floppy Size Density Sectors Tracks Storage Capacity DSDD ** 5.25 inch Double 9 40 360 K DSLD ** 3.5 inch Low 9 80 720 K DSHD ** Big 5.25 inch High 15 80 1.2 MB DSHD Small 3.5 inch High 18 80 1.44 MB **

DS stands for Double Sided, LD for Low Density and HD for High Density

Compact Disk Compact Disk (

CD) is the latest storage device, used to store data, information and software, which can be read only and not be

changed or erased. It is an optical read only memory, made up of a resin
as shown in Figure 3.22.

Therefore, it is actually called as

Compact Disk Read Only Memory (CD-ROM). However,

the information is stored on CDs by using an expensive drive, called CD-

ROM drive.

Figure 3.22 A CD ROM Disk

Now-a-days

compact disks are very popular storage devices for microcomputers because a large number of software including multimedia, audio and graphics software

are available only on these disks. Compact

Disks can store a large volume of data (upto 680 MB),

which is almost

the same as a storage capacity of a 640

MB Hard Disk.

WORM (Write Once Read Many) is a type of compact disk which can be recorded only once and not erased. It can store more data than

a CD-ROM, generally measured in gigabytes.

M a g n e t i c Ta p e

Magnetic tape is the oldest storage device available for microcomputers. It is generally used to store a large volume of data that is needed to be sequentially accessed and processed. The tape is made up of a plastic ribbon coated with an iron-oxide material, which can be magnetised
as shown in Figure 3.23.

The data stored on tape can be read as well as erased and written again.

Figure 3.23 A magnetic tape.

Magnetic tape is a sequential access storage device, hence it is not possible to read the data randomly or directly.

Therefore, magnetic tapes are suitable only for storing data for backups and batch mode applications and not for on-line applications.

On the other hand, magnetic disks (floppy and hard disks), which are discussed above, are considered best storage devices for on-line applications. V

i d e o D i s k

Video disk is used to store text, video and audio data. It is widely used for training applications as
it can be played like a phonograph record.

M ag n e t o Op t i c al D r i v e Magneto Optical (MO) drive, as shown in Figure 3.24,
is the latest of all storage devices. This drive uses both a laser and an electromagnet to record data on a removable cartridge, The surface of the cartridge contains tiny embedded magnets. The unique feature of MO drive is that it has a very high storage capacity. Although MO drive is costier and slower than HDD, it has a long life and is more reliable.
55
Hardware Concepts Figure 3.24 A Magneto Optical (MO) Disk.
DVD ROM/RAM Disk
DVD ROM and DVD RAM disks are optical disks having a storage capacity of 4.7 GB and 5.2 GB respectively. These disks are becoming the next generation's new standard for higher capacity removable media. They are ideal for storage of hug amount of information required for multimedia applications.
One can put 133 minutes of high quality of video with digital sound on a DVD RAM Disk.
The picture of DVD RAM disk is shown in Figure 3.25. Figure 3.25 A DVD RAM Disk C A R D S
Cards are the printed circuit boards used to hold the chips (integerated circuits). There are many types of cards used in a
PC, the important ones are Video Card, Sound Card, I/O Card, Controller Card and Memory Card. Video card (Display Card) generates the text and graphic images for
the monitor while the
sound card generates the sound. Pentium computers, generally, use a PCI (Peripheral Component Interconnect) video card to speed up graphics. I/O Card provides a place for connecting
the
mouse and printer. Cables of hard disk and floppy disk are connected to controller cards. Memory Card provides a place for memory chips.
Some of the cards are shown in Figure 3.26.
56
Basic Computer Skills Figure 3.26 Some cards. P O R T S A N D C O R D S
Besides the important hardware discussed above,
the computer has several components which are used as pathway for flow of data. The rear of a PC has many empty holes or external sockets called ports or connectors. There are many types of ports in a PC, the most important

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ones are Serial Port, Parallel Port, Game Port and Video Port. Serial Port is used to connect a mouse, modem or scanner. Parallel Port is generally used to connect a printer. Game Port is used to connect the joystick while Video Port is a connector for

the

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monitor. Cords are the cables used to plug into the ports. There are different types of cables for connecting different types of input, output and storage devices. The important cords used in a PC are keyboard cords, power cords, monitor cords and printer cords.

P O W E R S U P P L Y

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Power supply is considered as the 'Heart' of a PC.

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A computer requires a clean and steady power source for working properly. Power supply is that important hardware, which provides the power source to a computer. It provides a voltage range of 4.95 to 5.25 volts for the highest performance of the system. Power supplies vary in size and power (in watt).

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An Uninterrupted Power Supply (UPS) keeps the computer running for

a

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few minutes even when the electricity supply goes off. UPS is not a part of computer and is purchased separately. It is optional but mostly preferred to CVT (Constant Voltage Transformer).

The pictures of CVT and UPS are shown in Figure 3.27.
57 Hardware Concepts Figure 3.27 Constant Voltage Transformer (CVT) and Uninterrupted Power Supply (
UPS). S U M M A R Y Hardware refers to the physical component of a computer. The harware components are

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classified into 7 types – i. Motherboard, ii. Input Devices, iii. Output devices, iv. Storage Devices, v. Cards, vi. Ports and Cords

and vii. Powersupply.

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Motherboard contains mainly the CPU chip, memory chip, I/O interface, expansion slots and logic circuits.

Keyboard and Mouse are the basic input devices of today's PC. Trackball,

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Light Pen, Touch Screen, Joystick, Digitizer, Scanner, Optical Mark Reader (OMR), Optical Character Reader (OCR), Bar Code Reader, MICR and Voice Input Devices

are the other input devices that are used for various special purposes. Monitor and Printer are the main output devices of a PC. There are many types of monitors primarily based either on the quality of output. Printers are also of many types depending upon their printing quality and speed. Plotter, another output device, is used to print high quality graphics and drawings. Computer Output Microfilm (COM) is also an output device which is used to produce output on a microfilm media. Winchester Disk (hard disk), Floppy Disk, Compact disk (CD), Magnetic Disk, Video Disk and Magneto Optical (MO) Disk are the main storage devices of a computer. Cards, Cords and Ports are the other important hardware components. Powersupply is considered as the `Heart' of a PC, because it provides the power source to a computer. E X E R C I S E Fill in the Blanks: a. All on hardware devices except motherboard are called _____. b. Motherboard is called_____ Board also. c.
Input devices are used to input data, information and instructions into the _____.
UPS CVT
58 Basic Computer Skills d. The digitizer consists of _____ main parts. e. Scanner is widely used in _____ applications. f. COM is a technique to produce output on a _____ media. Unsolved Questions 1. Define the term hardware. Discuss in brief the classification of hardware components of a microcomputer. 2. What is a Motherboard? Write the names of various components of motherboard. 3.
Name the basic input devices of a PC and explain their functions in brief. 4. What is a trackball ? How does it differs from mouse and joystick. 5. Name the input device used - a. to create drawings and pictures b. for digitizing photographs and documents 6. Classify the following devices into an Input (I), Output (O) or Storage (S) Device and write their main functions: a. Touch Screen b. Video Disk c. Light Pen
d. Plotter e. WORM f. COM g. CD h. MICR 7. How does an OMR differs from an OCR? Which of these devices

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is used for checking the answer sheets of examinations having multiple choice questions? 8.

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is used for checking the answer sheets of examinations having multiple choice questions? 8.

Explain the differences between CGA, EGA and SVGA monitors. Which of these monitors has the best quality display? 9.

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What is the difference between Impact and Non-impact Printers?

Classify the following category of printers as impact (I) or non-impact (N) printer and write their functions: a. Laser Printers b. Thermal Printers c. Drum Printers d. Ink Jet Printers e. Chain Printers f. Daisy Wheel Printers g. Dot Matrix Printers 10. Explain the difference between Character, Line and Page Printers. Give examples. 11.

Name

the main storage devices of a computer. Which device -

a.

has the highest storage capacity and is most commonly used b. has the lowest storage capacity but still is used most frequently c. is

the oldest of all storage devices d.

used to store data which cannot be erased or altered

59 Hardware Concepts 12. What is the

difference between cards and cords? Explain with examples. 13. What is the difference beween a serial and a parallel port? 14. Why is powersupply called as a `Heart' of a computer? 15.

Write the full form of following abbreviations: a. MDA b. HGA c. DIP d. SIMM e. SIPP f.

HDD g. MO h. WORM i. CVT j. UPS

60 Basic Computer Skills C A S E S T U D Y Making of India's own Supercomputer: Param In 1988, C-DAC (Centre for Development of Advanced Computing) set up a 10-year mission, divided into three parts to build India's own supercomputer, Param. In the first mission, the first Indian supercomputer - the transputer-based Param 8000 was developed. Param 8000 was designed to deliver one gigaflop computing capability. It was designed board-up which means that right from the start, it was based on parallel processing technology. In order to take advantage of the hardware capabilities of Param 8000, many teams worked for the development of system software that can be used on the supercomputer. After Param 8000, the new series of supercomputer, Param 9000 were developed. Param 8000 and Param 9000 series were so successful that 30 machines were sold and some of them are still working in Russia, Canada and Germany. On completion of Mission-I, its achievements were reviewed. There were three significant achievements of Mission-I. First, as the export restrictions for supercomputer were eased, anybody from the Third world country could purchase supercomputers. Second, the price tag on the monster number crunches came down significantly, to level near where the Param was tagged. Third, Param demonstrated to the Indian IT industry that we can develop the technologies for running mission critical applications. The major drawback of Param 8000 and 9000 series was that the making of these machines was very time-consuming (i.e. 2 to 3 years) due to their board-up design. In Mission-II, the entire project strategy changed. According to the new strategy, the supercomuter was built by making a network of smaller computers that have been set up for parallel processing. Instead of using board- up design, a scalable high performance computer was built from the available standard hardware components. In Mission-II, it was also decided to use network systems instead of transputers. Mission-II developed the latest of the Param supercomputers, the Param OpenFrame which is built from dual- processor Sun UltraSPARC workstations. The Param OpenFrame has many components including 3Com FMS Linkbuilder 100BaseT Hub and the APC Smart-UPS 2000. The UtraSPARC workstations are linked with three different networks viz. Paramnet, Myrinet and 100BaseT Ethernet network. One of the advantages of using three networks is that if one goes down, the other two are available. The other advantage is that applications running on the supercomputer can choose one of the three networks depending upon their bandwidth and latency requirements. The Param Openframe supercomputer also has its own power protection, air conditioning and system parameters monitoring systems. Presently, out of two in operation, one of these supercomputers is installed at C-DAC which has eight UltraSPARK workstations. and the other one having four workstations is installed at NIC (National Informatics centre). These machines can deliver peak performace of 10 gigaflops. Mission-III, which has to be finished in 1998, is still under progress. The objective of Mission-III is the development of a new series of Param supercomputers with a peak performance of 100 gigaflops. Param 10000 is the latest series of Param supercomputer. It has been designed using the latest 160 UltraSPARK II processor alongwith C-DAC's own design communication processors and networks. It will perhaps be the largest supercomputer of Asia barring Japan. (Adapted From: PC Quest, Apr.,1997) Questions 1. Describe the achievements of Mission-I for development of India's own supercomputer. 2. Discuss the major features of the Param OpenFrame supercomputer. 3. How does the Param Openframe differ from Param 8000 supercomputer? Discuss.

Software Concepts U N I T 4 In the last unit, we discussed the basic hardware concepts. A computer is a hardware and it is useless unless it is provided with the necessary software. Therefore, all computer users must be aware of the basic software concepts besides hardware.

A

software is a program or set of instructions, which is required to use

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the computer. Many types of software are available for various applications. The software development field is so advanced that day by day existing software are becoming outdated and new software are coming in the market. So, we must get aware of the latest developments in the software industry.

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In this unit, we are discussing all the important software concepts and providing you the latest knowledge of all the software available in the market.

Though we

are also providing you the current information about the latest version of

a

software, we are sure that it will be out-dated soon.

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Classification of Software ? Operating Systems ? Concept of Programming ? Types of Computer Language ? Language Translators ? Software Tools ? System Software Utilities ? Windows—A Graphical User Interface (GUI) ? General Purpose Application Software ? Special Purpose Application Software ? Latest Trends in Information Technology ? Emerging Information Technologies ? Limitations of Computers

62 Basic Computer Skills C L A S S I F I C AT I O N O F S O F T WA R E

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Software are broadly classified into following two types : a. System Software b. Application Software System Software Software that are required to control the working of hardware and aid in effective execution of a general user's applications are called System Software. These software perform a variety of functions like file editing, storage management, resource accounting, I/O management, database management, etc. Some of the examples of system software are DOS (Disk Operating System), Windows, BASIC, COBOL and PC TOOLS. These software are developed by System Programmers. Types of System Software System software can be further categorised into following three types: i. System Management Software (Operating Systems, DBMSs, Operating Environments) ii. System Development Software (Language Translators, Application Generators, CASE Tools) iii. System Software Utilities

A

p p l i c a t i o n S o f t w a r e

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Software that are required for general and special purpose applications like database management, word processing, accounting etc. are called Application Software. Some of the examples of application software are dBASE, Word Star, Tally etc. Application software are developed using system software by Application Programmers.

Application software can be further classified into following two types: i.

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General Purpose Application Software (Database Management Packages, Word Processors, Spreadsheets etc.) ii. Special Purpose Application Software (

Accounting, Inventory, Production Management etc.) O P E R AT I N G S Y S T E M S
An Operating System is the most essential system software that manages the operation of a computer. Without an operating system, it is not possible to use the computer. The
63
Software Concepts
computer is useless unless it is provided an essential software that makes it ready to use. An operating system is software
which makes the computer ready to use by a process called booting. Before discussing the types of operating systems, let us first see what exactly is meant by booting?
When we switch on the computer, the instructions stored in ROM are automatically executed. These instructions help the computer to load the operating system from external storage device (disk) to internal storage (RAM). This process of loading of operating system from disk to RAM is called
booting.
The term 'booting' comes from the word - 'bootstrap' as bootstrap help us to get our boots on, similarly booting helps the computer to get ready.
The process of booting is illustrated in Figure 4.1. Figure 4.1 Process of Booting. Typ e s o f Ope rati n g Sys t em s

Many

types of operating systems are available for computers which can be divided into the

following two types - a. Single-user operating systems b. Multi-user operating systems. a .

Single-user Operating Systems: These operating systems are used for mainly computers having only one terminal (stand-alone PCs). MS DOS (Microsoft Disk Operating System) and PC DOS (Personal Computer Disk Operating System)

RAM DISK Loading of Operating System (

BOOTING) Switch on the Computer Automatic Execution of Instructions Stored in ROM

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Basic Computer Skills

are the two important single-user operating systems. Both systems are almost identical and are simply called DOS.

OS/2 and Windows NT are other popular single-user multi-tasking operating systems for microcomputers. i.

MS DOS - MS DOS, developed by 'Microsoft Inc.' in 1981, is the most widely used operating system of IBM-compatible microcomputers. The latest version (

identification number of a release of software)

of MS DOS is 7. ii. PC DOS - PC DOS is essentially the same operating system as MS DOS, but developed and supplied by IBM for its

personal computers.

iii.

OS/2 - OS/2 is a single-user, multi-tasking operating system, developed jointly by IBM and Microsoft. This provides a unique feature of multitasking, where several programs can be run simultaneously.

OS/2 was the first operating system

that provided users with a Graphical User Interface (GUI). iv. Windows NT - Windows NT (New Technology) is the single user 32-bit multi-tasking operating system for 386

s

and above, developed by Microsoft Inc.Windows NT was driven by a need to exploit the tremendous power of 32-bit microprocessors and runs applications, which are developed for DOS and Windows.

b. Multi-

user Operating Systems: These operating systems are used for those computers (micro to mainframe) which have many terminals (multi-user systems). The popular operating systems used for multi-user systems are UNIX, NETWARE, MVS, OS/400,

VMS

and

Linux. i. UNIX - UNIX

was initially developed by AT&T at Bell Laboratories in 1969.

UNIX is a highly successful operating system for muti-user systems. Actually, it is more popular among scientific and engineering users rather than business users. In 1980, Microsoft developed its own version of UNIX for 286

s and higher PCs which is called

as

XENIX. UNIX System V Release 4 is the latest version of UNIX.

ii. NetWare - NetWare is a group of network operating system developed by Novell, Inc., that provides multi-user capabilities.

iii.

MVS (Multiple Virtual Storage) - MVS is one of the most complex multi- user operating systems ever developed for IBM mainframes. In MVS, each job (time-sharing user or batch program) is assigned its own virtual storage space. iv. OS/400 - OS/400 is the IBM's operating system for its AS/400 computer. v. VMS (Virtual Memory Storage) - VMS operating system is used on DEC's VAX series of minicomputers. vi. Linux - Linux is a 32-bit UNIX-like operating system that has been developed recently for microcomputers. It is the world's first free operating system developed and maintained by thousands of people

world-wide.

65 Software Concepts

The applications of different single and multi-user operating systems

are summarised in Table 4.1. Table 4.1 Applications of some common operating systems. Operating Type Applications

System MS DOS Single-user Mostly used for running/developing stand-alone applications/ programs on microcomputers. PC DOS Single-user Mostly used for running/ developing stand-alone applications/ programs on microcomputers. OS/2 Single-user Used for GUI applications and running several applications simulateously on microcomputer. Windows NT Single-user Used for GUI applications and running several applications simulateously on microcomputer. UNIX Multi-user Most widely used for multi-user applications on all computers. Net work Multi-user Most widely used for LAN (Local Area Network) applications on microcomputer. MVS Multi-user Used widely for large applications needing virtual storage space.

OS/400 Multi-user Used for large multi-

user applications on AS/400 computer. VMS Multi-user Used for large multi-user applications on VAX computer. Operating System Techniques There are several techniques used in Multi-user operating systems for enabling many users to concurrently share the single or multiple CPU (e.g. Multiprogramming and Multiprocessing). Some techniques are used in single-user operating system to handle multiple tasks (Multitasking). We will now discuss these common techniques used in different operating systems. i. Multiprogramming is a process by which single CPU works on two or more programs simultaneously. Using this technique, the operating system keeps the CPU busy. Multiprogramming allows the processor to handle either multiple batch jobs at a time (Batch Multiprogramming) or multiple interactive jobs shared among multiple users (

Time Sharing Multiprogramming). Time-sharing

is a technique that allows a CPU to simultaneously support the activities of several users by allocating fixed time slots (in milliseconds). Examples of operating systems that support multiprogramming are OS/2, UNIX and Macintosh System 7. ii.

Multiprocessing refers to the use of two or more CPUs to perform a coordinated task simultaneously. For example, MVS, VMS and Windows NT support multiprocessing.

66

Basic Computer Skills iii.

Multitasking refers to the ability of an operating system to execute two or more tasks concurrently. In multitasking environment, the user opens new applications without closing the previous ones and the information can be easily moved among a number of applications. For example,

Windows NT and OS/2 operating systems use this technique.

Fu n c t i o n s o f Op e rat i n g Sy s t e m s

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An operating system performs, basically three types of functions: i. Essential Functions:

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Storage management and processor management are two essential functions of an operating system. Storage management is concerned with allocation and reclamation of storage when a program is initiated and terminated. Process management is concerned with scheduling of programs in a time-sharing system. ii. Monitoring Functions: These functions are concerned with collection of resource utilisation and system performance information.

iii.

95%	**MATCHING BLOCK 112/291**	**SA**	Computer Application.pdf (D166063658)

Service Functions: These functions of operating system enhance facilities provided to users.

C O N C E P T O F P R O G R A M M I N G We have discussed that computer has

no intelligence of its own and each and every instruction should be given to it for performing any task. The set of instructions given to computer to process the data or perform certain task is called a Program. Programming is the technique for writing the programs. Programming is

required at all levels from manufacturing of the computer to its operation by the user. Programming, which is done at systems level for developing

systems

software, is known as Systems Programming (Systems Development). Systems Programs are written in low level languages (

we will discuss about types of language later)

like Machine/Assembly Language and some high level languages like C,C++ etc. Programming, which is done at the user level, for development of application software, is known as Applications Programming (Applications Development) or simply Programming. Application Software are generally developed using high level languages, DBMSs or Front End Tools (

We will also discuss about these later).

There are two approaches used in programming - a traditional approach, Procedure Oriented Programming and a latest approach, Object Oriented

Programming.

You must be aware of the advantages and disadvantages of both approaches of programming.

P r o c e d u re Or i e n t e d P r o g r am m i n g

Procedure oriented programming is the traditional way of programming, where an application problem is viewed as a sequence of steps (algorithms). As per the algorithm, the problem is broken down into many modules (functions) such as data entry, reporting,

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modules etc. as illustrated in Figure 4.2. There are two types of data, which are associated with these modules - one is global and another is local data. Global data items are defined in main program, whereas local data is defined within associated functions. Many of the functions share global data, as this kind of data is available to all functions. Procedure oriented programming is the conventional approach of programming for developing application software. High level languages like COBOL, Pascal, BASIC, Fortran, C etc. are based on procedure oriented approach, and hence are also called procedural languages. Figure 4.2 Generalised structure of a procedure oriented program. Advantages of Procedure Oriented Programming The main advantages of procedure oriented programming are−

i. It

is easy to port programs as compilers for procedural languages are easily avaliable. ii. It is easier to learn procedure oriented programming than new ways of programming. Disadvantages of Procedural Oriented Programming Although procedural oriented programming is the conventional approach of programming, it has certain drawbacks. The main disadvantages of this approach are - i. As most of the functions share global data, this data is freely available to all functions. Although this freely available data is easily accessed by any function, it can create certain problems. When a new function is written for analysing this data in different way it is possible that data may be changed accidentally or deliberately. Therefore, there is no security of data in procedure oriented programs. ii. Another problem is that whenever data structure is required to be changed, all the functions using that data must also be changed. So, procedure oriented programs (especially for complex applications) are extremely difficult to modify and maintain.

iii.

Procedure oriented programming does not model the real world problem. (

We will discuss this concept in the next sub-section) Procedure Oriented Program FUNCTION 1 FUNCTION 2 FUNCTION 3

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Object Oriented Programming Object oriented programming is the latest approach of programming. It attempts to eliminate most of the drawbacks of procedure oriented programming by incorporating new concepts. It is a new way of organising programs, which is not dependent upon any particular language. In object oriented programming, a problem is viewed not as a sequence of steps to be done, but as a collection of different units (called objects) that models the real world things. The structure of an object oriented program is shown in Figure 4.3.

Figure 4.3 Generalised structure

of an Object Oriented program. The 'Object oriented' concept can be better understood by discussing about the definitions of an object and its related terms. So, let us discuss the basic terminology used in

Object

Oriented Programming (OOP). Basic Terminology used in OOP Object − The fundamental idea behind OOP is to store the data and functions operating on that data into a single unit, called an object. An object may represent a person, a student, an employee, an account, an examination or any item that closely resembles the objects of real world. Class − A class is a collection of similar objects. For example, if 'Car', 'Bus' etc. are different objects than 'Vehicle' is a class. Encapsulation − The wrapping of data and functions in an object or class is known as encapsulation. Data Hiding − Data hiding is the important feature of objects, by which data is not accessible other functions outside the objects. Data Abstraction − The act of representing essential features of the objects without giving details is known as data abstraction. Classes use this concept and represent essential properties of the objects.

Obejct Orinted Program OBJECT 1 OBJECT 2 OBJECT 3 DATA FUNCTION OBJECT

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Inheritance – An object of one class (base class) can inherit the properties of another class (derived class) by a process, called inheritance. For example 'Petrol Vehicle', is one class that inherits the properties of another class 'Vehicle'. Polymorphism – The ability of objects to exhibit different behaviours in different instances is known as polymorphism. For example, an additional function of an object generates a sum if the data is in numeric form or it concatenates the strings if the data is in character form. Advantages of Object Oriented Programming Object oriented programming offers several benefits over the procedure oriented approach. The main advantages of using object oriented approach in software development are described as follows: i. Reusability of the code is the major benefit of object oriented programming. Redundant code can be eliminated through inheritance feature of OOP. The generation of windows, menus, dialog boxes etc. are few examples of programming codes that can be reused. So, a lot of time of programmers is saved during development of an application software. ii. In object oriented programming, as the emphasis is on data rather than algorithms, a program can easily be broken down into objects, which model truly the real world objects. iii. The programs and data are more secure due to data hiding feature of OOP. iv. New data types can be easily created through data abstraction feature of OOP.

Applications

of OOP Object oriented programming is very useful in application areas like real-time, artificial intelligence, expert systems, computer aided manufacturing/designing, office automation and decision support systems. Disadvantages of Object Oriented Programming Although the object oriented approach is the latest and most widely accepted programming approach, it has certain drawbacks as described below: i. Although object oriented software are easier to upgrade and maintain, first time development process is more difficult than procedure oriented software. This drawback can be solved by using latest programming tools.

ii. All

languages cannot easily implement object oriented approach. So, object oriented programming is limited to few languages (object oriented languages).

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Basic Computer Skills Role of Programmers and

Systems Analyst Software development project is not managed by a single person, but it is a teamwork. Software project is managed by a person called, project leader. The project leader is generally a system analyst, who analyses and designs the complete software. Programs are developed by software professionals, called Programmers. System Programmers develop

systems

software while application programmers are involved in development of application software. Systems analyst and programmers play a vital role in development of an application or a systems software.

The

analyst plays the role of a specialist in computer-based applications. Programmers are responsible for coding, editing, testing and debugging the programs. Systems analyst and programmers work together as a team.

T Y P E S O F C O M P U T E R L A N G U A G E S

One man communicates with another in a language which another man can understand. Similarly, man communicates with computer in a language which machine can understand. This language which consists of a set of commands, understandable by computer directly or after translating, is known as Computer Programming Language. There are many types of

computer

languages, which can be categorised into following four types – a. Low-level Languages (First & Second Generation Languages) b. High-level Languages (Third Generation Languages) c. User-Friendly Languages (

Fourth Generation Languages) d. Object Oriented Languages (Fifth Generation Languages)

L o w - l e v e l L a n g u a g e s

In early days of computers, only those languages were used for programming, which could be directly executed on computer. Languages, which computer can understand directly and are machine dependent, are called Low-level Languages. For example, Machine Language and Assembly Language are two important low-level languages. Machine language is the oldest and most difficult of all the languages. It is also known as First Generation Language. In machine language, all the instructions are given to computer in binary digits, and hence are directly understood by the computer. On the other hand, Assembly Language is easier than machine language, and is known as Second Generation Language. In Assembly Language, instructions are given using mnemonic operation codes (such as ADD, MUL etc.) instead of binary digits. Low- level languages are

mainly used for development of systems software.

H i g h - l e v e l L a n g u a g e s

Development of applications using low level languages requires a deep understanding of the hardware. In order to facilitate the programmers to write programs without knowing

Software Concepts

the internal details of computer components, many languages were developed. These languages use common English words and are translated into low-level languages before processing by the computer. These languages, which computer cannot understand directly and are not machine dependent, are called High-level Languages (HLL). These languages are also known as Third Generation Languages.

Some of the common high- level languages are - i. BASIC (Beginners All Purpose Symbolic Instruction Code) ii. COBOL (Common Business Oriented Language) iii. FORTRAN (Formula Translator) iv. PASCAL (Name of a Scientist) v. C (it does not stand for anything) These

languages were widely used for applications development, but most of them are now outdated due to popularisation of 4GLs. The uses of different 3GLs are summarised in Table 4.2.

Table 4.2 Uses of 3

GLs (Third Generation Languages). Language Uses

BASIC (Beginner's All Purpose Used for all purposes (Commercial, Scientific, Educational, Graphics Symbolic etc.) by beginners. Instruction Code) COBOL (Common Business Mainly used for development of commercial applications Oriented Language)

on all types

of

computers. FORTRAN (Formula Translator) Used for development of scientific (mathematical) applications. PASCAL (Name of a Scientist) Used for both commercial and scientific applications. C (No full form) Very powerful language for development of both system and application software.

User-friendly Languages Although high-level languages are simpler to codify than low-level languages, they still require a lot of time to learn programming syntax. Hence,

these languages are beyond the reach of many computer users, who do not want expertise in programming. Therefore, a new category of languages have been developed which are user-friendly, very easy to codify and simplest to learn. These languages are called User-friendly Languages and popularly known as 4GLs (Fourth Generation Languages). Some of the common 4GLs are dBASE, Foxbase, Foxpro, MS Access, Oracle, Sybase and Ingres. The uses of different 4GLs are summarised in Table 4.3.

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96%	MATCHING BLOCK 113/291	W

Table 4.3 Uses of 4GLs (Fourth Generation Languages). Language Uses dBASE Used for development of mainly single user DOS based database appliactions. Foxbase Used for development of both single and multiuser DOS based database applications. Foxpro Used for development of both DOS and Windows based database applications. Oracle Used for development of relational database applications on any operating environment. Sybase Mainly used for development of on-line applications such as Decision Support Systems and Transaction Processing. Ingres Used for development of relational database applications of VAX/UNIX operating system. Object Oriented Languages

We have discussed that the object oriented programming is the latest approach in programming. The languages which are based on object oriented programming (OOP) approach, are called as Object Oriented Languages. They may be classified into Fifth Generation Languages. Object oriented languages are specially useful for development of GUI (Graphical User Interface) applications. These languages also offer a unique feature of

Reusable Code. Some of the popular object oriented languages are Smalltalk, C++

and

Object COBOL, Object Pascal, Simula, Eiffel, Java & Visual J++. C++ and Visual J++ are widely used

now-a-days for

development of

window-based

applications. The uses of different object oriented languages are summarised in Table 4.4.

97%   **MATCHING BLOCK 114/291**   W

Table 4.4 Uses of Object Oriented languages (Fifth Generation Languages). Language Uses Smalltalk Used for development of mainly graphical applications. C++ Used for development of all types of object oriented applications Object COBOL Used for development of object oriented applications on mainframe computer. Object PASCAL Used for general object oriented applications. Simula Mainly used in a research environment. Eiffel Used for general

of

92%   **MATCHING BLOCK 116/291**   W

object oriented applications. Visual J++ Very popular for development of Windows based applications. 73 Software Concepts There are certain languages which support most of the features of object oriented programming except inheritance. These languages are not pure object oriented languages and are known as Object Based Languages. For example, Ada, an high level language designed for process control, is an object based language.

LANGUAGE TRANSLATORS

89%   **MATCHING BLOCK 117/291**   W

Regardless of the programming language used (except machine language), the symbolic instructions have to be translated into a form, that can be executed by computer. The software, which converts the codes of other languages into machine code, are collectively called Language Translators. Language Translators are categorised into three types - a. Assemblers

b. Interpreters c.
Compilers A s s e m b l e r s

100%   **MATCHING BLOCK 118/291**   W

Assemblers translate the assembly language code (source program) into machine language code (object program). After assembling, a linker program is used to convert the object program into an executable program. The Microsoft assembler program (MASM) and Borland Turbo assembler program (TASM) are two popular assemblers. Assemblers are used mainly in development of system software.

Interpreters

93%   **MATCHING BLOCK 119/291**   W

Instructions of a high-level language are coded in many statements. At the time of their execution, they are converted statement by statement

93%   **MATCHING BLOCK 120/291**   W

into machine code, by using system software, called Interpreters. For example, programs written in BASIC language are executed by using BASICA or GWBASIC interpreters. Programs written in some fourth generation languages, like dBASE III plus are also executed using dBASE interpreter. There are certain disadvantages of interpreters. As instructions are translated and executed simulateously using interpreters, they are very slow for executing large programs. Hence, interpreters are not suitable for most of applications development.

Compilers
As

contrast to interpreters, compilers provide faster execution speed. Compilers do not translate and execute the instructions at the same time. They translate the entire program (source code) into machine code (object code). Using linker, the object code is converted into executable code. Compilers are widely used in translating codes of high level languages (e.g. COBOL, FORTRAN, PASCAL, Turbo/ Quick BASIC, 74

Basic Computer Skills

Turbo/ Microsoft C etc.) and fourth generation languages (dBASE IV, Foxpro etc.). As compared to interpreters or assemblers,

compilers are preferred in development of application software.

S O F T WA R E T O O L S

To develop a large application, lots of effort, money and time are required for designing the systems and writting the program code. The overall goal of computerising an application is to make it more efficient than manual system with optimum utilisation of time, money and effort spent on its development. In order to save the valuable time spend by systems designers and programmers in designing the complete system and writting codes, certain programs are required, which are called software tools. The selection of software tools has become an important aspect of software development. Software tools assist the programmers/ analyst in the design, coding, editing, compiling, linking and debugging programs. They allow them to focus on the challenging aspects of a system. We are discussing below the important categories of software tools that are normally used.

A p p l i c a t i o n G e n e r a t o r s

Application generators are software tools that help the programmer to quickly generate a complete or part program according to the specifications given. The programmer does not write the code but using an application generator, defines the menus, screen, report formats, data elements and processing logics. The program code is generated quickly by the application generator. Now, the programmer can easily edit and execute the program. Many application generators are available for different third and fourth generation languages like COBOL, dBASE, Foxpro etc.

For example, Pacbase is an application generator for programs written in COBOL language. dBASE and Foxpro have built-in code generation capabilities for designing screen, menu and report formats. Genifer is a full scale code generator, that provides a pattern called a template, from which the code is generated. After defining screens, menus and reports, Genifer creates the data files, index files and programs. Advantages of Application Generators The major advantages of using application generators are - ? Saving a lot of development time ? Useful as a learning tool for writing programs ? Programs are easy to modify and maintain

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Disadvantages of Application Generators Application generators also have certain disadvantages - ? They cannot handle systems having complex processing logic ? They add complexity, if template language differs from native language Software Engineering and CASE Tools Development of an

application software is very complex to plan, design, develop and manage. Software engineering is the systematic approach in design, development, operation and maintenance of such software. Its basic aim is to produce high quality software at low cost. Computer

Aided Software Engineering (CASE) tool is a group of different software tools that are integerated and used in software engineering. For example, Designer/2000 is Oracle's suite of CASE tools that address the different stages of the application development. CASE tools simplify all stages of project planning, analysis and design of an application. CASE tools include many important features like graphics library, data dictionary, design methodology, screen/ report designing and systems documentation. CASE tools incorporate modelling techniques for representing the data and processes.

S Y S T E M S O F T WA R E U T I L I T I E S

System software utilities support the operation of the

computer. They provide many features including file management capabilities, data compression, diagnostic routines, virus detection and removal, text editing, performance monitoring and spooling.

There are many types of utilities for carrying different tasks. We must be aware that utilities are not operating systems, but certain utilities are inbuilt in operating systems. We are describing below the important types of utilities that are commonly used in computers.

File Management Utilities

These utilities provide

file management capabilities like copying, comparing, searching, listing and sorting the files. Although these features are offered by many operating systems, utility programs provide better user-friendly environment along with some additional features. Norton Utilities (

NU)

and PC TOOLS are the most commonly used file management utilities.

Data Compression Utilities

These utilities compress or decompress files that are stored on floppy and hard disks. As compressed files take up very less space

in

disks, data compression utilities are widely used during copying of data from hard disk to floppy disks. PKZIP/ PKUNZIP programs are commonly used examples of data compression utilities.

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Diagnostic Utilities These

utilities can detect bugs (errors in hardware/ software) in computers. For instance, the problems of floppy and hard disks can easily be detected by a popular utility program called Norton Disk Doctor (NDD).

QAPlus and Disk Manager (DM) are other examples of utilities that can detect and remove many bugs in storage devices, software and other components of computers.

Virus Detection and Removal Utilities

These utilities are used to detect and eradicate the different types of viruses. Before discussing their importance, let us first discuss, what is a Virus ? Virus is an unauthorised software that is used to invade and disrupt the normal working of computer. Like biological viruses, computer virus spreads from one computer to another generally through floppy disks. There

are

many problems caused by viruses like damage of data, loss of user interface, unexpected screen messages, system crashes etc. The potential problems caused by viruses in today's organisational computer systems

is

the worst. There are many types of viruses and their numbers is increasing day by day. The users and managers must take precautionary measures to control the spread of these viruses. There are many utilities, such as Nashscan, SmartDog, Dr. Soloman's Anti-Virus Toolkit etc. that can detect and remove most of the viruses and are popularly called as Virus Scanners. These virus scanners must be upgraded from time to time for detection and removal of new viruses.

Text Editing Utilities

These

utilities are used to create, edit and print the non-document texts such as programs, data etc. Norton Editor (NE) is the most common example of text editor. Most operating systems, including DOS, also has inbuilt text editor program.

Performance Monitoring Utilities

These utilities provide information about the efficiency of computer working. For instance, QAPlus, PC Tools and Norton Utilities provide performance monitoring capabilities by providing information about speed, storage capacity and other features of the system.

Spooling Utilities

In multi-user/ networking environments, the input and output devices are generally slow. In such environment, the processing of computer is also slowed down. To control the computer from being slowed down, the spooling programs are used. SPOOLing (Simultaneous Peripheral Operations OnLine) program is used to buffer data for the

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Software Concepts

printer and remote batch terminals. This program sends the output to the disk and printer does not interact with CPU during printing. Spooling utilities are used mainly in computer systems with multi-user/ networking environment.

WINDOWS –A GRAPHICAL USER INTERFACE (GUI)

We have discussed the role of an operating system in managing the operations of a computer. Most microcomputers use DOS as an operating system. Although DOS is essential to operate a computer, but the user interface with DOS is not user-friendly. In order to operate the computer, one must learn DOS commands. The user is expected to memorise all DOS commands and understand their correct syntax (rules for writing statements of a language). Therefore, only DOS environment is not considered sufficient for running present day applications on PCs. Most of the present day applications related to management and other fields need a graphics-based user interface that is easy to operate. Such a graphics based user interface, that incorporates pull down menus and icons (small pictorial representations of files, programs, storage devices etc.) is known as Graphical User Interface (GUI). For example, as we have discussed earlier, the operating system of Mac PCs provide graphical user interface (GUI). In IBM-compatible PCs, GUI is provided by an operating environment/

system - 'Windows'.

Windows is the most popular system software, that provides graphical user interface. Windows provides an interface, which is similar to

the Macnitosh

user interface. In such interface, each active application is displayed in

a window on the screen as shown in Figure 4.4.

The application window can be closed, opened, hided, displayed, moved, resized, minimised or maximised. The user can run several applications simultaneously, each in its own window. Windows allow the user to share data among different applications. Windows provides an interactive environment, where the user is engaged in continuous dialog with the computer. In windows, although both keyboard and mouse are used as input device,

the mouse

is the primary tool for selecting and running window applications. The different versions of

58%	MATCHING BLOCK 133/291	W

windows are Windows 1.x, Windows 2.x, Windows 3.0, Windows 3.1, Windows 3.11, Windows for Workgroups 3.11, Windows 95, Windows 98 and Windows NT. Windows 1.

x, 2.x and 3.0 were the earlier attempts from Microsoft, Inc. for creating graphical user interface but were not very successful. Windows 3.1 and higher versions provide powerful and multifeatured GUI capabilities. Windows NT may appear

to you user

same as Windows 3.1, but it is based on entirely a different concept.

Therefore, we have already discussed about Windows NT in our discussions on 'Types of Operating Systems'. Now, we continue our discussion mainly on Windows 3.1, Windows 95 and Windows 98.

78 Basic Computer Skills Figure 4.4 A Window Screen showing many active applications. W in do ws 3. 1/ 3. 11 & W i ndow s fo r Wo r k g ro u p s 3 . 1 1

Windows 3.1 is generally misunderstood as an operating system, but actually it is not an operating system. Windows 3.1 is a graphics-based operating environment that replaces the DOS interface. In order to run Windows 3.1, DOS must be installed on the computer.

Windows 3.1 has all the basic features of other GUIs.

It also provides non-preemptive multitasking features, which allow users to run several programs at

once. Non-preemtive multitasking means the programs must voluntarily give up control to the computer for getting their turn. Windows 3.11 is the successor of Windows 3.1, with a trivial difference.

Windows for Workgroups 3.11 is a peer to peer network (a network in which any computer can be server) version of Windows. It includes 32-bit file access system, which is not provided by Windows 3.11.

W i n d o w s 9 5

Windows 95 is a much awaited replacement for Windows 3.1.

It is a

new 32-

bit operating system from Microsoft, released in 1995. Windows 95 provides the following important features:

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Software Concepts i.

Built-in Networking: Windows 95 has sophisticated 32-bit built-in network components, that

allows it to operate both as client in

a client-server network and peer-to-peer network operating system. In client-server approach, there is a central computer acting as a file server, with which workstations called 'clients' are attached.

In peer-to-peer networking, every computer connected with network can work as a file server and therefore can share files and printers with other computers.

ii.

Multimedia Functions: Windows 95 provides all multimedia controls and functions. Multimedia is the way of disseminating information in form of text, audio, graphics/ animated graphics and full-motion video.

iii.

Preemtive Multitasking: Windows 95 provides preemtive multitasking features, which are found in operating systems like OS/2 and Windows NT. In preemtive multitasking, operating systems dictate the time slice for each program, resulting in smoother control and fewer crashes. iv.

Memory Protection: Memory protection feature of Windows 95 ensures that one application do not crash other applications in memory. v. 'Plug and Play': Windows 95 automates the hardware configuration process,

by

knowing the kind of printer, mouse and other peripherals. This feature is known as 'Plug and Play'. vi. OLE (Object Linking and Embedding): OLE is the key technology for Windows 95.

Object Linking and Embedding

is the Microsoft's standard for creating compound documents (compound document is a document made from different programs) in windows.

OLE permits seamless integeration of applications in windows.

W i n d o w s 9 8

Windows 98 is the latest upgrade of Microsoft Windows operating system. It makes our computer easier to use by providing new and enhanced features. The major features of Windows 98 are– i. Faster than Windows 95: Windows 98 is a faster operating system. Without adding new hardware, the computer runs faster in Windows 98 as compared to Windows 95. The maintenance wizard of Windows 98 checks the hard disk for problems and frees its space so that the programs run faster. ii. Web Integration: It provides improved web features by combining the power of the computer with the interactive content of the Internet. iii. Improved Reliability: It improves computer reliability by introducing new utilities, wizards and resources which help in running the computer smoothly and efficiently. The new web-based resource site automates driver and system file updates, and provides up-to-date technical support.

The

system file checker of Windows 98 restores the critical files if they are changed. In Windows 98, scandisk runs automatically if the computer is shut down improperly.

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iv. Multiple Display: In Windows 98, we can use several monitors simultaneously to run different programs on separate monitors. v. Power Management: Windows 98 improves the startup time of the computer. In Windows 98, we can start the computer in just a few seconds. Windows 98 restore all the programs in their last saved positions. vi. More Entertaining: Windows 98 provides new features such as enhanced television, video playback and Web TV for Windows that makes our computer more entertaining. Using Web TV for Windows, we can receive and view searchable television program listings provided we have an Internet connection and a TV tuner card installed on our PC.

G E N E R A L P U R P O S E A P P L I C AT I O N S O F T WA R E

Whenever an organisation purchases computers, besides an operating system certain application software are also required to be purchased. These

software are needed for general purposes like word processing, database management, spreadsheets etc. and are known as General Purposes Application Software.

We are discussing below the importance of different general purposes application software along with their major products. Wo rd P ro c e s s o r P ac k ag e s

Word processors are application software which

are used for word processing. Word processing is the most widely used technique for typing, editing, storing, formatting, manipulating and printing documents with the assistance of computer and printer. It is the most efficient means of generating documents electronically.

Advantages of Word Processing Word processing offers several advantages over typewriting. Using the word processing technique, the user can - ? edit the text as and when required ? move or copy any part of the text from one location/ file to another location/ file ? insert or delete the spaces/ text ? wrap words to the next line (Word Wrapping) and justify text to the right margin (Justification) ? select different types of fonts and size of characters ? adjust the margins and page lengths for the desired output ? find the required word/ group of words and replace with another word/ group of words ? check the spelling of any word of the document

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Software Concepts ?

store (save) the document on disk and print single or multiple copies ? print letters with same text
and
different names and addresses (mail-merging) Besides the above main features, there are many more benefits of word processing depending upon the word processor used.
Examples of Common
Word Processors There is a wide range of word processors available for both DOS and Windows environment. Word Star, Softword, Akshar, MS Word, Word Perfect and Amipro are some of the common examples of word processors. Word Star the most common and popular DOS-based word processor is developed by the MicroPro International Corporation, Inc. U.S.A.. There are different versions of Word Star like 1.x, 2.x, 3.x, 4.0, 5.0, 6.0 and 7.0 but the releases 4.0 (also known as Word Star Professional)
and 7.0 (the latest one) are the most popular among users. Softword and
Akshar are also DOS-based English and Hindi word processors respectively developed by an Indian Company, Softech. Among the windows-based word processors, MS Word, Word Perfect and AmiPro are the leaders in the markets (
DOS based versions of these packages are also available).
MS Word, developed by Microsoft Inc. is a part of MS Office professional package. Word 6
for Windows 3.1
and Word 7 for Windows 95 are the most popular versions of Word. Word Perfect (latest version 6.0), developed by Word Perfect Corporation, which provides almost same features as MS Word is also very popular among users. Ami Pro (latest version 3.0)/ Word Pro, developed by Lotus Corporation, is another full-fledged, multi-featured word processor for windows. The important word processors are listed in Table 4.5. Table 4.5 Common word Processors. Word Processor Description Word Star Simplest DOS-based word processor Softword Similar to Word Star developed by an Indian company Akshar Popular Hindi/English word processor developed by an Indian company Word Popular Windows-based word processor Word Perfect
Most widely used Windows-based word processor
Amipro Full-fledged, multi-featured Windows-based word processor with DTP features
Database Management Packages Business processes are always associated with a huge amount of data. To store, manipulate and process such data, some software packages are needed, which are
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Basic Computer Skills collectively known as Database Management Packages/ Software/ Systems (DBMS). Data Base Management System
is defined as a
software that organises and maintains the data in a database for providing the information.
Before discussing about these packages, let us see what is meant by
the terms - data, information,
file and database. Data and Information Data and information are the two basic components of any information system. Data is defined as a set of basic facts and entities which itself has no meaning or value. For example, 5000, 4000, 4500, 4800, 8900.... is a data of employees salaries which itself has no meaning. On the other hand, information is defined as that data which has some meaning or value. For example, the personal data of employees names and their basic salaries represented as "Komal – 5000", "Rajesh – 4000", "Sarika – 4500", "Suchitra – 4800", "Pawan – 8900", etc. is an information because it has some meaning. File
and Database
File is a group of related records in a database. For example, a group of personal records of all the employees of a company is a file. However, database is a collection of related files that is created and managed by a database management system.
The most important point to remember about database is that it contains data and not necessarily information. Some of the examples of the database are as follows : i. The vouchers, bills receipt and other financial data of an organisation. ii. The details of students and their marks obtained for preparing their result in a school. In the above examples, the data can have some meaning or no meaning in itself until it is processed to get useful information.
Examples of Database Management Packages Many database management packages are available in the market. Managers must be aware of the benefits and limitations of these packages before purchasing and using them. dBASE, Foxbase, Foxpro, MS Access, Paradox, Oracle, Ingres, Sybase, Informix etc. are the major products of database management systems. dBASE is the most popular and simplest to learn database management system which is developed by Ashton-Tale, U.S.A.. dBASE II was the first product developed for database applications and later on Ashton-Tale developed new versions viz. dBASE III plus, dBASE IV and dBASE V. dBASE III plus and dBASE IV are exclusively DOS based versions while dBASE V is windows-based. FoxBASE+ is a dBASE III plus compatible DBMS, which is originally developed by Fox Software and later on by Microsoft. It is faster and multi-user as compared with dBASE III plus which is slow and

single-user.

Microsoft developed another dBASE IV compatible DBMS, called FoxPro which has now become very popular among users. FoxPro 1.0, 2.0, 2.5, 2.6 and

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Visual FoxPro 3.0/5.0 are the different versions of FoxPro. FoxPro offers several advantages over both dBASE and FoxBASE. The difference between dBASE, FoxBASE and FoxPro are given in Table 4.6. Table 4.6

Comparison among three popular DBMSs. Criteria

dBase Foxbase Foxpro Operating Environment DOS/Windows DOS DOS/Windows Users Single-user Multi-user Multi-user Execution Speed Slow Medium Fast Disk Storage Less Average

More Features Less Average Many Program Generators Less

Less Many Compiler Not available Available Available MS Access, developed by Microsoft Inc., is also a part of MS Office professional package. It is a relational database management system (RDBMS), which is windows based and is quite similar to Visual FoxPro. Paradox, a part of Corel Office Pro software, is a network RDBMS and is known for its Querry By Example (QBE) method for asking questions. Oracle, Sybase, Ingres and Informix are the leaders among RDBMSs. The list of

major DBMSs products are illustrated in Table 4.7. Table 4.7 Common DBMS packages. DBMS Pacckage Description dBase Most popular DOS/Windows based database management system Foxbase Faster, multi-user dBase-compatible DBMS Foxpro/ Visual Foxpro DOS/Windows-based DBMS with advanced features Access Windows-based DBMS similar to Visual Foxpro Paradox Netword RDBMS with QBE (Query By Example) features Oracle Most popular RDBMS for microcomputers Sybase

Distributed RDBMS that runs on most servers Ingres Popular RDBMS that runs on many operating systems Informix Popular RDBMS server mainly for UNIX operating system.

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Spreadsheet

Packages Business applications require a lot of calculation work. In manual system, it is done on a sheet of paper with rows and columns, which

is

called a 'spreadsheet'. Spreadsheet packages use the concept of an electronic spreadsheet. An electronic spreadsheet (or worksheet)

is a very big sheet consisting of thousands of rows and columns, which

is

used to store information in the memory of a computer. Like databases, electronic spreadsheets have now become an essential tool in developing a computerised management information system.

Income statements, annual reports, balance sheet, cost analysis and budgets are some of the applications where worksheets are typically used.

Advantages of Electronic Spreadsheets The electronic worksheet offers several advantages over manual and other computer application software. These are described as follows : ? The user can perform any type of calculations involving mathematical, financial, statistical and other functions. ? All recalculations are performed automatically, if any figure is changed. ? As worksheet is very big in size, so a large volume of data can be stored on a single worksheet. For example, it is possible to store entire data of accounts of a big organisation on a single worksheet. ? The user can view/ print the data in any desired format. ? Most of the word processing features like spell checking, find/ replace words can also be performed on a worksheet. ? The data of worksheet can be viewed in many types of graphs/ charts. ? The worksheet can be saved, retrieved, combined to another worksheet and transferred to files of different database and word processing packages. Besides the above main features, there are many more benefits of spreadsheets depending upon the spreadsheet package used.

Examples of Common

Spreadsheet Packages There are many products of spreadsheet packages– some of them are exclusively windows based like MS Excel and others both as DOS and Windows based like Lotus 1-2-3. Lotus 1-2-3, developed by Lotus Development Corporation, is the most popular spreadsheet package among DOS users. The different versions of Lotus 1-2-3 are release 1.x, 2.x & 3.x (DOS based) and 4 & 5 (both DOS & Windows based). Lotus 1-2-3 is also available as a part of Lotus Smartsuite office automation package in the market. MS Excel, a part of MS Office, is the most popular Windows based spreadsheet package. The

latest and

popular versions of Excel are Excel 5.0 (for Windows 3.1) and Excel 7.0 (for Windows 95). Quattro Pro (latest version 5.0), developed by Borland International is another spreadsheet package that provides advanced graphics and presentation features. Javelin Plus (from Information Resources, Inc.), Multiplan (Microsoft Corp.),

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Supercalc (Computer Associates International, Inc.) and PlanPerfect (Word Perfect Corp.) are some other examples of spreadsheet packages.

The list of major spreadsheet packages are given in Table 4.8. Table 4.8 Common Spreadsheet Packages. Spreadsheet Package Description

Lotus 1-2-3 Most popular DOS/Windows based spreadsheet package Excel Most popular Windows based spreadsheet package Quattro Pro Spreadsheet package with advanced presentation features

Javeline Plus Spreadsheet package that uses names to identify calls Multiplan Spreadsheet package from Microsoft Corp. Supercalc Spreadsheet package from Computer Associates PlanPerfect Spreadsheet package from Word Perfect Corp.

Office Automation Packages (Office Suites)

Word processors, Spreadsheets and Database Management packages are also available as integerated

packages generally called Office Automation Packages/ Software Tools

or

Office Suites. MS Office and Lotus Smartsuite are two most popular examples of office automation packages. Microsoft Office (MS Office) Professional is a package that contains five powerful general purpose application packages. It includes Word, Excel, Powerpoint, Access and Mail. We

have already discussed about Word, Excel and Access

in previous sub- section.

Powerpoint is used to create professional presentations in the form of slides. The user can write text, draw figures and organisation charts on these slides. Powerpoint is the most popular and commonly used desktop presentation program for Macintosh and PCs. Powerpoint 4.0 and Powerpoint 7.0 are the currently used versions

for Windows 3.1 and Windows 95 respectively. MS Office 4.3 and MS Office 97 are two currently used versions for Windows 3.1 and Windows 95 respectively.

Lotus Smartsuite

is another popular office automation

package that contains five powerful general purpose application packages. It includes Word

Pro, 1-2-3, Freelance Graphics, Approach and Organizer.

We have already discussed about Word Pro, and 1-2-3 in previous sub-section. Lotus SmartSuite 7.0 and Lotus SmartSuite 97 are Windows and Web Enabled versions of SmartSuite respectively.

Corel Office, an office suite, contains Word Perfect, Quattro Pro, Paradox, Corel Draw, Netscape Navigator, Presentations, Corel Flow, Sidekick and other

general pupose

application packages. SideKick is the first popup program (TSR - 'Terminate and Stay Resident' in memory) used for editing programs and non-document files.

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Skills S P E C I A L P U R P O S E A P P L I C AT I O N S O F T WA R E

Although general purpose application software are exclusively used by all users for general appications, but there are certain software which are meant for some special applications and organisations. Besides general purpose application software, some

organisations

also need software for desktop publishing, graphics, multimedia, animations, financial accounting, sales and marketing, inventory, export documentation etc.. These software are collectively known as Special Purpose Application Software. We are discussing below the different types of special purpose application software. D e s k t o p P u b l i s h i n g S o f t w ar e Desktop

Publishing (DTP) software are used to produce a high-quality document for commercial printing. Using DTP software, text and graphics are combined into a single document that is printed generally on a laser printer. Although these software are mainly useful for publishers but they are also used in general offices and educational institutes for the best presentation of management documents, project reports and thesis works. DTP software are used in combinations with word processors, graphics and CAD (Computer Aided Design) software. First, the document is written by using a word processor and the graphics/ diagrams are made by using graphics/ CAD software. Then, all documents and graphics are merged into the DTP files for advanced page formattings. DTP software are widely used by publishers and other organisations. These software require a special kind

of hardware system which include a high speed PC (prefearlly 486 or higher),

laser printer and scanner/ digitizer. Examples of DTP Software Many desktop publishing software are available in the market with a wide variety of features. PageMaker, Ventura and CorelDRAW are the most common examples of DTP software. PageMaker (latest version 6.5), originally developed from Aldus Corp. and now from Adobe, is the most favourite among Indian users. Although PageMaker was originally introduced for Macnitosh but currenly it is available for both Mac and PC (mainly for Windows). Ventura Publisher (

latest version 4.),

developed by Ventura Software, Inc. (a Xerox company), provides full-scale pagination features for very large documents. It is available both for Mac and PCs (under DOS, Windows & OS/2). CorelDRAW (latest version 8.0), developed by Corel Systems Corp., is the popular windows-based DTP and Graphics Software for PCs. It is designed to work with high quality graphics images and provides advanced autotracing features for building a vector- based image. As it does not provide word processing/ DTP page layout features, it is used in combination with word processors and other DTP software like PageMaker. Graphics, Multimedia and Animation Software For last few years, Graphics, Multimedia and Animation Software are becoming very popular for high quality presentation of business and other applications. CorelDRAW, Adobe Photoshop, AutoCAD Map and Harvard Graphics are some of the commonly

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used graphic software. We have already discussed about CorelDRAW in the previous sub-section. Adobe Photshop is an image editing software with multiple layers, interactive GUI and powerful object-based editing tools. AutoCAD Map is a software for mapping and graphic applications. Harward Graphics, developed by Software Publishing Corp., is a business presentation software. It allows the user to create professional looking presentations in just few minutes. Multimedia, a latest computer technology, displays information using a combination of full-motion video, text, graphics, animations and sound. A wide range of multimedia and animation software are available in the market. Macromedia Director, 3D Studio Max, AnimatorPro and Animator Studio are some of the commonly used multimedia/ animation software. Macromedia Director is a multimdeia authoring software for creating tutorials and CBT (Computer Based Training) software. 3D Studio Max software allows the user to create 3D modelling and animations on a PC. AnimatorPro is an 8-bit, 256 colour, 2D Paint and animation software with in-built C based programming, 3D Studio and customised GUI. Animator Studio is a digital sound studio designer for animation with true colour features.

B u s i n e s s A p p l i c a t i o n S o f t w a r e

Every business consists of many functions which are organised into different departments like Finance, Marketing, Invetory, Production, Research and Development (R & D) and Human Resources Development (HRD). For computerising these departments, special kind of application software are needed, which are collectively called as Business Application Software. These software are available either general requirements of the users (Standard Software) or can be developed as per the requirement of a specific organisation/ user (Customised Software). Accord, EX and and Tally are some of the examples of popular standard financial accounting software packages among Indian users. Accord (

latest version 4.1),

developed by EDP Corporation, is the comprehensive accounting software for preparing MIS and other reports. EX (latest version 3.0), developed by Tata Consultancy Services, provides business accounting capabilities along with inventory and invoicing features. Tally (latest version 5.0), developed by Peuronics Pvt. Ltd., is the accounting and book keeping software along with capabilities of invoicing/ inventory accounting.

L AT E S T T R E N D S I N I N F O R M AT I O N T E C H N O L O G Y Since the advent of first commercially available computer (UNIVAC I) in 1952, there is a rapid development in the field of information technology. The IT industry continues to grow at record speeds. Today, PCs are being used much more than their original purposes of data processing. We have already discussed the role of computers in various fields in the first chapter. We are, now, discussing below the latest trends in information technology, which are networking, client/server computing, data communications and telecommunications.

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Networking Network is a group of computers and peripherals, connected by a communications channel. It is capable of sharing files and other resources such as printers, drives etc. among many users. It ranges from local area networks to wide area networks.

Local Area Network (LAN) connects several computers within a confined geographical area with permanently installed cables and dial-

up-lines.

Peer-to-peer network is a local area network in which all the resources of each PC is available to other PCs on the network.

A typical LAN consists of a server, workstations, a network operating system (such as Windows NT) and a communication link (such as Modem). Server is any LAN computer that holds data/ programs and makes access to files, printing and other services available to users of the network. Typically, a server has a more advanced CPU with more memory and storage capacity than a workstation. Workstation is a user's machine (other than server) that can also function as a stand alone computer.

As contrast to LAN, Wide Area Network (WAN) connects users across large distances, often crossing the geographical boundaries of cities or states. Thus, WANs are much bigger than LANs. A WAN may consist of several LANs. The individual LANs inside the WANs are generally referred as
sub-networks.

Besides LANs and WANs, there are certain networks which are bigger than LANs but smaller than WANs. These networks extend beyond the confines of a LAN but not spreadover in wide area. These networks, which are usually confined to a single metropolitan city are known as Metropolitan Area Networks (MANs).

Networking offers several benefits to the organisations. In networking, the users can share information such as databases, memos, messages etc. and expensive resources such as laser printers, scanners etc. among others. Client/Server Computing Client/ Server Computing is a new kind of computing that divides a computer application into three basic components - a client, a network and a server. In client/server computing, the processing is distributed between clients and server on a network. The client and server are both computers with different processing powers to share the computing workload in a network. Typically, the server is an advanced PC (with more memory and storage capacity), minicomputer or mainframe computer while client is a user's PC (workstation). Client/ Server computing is sometimes misunderstood as networking, but it is not a networking. In other words, simple networking does not mean that it is a client/server computing. To understand this concept, let us first see, what is a dumb computing in networking. If, in a network, either a client or server plays no or little role in sharing of data processing, then such computing is termed as dumb computing. In dumb computing, when most or all of the processing is done by server, then the client is said to be 'Dumb Client'. This type of processing is also called 'Host Processing' because the host computer processes all data. If most or all of the processing is done by client in a network, then the server is said to be 'Dumb Server'. The networks either with dumb server or dumb

89 Software Concepts client are not considered suitable for multi-user applications involving more users due to too much slow processing. In client/server computing, neither the server nor the client is dumb, but both share the workload. In client/ server computing, the server must share the data processing workload with client besides sharing files, printers and other resources. Client/Ser ver Database Applications : Client/ server computing is mainly needed in database applications, especially in development of management information system. In client/ server database applications, the database runs on the server, which is called the Back End and the application program that accesses database, runs on the client, which is called Front End. The front end program requests services of the back end program by querring in the form of SQL (Structured Querry Language) statements. The back end processes the SQL statements and send the results to the front end program. The client, thus, is responsible for the graphical user interface (GUI) while the server provides database access. Oracle, Sybase, Informix and Microsoft SQL servers are the commonly used back end software. The programs that run on the client computers are usually developed using front end tools. The commonly used front end tools are Powersoft's PowerBuilder, Microsoft's Visual Basic and Borland's Delhi. Besides front and back end tools, client/server computing require software that operates between client and server. These software are sometimes termed as Middleware. Windows NT, a popular network operating system is an example of middleware. Advantages and Disadvantages of Client/Ser ver C om p u ti n g Before deciding on whether an organisation should go for client/server computing or not, the managers must understand the benefits and pitfalls of client/server computing. Client/server computing offers following benefits in most of the cases (not always) : ? Cost savings as compared to mainframe systems. ? Flexible in all the inevitable types of hardware/ software changes. ? Easy to scale the system to accomodate changes in a workgroup. ? Best utilisation of disk storge and memory in both server and client computers. ? GUI interface improve the user effectiveness. Client/server computing also have some disadvantages. The anticipated cost savings of a client/server systems is not always true during real-world situations. Actually, client/ server systems are rarely less expensive than mainframe systems. The organisation must have the technical expertise to switch to new system. The cost of retraining staff for development, administration and using the system, outweigh the benefits of the new system. Another disadvantage of client/ server computing is that its reliability is inherently less than that of a homogenous centrally controlled system.

90 Basic Computer Skills After discussing the benefits and pitfalls of client/server computing, we may conclude that the correct chioce of application for a client/server computing is the key factor in realising its benefits. Althogh client/server computing is important for the organisation, but it is not recommended for every application. For advanced study, you are advised to refer the special books on this topic. Data Communications Large organisations are generally spread over several office locations. In order to computerise such geopgraphically separated offices, various data communication facilities are required. The transfer of data and information from one computer to another over a communication link is known as data communication. Data communication has become essential for an organisation due to several reasons. The major reason for needing data communication is that it is the fastest and most cost- saving medium for sending data and messages to various geographically separated offices. There are several types of communication mediums through which data can be transmitted from one place to another. Some of the common data transmission media are Wire Pairs, Coaxical Cables, Microwave Transmission, and Communication Satellite. Wire pairs are used in local telephone communication for transmitting digital data for short distances. Coaxical cables are groups of specially wrapped insulated wires which transmit data at very high rates. Microwave transmission is the popular medium which is used to transmit data through the electromagnetic waves. A communication satellite is a microwave relay station placed precisely at 36,000 KM above the earth. It is the most widely used medium for sending data across a wide area on the earth. We are not discussing various data communication technologies in details. For further study, the reader is advised to refer special book on this topic. Te l e c o m m u n i c a t i o n s

Telecommunication refers to the electronic transmission of all forms of information, including digital data, voice, sound and video from one location to another over some form of transmission media. This transmission media may be a telephone line or microwave signal. The importance of telecommunications in businesses and personal purposes is increasing very rapidly with new developments and technologies. ISDN (Integerated Services Digital Network), e-mail, Internet, Intranet, Video Conferencing, Paging and Cellular technologies have become very popular during last few years. We are discussing

below in brief some of the widely used telecommunication technologies: E-mail Electronic mail (e-mail) is a very widely used technology for sending messages or documents from one location to another by using computers. E-mail services are either available within intra-office network (e.g. local area network) or through an outside vendor. Within an organisation, the employees use a PC for sending their messages from one electronic mailbox to another. By using e-mail services from a vendor, the

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e-mail subscriber enters the message into the computer and addresses to the recipient's computer by quoting the e-mail code. The message is then transmitted through the modem to the recipient's mailbox where the recipient can download it.

Internet/

Intranet Internet and Intranet are the most recent telecommunication technologies which have brought a technological revolution not only in all offices but also in homes. Internet is the world's largest network of million computers all over the world connected through telephone lines. Intranet, on the other hand, is a network of computers within the closed perimeters of the office. Teleconferencing Systems Teleconferencing systems are the latest office automation technologies for conducting meetings of widely separated people through a communication channel. These systems enable people to communicate audio, video or image information in a conversation taking place between two or more locations. The teleconferencing systems are of three types - Audio Teleconferencing, Video Conferencing and Computer Conferencing. Audio teleconferencing is simply a conference phone calls system. With such type of conferencing, participants can only hear the voice and cannot see the participants.

With videoconferencing systems, the participants not only hear the voice but also see each other. The communication takes place either in one-way or multi-way modes. In

one-way

mode, which is also known as point-to-point videoconferencing, one of the locations sends the information and others receive it. In multi-way mode, which is also known as multi-point videoconferencing, two or more locations can send or receive the information simultaneously. Some types of teleconferencing systems use

computers

for conducting meetings, which are known as Computer Conferencing Systems. In these

systems,

the participants use either e-mail or Electronic Bulletin Boards for sending and receiving information. The messages are entered into the computers using E-mail facility and an electronic conversation takes place among participants. The messages can also be posted on a

computer system, called Electronic Bulletin Board, that maintains the list of messages. E M E R G I N G I N F O R M AT I O N T E C H N O L O G I E S

The IT industry is growing very rapidly and many new technologies are coming day by day. There are certain technologies which are still under research and development process. Artifical Intelligence and Virtual Reality are major emerging tecnologies. Artificial Intelligence A computer has no intelligence in itself. It performs tasks by getting instructions from human beings. Scientists are trying to impart certain abilities to the computer, which can enable them to perform tasks intelligently, just like human-being. Artificial

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Intelligence (AI) is a capability in computer to carry out the tasks that require intelligence if carried out by human beings. The term 'Artifical Intelligence', which was coined in 1956 by John McCarthy at Dartmouth Collge, connotes a futurstic world. Artifical Intelligence is still under research & development program all over the world. Though we are not discussing this vast field of emerging technology in details, we are presenting below a brief outline of main areas of AI. Applications of Artificial Intelligence : There are five main application areas of AI research, which are - a. Expert Systems b. Robotics c. Natural Language Processing d. Computer Vision e. Neural Network. a. Expert System: Expert systems are programs that are like human experts which possess extensive background knowledge in their specialised field. They are needed because human expert manpower is scan and expensive. Today, expert systems are available for most of the business applications like finance, marketing, manufacturing etc. besides technical & medical fields. For example, PlanMan, Financial Advisor and Plan Power and some expert systems for financial planning areas. MYCIN was the first expert system project for medical applications. After MYCIN project, new systems like EMYCIN (empty MYCIN) were developed, which were without knowledge base. The expert systems without knowledge base are called expert system shell. Guru and VP Expert are other examples of expert system shell. b. Robotics: Robotics is the major field of artificial intelligence. It is concerned with design, manufacturing and implementation of computer controlled devices, called Robots. Robots are widely used in many industries like car manufacturing, coal mining, chemical industries etc..

c. Natural Language Processing (NLP): NLP is that field of artificial intelligence that allows computers to communicate with users in natural languages like English, French etc.. HAL is the popular natural language interface for Lotus 1-2-3. Guru is another example of NLP software with capabilities of database management, word processing, spreadsheets and graphics. d. Computer Vision: This field of artificial intelligence enables computers to recognise shapes and patterns through a technique called Pattern Recognition.

e.

Neural Networks: Neural networks are knowledge base computer systems that are designed to learn by observations and repetition just like human beings.

93 Software Concepts Virtual Reality Virtual reality is a concept that projects users into a three dimensional space generated by computer. Users wear a helmet-like device that completely covers both eyes and ears to create an artifical computer-simulated reality.

Users can move and manipulate illusory objects in their view. They can select and organise information with hand and body movements. Several companies are developing business applications for this emerging technology. For instance, a major electronics firm in Japan is developing an application for a 'Virtual Showroom'.

L I M I T AT I O N S O F C O M P U T E R S

Though the benefits and applications of computers are numerous, computers still have certain limitations. They

are not versatile like human beings. They can perform limited functions. Input, output and processing the data are the basic functions performed by a computer. They perform tasks according to the instructions given by human beings. They do not have human like intelligence. Although scientists are trying to provide human knowldege and intelligence to the computers through emerging technology of artificial intelligence, but still they are machines. They cannot possess all the knowledge and intelligence of a human being, so, computers cannot replace human beings at all.

S U M M A R Y Software are the programs required to operate a computer. They are broadly classified into System and Application software. System software include mainly operating systems, operating environments, DBMSs (Data Base Management Systems), language translators (Assemblers, Interpreters and Compilers), applications generators, CASE tools and various software utilities. An operating system (e.g. UNIX, DOS etc.) is the most essential system software without which we cannot use the computer. Windows is the most popular operating environment that provides a Graphical User Interface (GUI). Application software are further classified into General Purpose (Word Processors, Spreadsheets, Database Management Software etc.) and Special Purpose (Accounting, Inventory, Desk Top Publshing software etc.) application software. Programming is a technique for giving instructions to the computer by using a computer language. Procedure oriented is the traditional while Object oriented is the latest appraoch used for programming. Systems

Analyst and Programmers play a vital role in development of

software. There are mainly four types of programming languages - i. Low-level; ii. High -level; iii. User-friendly and iv, Object oriented langauages. Low-level lanaguages include Machine Language (1st generation language) and Assembly Langauage (2nd generation langauage). BASIC, COBOL, FORTRAN, PASCAL and C (3rd generation lanaguages) are the common high level langauauges. User-friendly languages include mainly dBASE, Foxbase, Foxpro, MS Access, Oracle, Sybase and Ingres (4th generation lanaguages). Smalltalk, Visual C++, Visual J++ and Object Pascal are some of the 94 Basic Computer Skills popular object oriented languages. Application generators generate the program code according to the specifications given by the programmer.

CASE tools simplify all stages of project planning and design of an application.

System software utilities support the operation of computer by providing many features like file management, data compression, diagnostic routines, virus detection and removal, text editing, performance monitoring and spooling. Networking, Client/Server computing, data communication and telecommunications are the latest trends in information technology. Artificial Intelligence and Virtual Reality are the emerging information technologies. Although computers provide numerous benefits to the man, they cannot replace human beings at all. E X E R C I S E Fill in the Blanks: a. Software are broadly classified into system and _____ software. b. The term 'booting' come's from the word _____. c. The traditional approach used in programming is called _____ Oriented Programming. d. COBOL is a _____ level language. e. Object Oriented Languages may be classified into _____ Generation Languages. f. Artificial Intelligence and _____ are major emerging technologies. Unsolved Questions 1. Differentiate between system and application software. Give 4 examples of each. 2.

What is an operating system? Describe its basic functions. 3. What is booting? Explain it with suitable illustration. 4. Classify the following operating systems into Single-user (S) or Multi-user (M): i. MS DOS ii. OS/2 iii. UNIX iv. Windows NT v.

OS/400 vi. PC DOS vii. Linux viii. MVS 5. Explain with examples the difference between multiprogramming, multiprocessing and multitasking. 6. Which is the traditional approach of programming? What are its major disadvantages? 7. What is OOP? Describe its advantages over procedure oriented programming. Why is it not as widely used as the latter.

95 Software Concepts 8. Discuss the role of programmer and systems analyst in development of a software. 9. Describe with examples five generations of lanaguages. Which generation of language is most suitable for development of GUI applications and Why? 10.

What is the difference between an interpreter and compiler? Give 2 examples of each. 11. What is an assembler? Give examples
of 2 assemblers. 12.

What are software tools. Describe the major categories of software tools with examples. 13. What are application generators? Describe their advanatges and disadvantages. 14. What are CASE tools? Describe their importance in development of a software. 15. What are system software utilities? Describe the role of commonly used utilities with suitable examples. 16.

Only DOS environment is not considered sufficient for running present day applications on
PC. Why? Which operating environment is most widely used on PCs and Why? 17. Describe the differences among Windows 3.1, Windows 95 and Windows 98. 18.

Discuss the importance of word processors in generating documents. Give some examples of DOS-based and Windows-based
word processing packages. 19. Discuss the major features of commonly used Database Management packages. 20. What is an electronic spreadsheet? Describe its major advantages. Name some commonly used spreadsheet packages. 21. What are Office Suites? Why are they so popular among computer users? Discuss with examples. 22. What is DTP? Describe the importance of various DTP software currently available in the market. 23. What is multimedia? Name any 4 multimedia software which are popular among users. 24. Discuss the
role of various business application software in computerising the different departments of
a company. 25. What is Networking? Differentiate between LAN, WAN and MAN. 26. What do you mean by Client/server computing? How does it differ from networking? Describe various advantages and disadvantages of client/server computing. 27. What is data communication? Why is it so important for an organisation? 28. What is Telecommunication? Describe the role of latest telecommunication technologies.

96 Basic Computer Skills 29. What is Internet? How does it differ from Intranet? 30. What do you mean by the term `Artificial Intelligence'? Discuss about the major application areas of AI research. 31. What is virtual reality? 32. `Although computer provides enumerous benefits to the man, it can't replace human beings at all'. Discuss. 33. Give the full form of the following abbreviations: i. DOS ii. HLL iii. BASIC iv. CASE v. GUI vi. RDBMS vii. OLE viii. FORTRAN ix. VMS x. MVS 34. Classify the following languages into 3GLs, 4GLs or 5GLs: i. PASCAL ii. Oracle iii. C iv. Simula v. FORTRAN vi. Java vii. Smalltalk viii. Eiffel ix. Sybase x. Foxpro

97 Software Concepts C A S E S T U D Y Customised Inventory Control Software: STOCKSYS STOCKSYS (version 2.0) is the customised inventory control software developed by National Computer Lab (Regd.) for Reebok India Company for maintaining the inventory of apparels. This software was developed in dBASE III plus/Clipper under DOS environment by the systems analyst, Mr. Ashok Arora in July,1995 as per the specifications given by Mr. Johney John, Executive Director– Apparel of Rebook India Company. The inventory system is completely menu-driven and user friendly. STOCKSYS provides a user-friendly data-entry, modifications, query and report printing modules. In all modules, the on-line help is available by pressing various function keys. For manufacturing the apparels, the company purchases raw materials from various suppliers and issued them to the vendors for their processing (like embroidery, printing etc.). A purchase order is made at the time of giving orders to various suppliers. Items are received at the warehouse/factory either from the suppliers or vendors against P.O. (Purchase Order) No. or Issue No. respectively. The items may also be rejected to suppliers either from warehouse or factory against the receipt number. The items are grouped into various categories, colours and sizes. The main menu of the STOCKSYS provides different options for adding, changing/deleting and viewing the data besides printing the reports. By selecting `Add' option, the user can add various details about the colour codes, category codes, item codes, items ordered, items received, items issued and items rejected. The user can also modify or delete any data later on by selecting `Change/Delete' option. The user can query about any data enterred by selecting the `View' option. STOCKSYS provides a customised report printing module for printing the purchase order, purchase book and various analysis reports. The user can print a range of purchase orders by specifying the starting and ending P.O. Nos. along with their number of copies. Similarly, the purchase book can be printed by specifying the starting and ending received dates. The analysis reports of STOCKSYS includes the Stock Status Report, Stock Summary Report, Items Rejected Report and Purchase Analysis Report. The stock status report provides the information about opening balance, received quantity, issued quantity, rejected quantity and balance quantity of each and every item by category/item/colour-code wise. Stock summary report does not give detailed description about the current stock positions but provides only the summary. The items rejected report provides the description of items rejected to various suppliers/ vendors along with the reasons. The purchase analysis reports provide description about the purchases made from various suppliers both by item and supplier wise. Q u e s t i o n s 1. Discuss the importance of an inventory control software for a manufacturing organisation. 2. How does a customised application software differs from a standard application software? Explain with suitable examples. 3. Discuss the characteristics of a user-friendy software. Introduction to DOS U N I T 5 In the last unit, we discussed that system software controls the working of hardware and is essential for running the application programs. An operating system is that important system software which helps in running the computer system. It is an integrated set of specialized programs. The hardware cannot work without the operating system. Infact, an operating system provides an interface between the hardware and the user. It acts as a translator that conveys information between you and your computer system. An operating system performs all the functions of storage management and I/O (Input/ Output) device management. The user saved the effort and time of knowing hardware just because of the presence of an operating system. D E F I N I T I O N A N D I M P O R TA N C E O F DOS

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DOS is the most commonly used operating system. The full form of DOS is Disk Operating System. It is a single user operating system which means that only one application can be made to run at one time. DOS provides a 'Platform' or an

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Definition and Importance of DOS ? Loading DOS ? Rebooting the Computer ? Files and Directories in DOS ? Referencing Files ? File Naming Conventions ? DOS Commands ? Wildcards ? Some More DOS Commands ? Internal and External Commands ? Batch Files
99 Introduction to DOS '

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Environment' which lets the application program to interact with CPU and I/O devices. Many application software require DOS for running. The common among these are word processors like Wordstar, Professional write; spreadsheet programs like Lotus 123, VP Planner Plus; accounting software like Tally, EX, etc. Each software package has a specific command to get itself running on DOS. For example, in order to run the spreadsheet program, Lotus 123, you will have to enter 123 at the DOS prompt. DOS will run Lotus 123 for you. Once any application software shuts down, the control again has to come back to DOS and the DOS prompt can be seen again on the screen. Now, DOS is ready to accept more commands from you. MS DOS (Microsoft Disk Operating System), a product of Microsoft Corporation of USA., is the most popular operating system for PCs. Another operating system available in the market is the PC DOS, a product of IBM, which is almost similar to MS DOS. Whether you use MS DOS or PC DOS, the basic commands of DOS remain the same.

L O A D I N G D os To be able to use a computer system, the operating system (DOS) must always be present in its memory. So, as and when a computer system is switched on, the very first thing that is placed in the computer's memory (i.e. RAM) is DOS. Thus, loading DOS in computer's memory is called Booting the system.

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The booting happens automatically when the computer is switched on, provided DOS is available on it. DOS can be present on both hard disk as well as the floppy disk. So, when the system is turned on, a search for DOS is done on floppy drive first. If it is not present on the floppy drive, the DOS is searched for on the hard disk. Thus, for booting to happen, the DOS must be present either on the floppy or on the hard disk. So, if DOS is not present on the hard disk, insert the floppy carrying DOS software in the A drive before switching on the system.

How will you find out whether DOS has been loaded in the memory or not? You can very easily assure yourself when the following query is seen on the monitor: Current date is Mon 11-02-98 Enter new date (mm-dd-yy):_ DOS wants you to enter a date after the colon (:) at the position where a flashing cursor is seen. Enter the date in mm-dd-yy (month-date-year) format. An error message may appear on the screen if a format other than the one specified is entered. However, it is not at all essential to enter a new date. In such a case, the current date is assumed to be the new date. Once the new date is entered, hit the >Enter< Key. After this, enter the new time where a flashing cursor is seen in the format of hours: minutes: seconds. The seconds entry is entirely optional. Hit the >Enter< key once time is entered. You can also avoid entering time as you did with date. After pressing >Enter< key,

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the following screen can be seen: Current date is Mon 11-02-98 Enter new date (mm-dd-yy): 11-12-98

Current time is 0:01:50:12 Enter new time:11:53:14 A:\<_
100 Basic Computer Skills where underscore character '_ ', indicates the cursor (blinking mark) on

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the screen. However, if booting has been done from the hard disk, then the following Prompt will come: C:\<_ C:\< or A:\< is the DOS Prompt. Looking at DOS Prompt, you can easily make out the currently active drive. If you want to switch yourself over to another drive, then simply type its drive letter after the prompt and hit the >Enter< key as shown below: C:\<A: >Enter< A:\<_ Now again if you want to go back to the C drive, then type in C: and hit the >Enter< key.

The following screen makes it more clear. A:\<C: >Enter< C:\<_ R E B O O T I N G T H E C O M P U T E R Sometimes, it may happen that your system crashes down because of any reason. In such a situation, hit > Alt + Shift + Del < Keys together. This will restart your computer. This process is called Warm Boot or Reset. This will again get things going. But it is advisable to use it as a last alternative when all other efforts of resuming work fail. At times, Warm Boot also fails to restart the computer. This means the instructions that are given by the keyboard are no longer valid and are not interpreted by the system. In this case, switch off the power supply and wait for a few minutes.Then turn on the power supply and start working. Sometimes, due to unknown reasons the system is unable to boot from the hard disk, in such a situation, you are required to boot the system from the bootable floppy (floppy that contains DOS). F I L E S A N D D I R E C T O R I E S I N

DOS File is a collection of related information. Any kind of text, data or program that is entered is stored in a file. Now, it is very essential to organize your files in an ordered manner. This makes file search easier. Otherwise, it can really be a difficult and time consuming job to search for a particular file out of the whole lot of files stored on the disk. An example of library can make the explanation of the concept more clear. As you must have already observed, the books in a library are put in big cabinets. Each cabinet is divided into many shelves and sub-shelves. Each shelve or sub-shelve contains books on a particular subject. So, the required book on a particular subject can be found out very easily without wasting much time and effort. On similar grounds, all the files that are related to each other are clubbed at one place. This is known as a Directory Structure or simply a Directory. A directory structure resembles an inverted tree. The main directory becomes the Root directory. The directories and files become the branches of this directory tree. Any number of files and directories can be added to it, thus, making the tree grow big downwards. Let us take an example.

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Suppose we wish to store two kinds of files on our disk: ACCOUNT and EXPENSE. Further, we wish to keep two more kinds of files (say CASHSALE and CREDSALE) under ACCOUNT sub-directory. DOS can very much help you in organizing your files through directory structure which is shown in Figure 5.1.

Figure 5.1 Directory Structure

It is clear from Figure 5.1 that 1. On the top of the directory structure, there is a Root directory. This directory is always present and is shown by \(backslash) for referencing. Any file or directory that is created is always under the Root directory. 2. EXPENSE is the sub-directory of the Root directory. 3. ACCOUNT is the parent directory of the directories CASHSALE and CREDSALE. It can also be said that the CASHSALE and CREDSALE are the sub-directories of the ACCOUNT directory. Thus, a directory under a directory is called a sub- directory. It can be clearly seen that the files relating to a particular subject can be put under a directory. For example, all the files relating to expenses can be put under EXPENSE sub-directory whereas all the files relating to cash sales can be stored under the sub- directory CASHSALE.

R E F E R E N C I N G F I L E S

It's time to learn as to how to locate a file. The directory structure shown in Figure 5.2 has two sub−directories under the Root directory. The sub-directory EXPENSE has two files under it.

ROOT DIRECTORY EXPENSE DIRECTORY ACCOUNT DIRECTORY CASHSALE DIRECTORY CREDSALE DIRECTORY

102 Basic Computer Skills ROOT ACCOUNT EXPENSE EAST.TXT WEST.TXT Figure 5.2 Referencing Files

DOS allows you to go from one directory to another by following a certain path. In the beginning, the user is always resident in the Root directory. While travelling from one directory to another certain rules have to be followed. A user cannot go directly from ACCOUNT sub-directory to EXPENSE sub-directory. To go from one sub-directory to another, you have to first go to its parent directory or the Root directory. Thus, for going from ACCOUNT sub-directory to EXPENSE

sub−directory, you first have to go to Root directory. Similarly for going from the file EAST.TXT to WEST.TXT, you have to go to the EXPENSE sub-directory first. Thus, in other words, while moving from one directory to another, you have to go to its parent directory first. Now, in order to reach out to the file WEST.TXT. the following path has to be followed: C:\<Expense\West.txt 1 3 4 5 2 Here, 1. is the drive name where the file is resident in; 2. is the path which DOS takes to reach for a file; 3. is the directory under the Root; 4. is the primary name of the file that is to be accessed; and 5 . is the extension name of the same file. The \ (backslash) has to be used for tracing out the path. The first backslash takes you to the Root directory. The subsequent backslashes separate the directories, sub- directories and the filename that are given in the whole path.

F I L E N A M I N G C O N V E N T I O N S

There are certain rules that have to be followed while giving names to your files. A filename has two parts:

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Primary Name 2. Extension (Secondary Name) A dot (.) separates a primary name from an extension. Let us see the two parts of the file named DRAGON.TXT. DRAGON.TXT Primary Extension Name A primary name cannot have more than eight characters and similarly an extension can contain only upto three characters. A filename having only the primary name and no extension is absolutely valid because it is absolutely optional to give an extension to a filename. An extension is generally given by the language or software used

by the file. For example, if you are entering BASIC and PASCAL programs, their filenames would have extension BAS and PAS respectively. A filename can contain the following characters: 1. An Alphabet (A-Z) or (a-z) 2.

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A number (0-9) 3. Special characters such as $, #, &, @, !, %, (,), ~, { , }, ', ^ etc. except *, ?, fullstop (.) and space ( ). It is a good practice to give meaningful names to your files. However, no two files can have exactly the same name on the disk. Thus, a name given to a file on a disk has to be unique. A look at a few valid and invalid filenames: VALID INVALID MYHUNT MY BOOK.DOC DRAGON.TXT B.R.ARORA UPHILL.UP S?JAIN.BAS VIJAYA EXCELBOOKS EMPLOYEE.EMP ANURAG*.* 157.IN VICKY.MEHTA The rules for naming a directory are the same as that of naming files.

DOS C O M M A N D S

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DOS offers a variety of commands to perform various functions. With the help of DOS commands, you can display the list of files and directories that are present on the disk, create new files and directories, remove unwanted files and directories and much more. DOS commands can be entered either in uppercase or lowercase letters. The format of a DOS command is called syntax. All DOS commands begin with command name. When DOS carries out the instructions given by you, it is called the execution of DOS command. Let us discuss some of the DOS commands in detail. 104

Basic Computer Skills (The commands which have to be typed

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are written as bold letters throughout this chapter) Directory Commands of DOS The directory commands help you to create new directories and remove existing ones. They also allow you to travel from one directory to another. You can also view the listing of files and directories that are present on the disk. Displaying a List of Files on the Disk – DIR Command This particular DOS command helps you in displaying a list of files or directories present on

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disk. Thus, to see the contents of your hard disk, issue the following command: C:\<DIR >Enter<

A sample output as shown in Figure 5.3 can be seen on the VDU: 1 2 3 4 5 Figure 5.3 Displaying the contents of hard disk In Figure 5.3, each line has five columns which are summarised in Table 5.1. Table 5.1 Contents of the column shown in the Directory Columns Contents 1 Primary name (eg. COMMAND) 2 Extension (eg. COM) 3 Size of each file in bytes 4 Date when the file was either created or modified last 5 Time when the file was either created or modified last. C:\<DIR

95%	MATCHING BLOCK 134/291	SA	Computer Fundamentals and PC Software (Block 1 ... (D148967917)

Volume in drive C has no label Volume Serial Number is 1421-15AB

95%	MATCHING BLOCK 138/291	SA	Fundamental of PC Software BLOCK 1.pdf (D164969260)

Volume in drive C has no label Volume Serial Number is 1421-15AB

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Volume in drive C has no label Volume Serial Number is 1421-15AB Directory of C:\

COMMAND COM 23641 02-01-98 12:12a DISKCOPY COM 4165 05-01-98 4:29a CHKDSK COM 9725 05-03-98 11:30a TREE COM 2473 07-03-98 12:30p ACCOUNT >DIR< 10-02-98 12:10a EXPENSE >DIR< 05-05-98 4:30a 4 file(s) 40,004 bytes 2 dir(s) 231000 bytes free
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If you wish to view the contents of the floppy drive, then you

can follow any of the two approaches given below: Approach 1

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First switch yourself to the floppy drive and then issue the DIR command.

The currently active drive becomes A. C:\<A: >Enter< A:\<DIR >Enter< Approach 2 Alternatively, you may issue the following command: C:\<DIR A: >Enter< But in this case, the currently active drive remains C only but the contents of the floppy disk are shown on the monitor. Figure 5.3 shows two sub-directories ACCOUNT and EXPENSE. >DIR< signifies a directory. Now,

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if you wish to view the contents of the sub-directory EXPENSE, issue the following command: C:\<DIR \EXPENSE >Enter<

This command shows you
the contents of the sub-directory EXPENSE which is resident under the Root directory.

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Let us assume that there is one more sub-directory by the name BUSINESS existing under EXPENSE. To view the contents of this sub-directory, issue the following command: C:\<DIR \EXPENSE\BUSINESS >Enter<

This command shows the contents of the sub-directory BUSINESS which is under EXPENSE.

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If you have a large number of files on the disk, then on issuing DIR command, the screen scrolls up and only a few filenames are shown. In such a case, issue the following command: C:\<DIR/P >Enter< This command will show the contents of the disk pagewise.

Once the screen is full of file- names, the message 'Press any key to continue' appears at the bottom of the screen and the scrolling will stop. Hit any key on the keyboard. The next screen showing the remaining filenames is displayed. The output of this command is exactly the same as that of DIR command. But

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if you are interested only in seeing the filenames, issue the following command: C:\<DIR/W >Enter< This command shows the names of files and directories widthwise. So, in one line only five names of files and directories are shown. The other details like the size of file, the 106

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date and time of each file creation are not shown. The directories are shown in square ([ ]) brackets. Making a Directory – MD Command In the earlier part of this chapter, we discussed that all the related files should be clubbed at one place, called a directory or sub-directory. So, to club all the related files under one head, new directories and sub-directories have to be created. Let us create a new sub-directory by the name INCOME under the Root directory. The following command can achieve this: C:\<MD INCOME >Enter< where MD stands for Make Directory Further, let us create another sub-directory by the name HOSPITAL under the sub- directory INCOME. C:\<MD INCOME\HOSPITAL >Enter< Removing a Directory – RD Command With times, certain directories grow old and are no more needed. It is better to delete such directories because they can save

you

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many precious bytes on the disk. So, let us delete the sub-directory HOSPITAL with the following command: C:\<RD INCOME\HOSPITAL >Enter< where RD stands for Remove Directory A directory or a sub-directory has to be essentially empty before removing it. For example, in order to remove the sub-directory HOSPITAL, there should not be any directories and files under it. So, you must first delete all the files and remove all the sub-directories present under the sub-directory HOSPITAL before removing it. We will discuss the method for deleting files

later. Changing Directories –

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CD Command Let us again refer to the Figure 5.1. Suppose you are under the EXPENSE sub-directory and you want to access the files or directories in the ACCOUNT sub-directory. This would involve the changing of directory from EXPENSE to ACCOUNT. This will make the ACCOUNT directory active. The task of changing directories can be accomplished with the help of CD command. Look at the following example: C:\<CD ACCOUNT >Enter< where CD stands for Change Directory The above command will take you to the sub-directory ACCOUNT as shown by following prompt: C:\ACCOUNT<_ 107

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If you want to go to the sub-directory CASHSALE straight from the sub-directory EXPENSE, issue the following command: C:\<CD ACCOUNT\CASHSALE >Enter< After the above command, the following prompt will come: C:\ACCOUNT\CASHSALE<_ The command for going to the root directory from the above prompt is: C:\ACCOUNT\CASHSALE<CD\ >Enter< But, the command for going to the parent or previous directory (whether it is root or sub-directory) is: C:\ACCOUNT\CASHSALE<CD.. >Enter< If you are in the sub-directory CASHSALE, the above command will take you to ACCOUNT sub-directory as shown below: C:\ACCOUNT<_

The command for displaying the name of the currently active directory is: C:\<CD >Enter<

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FILE COMMANDS OF DOS DOS offers a number of commands for performing various operations on your

files. The commonly used commands for copying, deleting and renaming the files are explained below: Cop ying Files – The COP Y Comm and

At times, you may have to work on some other machine. So, this involves copying files from one disk to another. Copying of files can happen from hard disk to floppy or vice- versa. Files can also be copied onto the same disk with a different name. The COPY command helps us to accomplish all these tasks. The syntax of the copy command is: COPY >Source drive<: (File spec 1) >Target drive<: (File spec 2) where, Source drive refers to the drive from where the file has to be copied. It can be A, B or C. `File Spec 1' refers to the path from where the file that has to be copied. 'Target drive' refers to the drive where the file is going to be copied. 'File Spec 2' refers to the destination where the file is going to be copied. 108 Basic Computer Skills Copying a File to another Drive under the Same Name A file can have the same name if it is stored on different disks. Thus, to copy a file by the name SCENE from hard disk to floppy disk, issue the following command: C:\< COPY C:SCENE A:SCENE >Enter< After the

execution of the above command the file SCENE stored at hard disk will be copied to the floppy disk. When the above command is executed, DOS displays the message `1 File(s) copied' on the screen. However, if the file has to be

copied from the active drive, then specifying the source drive can be very easily avoided. On similar grounds, if the filename remains unchanged then there is no need

to

specify it after the target drive. Thus, the above command can also be given in the following way: C:\<COPY SCENE A: >Enter< Copying a File to another Disk under a Different Name The name of the file can be changed very easily while copying.

It can be extremely useful when you want to make changes to a particular file without losing the original file. In such a case, you can make a copy of the file with a different name. This makes distinguishing between the two files easier.

The following command copies the file SCENE from the hard disk onto floppy disk by the name SERENE. C:\<COPY SCENE A:SERENE >Enter<

Thus, we now have two copies of this particular file. The contents of both the files are exactly same. They differ only in terms of name.
Copying a File with a New Name on the Same Disk The file can be copied with a different name on the same disk. Proceeding with the above example, let us save the file SCENE with a new name, SERENE and copy it onto the same disk. C:\<COPY SCENE SERENE >Enter< Once this command is executed, we have the same file under two different names, stored on the same disk. Copying Files from one Directory to Another Suppose you have placed all your files under the root directory. Now, at
a
later point of time, you wish to club all the related files at one place. This can be done
very
easily. Create a directory and copy the required files from the root directory to this newly created directory. DOS allows you to copy files from one directory to another.
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to DOS Let us assume that you have a file by the name NORTH.TXT in the root directory and you wish to copy this file in the newly created AREA sub-directory. The following command will do this: C:\<COPY NORTH.TXT \AREA >Enter< Similarly, you can copy files from any directory to any other directory. DOS only needs the specification of full path from you. Let us copy a file OLD.TXT which exists under the sub-directory DATA to the sub-directory INFO which is resident in the floppy disk. C:\<COPY DATA\OLD.TXT A:\INFO >Enter< Deleting Files–DEL Command With time, certain files grow old which are no longer required. So, it is desirable to delete such files because unwanted files occupy precious space on the disk. Suppose there is a file on the hard disk by the name IMT.PRG which is no longer required. The following command deletes this file: C:\<DEL

IMT.PRG >Enter< Once the above command is executed, DOS does not display any message on the screen. However, if the file IMT.PRG exists on the floppy disk then, you may issue the following command to delete it: C:\<DEL A:IMT.PRG >Enter< However, it is advised that

first you go to the A: prompt and then delete the file as shown below: C:\<A: >Enter< A:\<DEL

IMT.PRG >Enter< The above method will help you to avoid accidental deletion of file IMT.PRG from the hard disk. While deleting any file of a sub-directory, its full path can also be given as illustrated below: Let us assume that the IMT.PRG file exists under a sub-directory MANAGE on the hard disk. Issue one of the following commands: C:\<DEL C:\MANAGE\IMT.PRG >Enter< OR C:\<DEL MANAGE\IMT.PRG >Enter< You can also delete the IMT.PRG file by first changing to that sub-directory and then issuing the DEL command as shown below: C:\<CD\MANAGE >Enter< C:\MANAGE<DEL IMT.PRG >Enter<

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Renaming Files – REN Command DOS allows you to give new names to your files.

Sometimes, you may find that the old names given to the files are no more appropriate. In such a case you can rename your files with the help of REN command.

Assume that there is a file by the name OLD.TXT and now you wish to give a new name NEW.TXT to it. Carry out the following command to get your work done. C:\<REN OLD.TXT NEW.TXT >Enter<

Here, only the name of the file has changed. The contents of the file are same. Again, you can specify the full path to rename your files.

C:\<REN DATA\OLD.TXT NEW.TXT >Enter< The file OLD.TXT which resides under the sub-directory Data now has a new name NEW.TXT.

W I L D C A R D S

Often you may need to do a similar kind of job on a number of files. If these files have something in common, then we can save the effort of performing repetitive job. So, these files can be referred collectively by using the wildcard facility provided by DOS. The use of wildcards in a DOS command gives greater flexibility when using similar type of filenames. DOS offers two wildcards – ? and *. Each ? can be replaced by exactly one character or none, if it is given at the end of the filename. As and when the ? wildcard is specified in the middle of a filename, it has to necessarily match one character. The * wildcard can match eight or less characters in the primary name and three or less characters in the extension part. Let us take an example to make the concept of wildcards clear. Suppose the following files are present on your disk: OLD.TXT INCOME.PRO

OVER.PRG ANNUAL.DOC NEW.DOC ZEE.COM OLD.DOC PAPER.COM

SWEETY PAGE.IN GO.EXE OLD1 DRAGON.EXE KOMAL EXPENSE.PRG. OLD20.BAS

The following commands illustrate the concept of wildcards: i. If you wish to see all the files that start with the letter O and any extension, then give

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the following command: C:\<DIR O *.* >Enter< The above command will list the

following files:

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OLD.TXT OLD1 OVER.PRG OLD20 OLD.DOC ii. Now, let us copy all the files with any number of characters in the primary name and the extension EXE with the following command. C:\<COPY *.EXE A: >Enter< The above command will copy the files GO.EXE and DRAGON.EXE onto the floppy disk. iii. To delete all the files beginning with OL, having two more characters in the primary name and any extension, issue the following command. C:\<DEL OL??.* >Enter< With this command, the files OLD.TXT, OLD.DOC and

OLD1

are going to be deleted because these are the only files present on the disk which match the given wildcard pattern. However, the above command will not delete the files OVER.PRG and OLD20 because the former does not start with OL and the latter has a primary name
of 5 characters.

iv. Similarly, to copy all files starting with P and an extension comprising of two characters ending with N issue the following command: C:\<DEL P*.?N >Enter< This will delete the file PAGE.IN because this is the only file matching the given wildcard pattern. v. For copying all the files having primary name OLD and any extension from floppy to EXPENSE sub-directory of hard disk, issue the following command: A:\<COPY OLD.* C:\EXPENSE >Enter< The above command will copy only two files – OLD.DOC and OLD.TXT. vi. To copy all the files with any primary name and no extension from EXPENSE sub- directory of

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hard disk to floppy, issue the following command: C:\<COPY \EXPENSE*. A: >Enter< The

above command will copy the files SWEETY, OLD1 and KOMAL. vii. To delete all the files of floppy, issue the following command: A:\<DEL *.* >Enter< After

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giving the above command, the following message will come on the screen: Are you Sure (Y/N)?_ Press `Y' if you really want to delete all files otherwise press any key. Never try the above command on root directory of hard disk, otherwise your most important DOS file COMMAND.COM will also be deleted and thereafter you will not be able to boot the 112

Basic Computer Skills system from the hard disk. Therefore, the use of wildcards with DEL command has to be made with great caution. Some More DOS Commands You have already been introduced with

95%	MATCHING BLOCK 155/291	W

the directory and file commands of DOS. Now, let us make ourselves familiar with other commonly used commands. Displaying and/or Changing the

Currrent date—The DATE command In the earlier part of the lesson, we have seen the queries to enter or change date and time displayed on screen at the time of booting. You can also enter new date with the help of DATE command as shown below:

94%	MATCHING BLOCK 156/291	W

C:\<DATE >Enter< After issuing the above command the following screen appears: C:\<DATE Current date is Thu 11-12-98 Enter new date (mm-dd-yy):_ So, key in the new date in `month-date-year' format. However if you do not want to change this date simply hit the >Enter< key. The current date will be taken as new date.

A new date can also be given by the following command: C:\<DATE 06-26-98 The above command will not show the prompt 'Enter new date' on the screen.
Displaying

95%	MATCHING BLOCK 157/291	W

and/or Changing the Current Time – The Time Command The TIME command is used to display and change the current time. C:\<TIME >Enter< On issuing this command, the following screen appears: C:\<TIME

100%	MATCHING BLOCK 158/291	W

Current time is 11:05:10:01 Enter new time:_ Enter the new time in hours: minutes: seconds format. Hit the >Enter< key if you do not want to change the time. The new time can also be specified along with TIME command. C:\<

TIME 11:40 >Enter< So, the prompt 'Enter New Time' will not appear on the screen with above command.
113 Introduction to DOS

98%	MATCHING BLOCK 159/291	W

Clearing Screen – The CLS Command In order to clear the cluttered and clumsy screen, issue the CLS command. This will remove the contents shown on your screen thus making it look neater and cleaner. The CLS command is given in the following manner. C:\<CLS >Enter< Creation

of

100%	MATCHING BLOCK 160/291	W

a New File – The COPY CON Command Text Files can be created

with the help of

98%	MATCHING BLOCK 161/291	W

COPY CON command. Look at the following example: C:\<COPY CON HELLO.TXT >Enter< This command tells DOS to copy the information from the keyboard or console and put it in the file HELLO.TXT. On issuing the command the following screen appears: C:\<COPY CON HELLO.TXT _ You will find a blinking cursor in the second line. Enter the text and terminate each line by pressing >Enter< key as illustrated below: My first DOS file. The name given to this file is Hello.Txt. >Enter< It is very easy to create files in DOS. >Enter< Once all the required text is entered, hit the >Ctrl+Z< keys together to mark the end of text. >Ctrl+Z< keys tell DOS that no more text is going to be entered now. Again hit the >Enter< key.

Now, the following screen will be displayed: ^Z 1 files(s) copied C:\<_

96%	MATCHING BLOCK 162/291	W

Displaying Contents of Files – The TYPE Command The contents of any file can be viewed very easily by giving the TYPE command followed by the filename. Let us see the contents of file HELLO.TXT that we have just created by issuing the following command. C:\<TYPE HELLO.TXT >Enter<

It will produce the following screen:

97%	MATCHING BLOCK 163/291	W

My first DOS file. The name given to this file is Hello.Txt. It is very easy to create files in DOS.

C:\<_
114 Basic Computer Skills However, if the file is very big, then it scrolls upward and only the last page of the file is seen on the screen. The DOS prompt is again shown. You can see the contents of the file pagewise by prexssing >Ctrl+S< keys together. Hit any key to see the next page.

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You can also send the output of a file to the printer. The following command starts the printing job, provided the printer is on. C:\<TYPE HELLO.TXT <PRN >Enter<

In case the printer is not ready, the following message will come: Write fault error, writing device PRN Abort, Retry, Ignore, Fail? Set the printer ready and press `R' to retry otherwise press `A' to cancel the command. D is p lay in g a Me s sage on th e S c re e n – T he E CH O Co mm an d

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At times you may require to display a text on the screen while executing a set of commands. The ECHO command helps you to display a meaningful message on the screen. This command is issued as illustrated below: C:\<ECHO Please insert floppy in drive A: >Enter< The ECHO command is a special DOS command used exclusively in batch files (files containing a set of DOS commands)

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which are discussed in later part of the chapter.

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There is one more form of ECHO command i.e. ECHO OFF as shown below: C:\<ECHO OFF >Enter< The above command tells DOS not to display other commands in the batch file.

It is also used in batch files. D i s p l a y i n g t h e C u r re n t l y Lo g g e d S u b - d i r e c t o r y – T he PR OMPT Comm and

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Users always prefer to see the prompt for currently logged sub-directory. The PROMPT command tells DOS to include the sub-directory, greater than (<) sign, date, time or any text as a part of the prompt. The various forms of PROMPT command are discussed below: i. To display the path designation (e.g. \ACCOUNT\EXPENSE) and the greater than sign as a DOS prompt, issue the following command: C:\<PROMPT pg >Enter< After giving the above command, if you are logged to EXPENSE sub-directory of ACCOUNT sub-directory in the root directory, then the following prompt will come on the screen: C:\ACCOUNT\EXPENSE<_ 115 Introduction to

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DOS ii. To display a text `Welcome to IMT'

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along with path designation and greater than prompt, issue the following command: C:\<PROMPT Welcome to IMT pg >Enter< The above command will display the following prompt: Welcome to IMT C:\<_ iii. To display

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date and time along with the C:\<,

84%	**MATCHING BLOCK 169/291**	W

issue the following command: C:\<PROMPT $d $t pg >Enter< The above command will display the following prompt: SUN 11-15-1998 13:21:23.36 C:\<_ iv. To display just greater than sign without path designation, you can give the following command: C:\<PROMPT >Enter< The command will display the following prompt: C<_ Specifying a Sub-directory PATH – The PATH

C o m m a n d

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By this time, you must be familiar with the directory structure of DOS. Suppose your program (say PRINCE.COM file) lies

in

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the GAME sub-directory of the root directory and you want to execute it from any other sub-directory (say WINDOWS). To execute PRINCE.COM file, first you will have to make GAME as the currently active sub- directory and then issue the following command: C:\GAME<PRINCE >Enter< DOS provides a shortcut way to locate and run the above program from any other sub– directory by specifying the path as illustrated below: C:\WINDOWS<PATH C:\GAME >Enter< The above command tells DOS that GAME sub-directory is in the current search path of DOS. DOS will first search the required program file in the currently logged drive and then GAME sub-directory. Thus, the PRINCE.COM file can be executed directly from WINDOWS or any sub-directory as shown below: C:\WINDOWS<PRINCE >Enter< The PATH command is generally used in batch files

as discussed in later part of this chapter. I N T E R N A L A N D E X T E R N A L C O M M A N D S

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All DOS commands can be classified into two categories: Internal Commands and External Commands. 116

Basic Computer Skills I n t e r n a l C o m m a n d s

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The commands which are a part of the main files of DOS (i.e. COMMAND.COM and two hidden files) are known as Internal Commands. They are loaded in the RAM as soon as the computer is switched on. The important internal commands are DIR, COPY, DEL, REN, MD, CD, RD, TYPE, COPY CON, DATE, TIME, CLS, ECHO, PROMPT and PATH. We have already discussed all these commands quite in detail. These commands are very frequently used.

E x t e r n a l C o m m a n d s

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External commands are those commands which are stored on disks as separate program files. These files have the same primary name as the command name. The extension of these files is either COM or EXE. So, at the time of execution of these commands, the corresponding program file should be present in the DOS sub-directory of the harddisk and DOS sub-directory should also be in the path search. The commonly used external commands are– FORMAT, DISKCOPY, CHKDSK, XCOPY and LABEL. Let us learn about these commands.

Making the Disk Usable–The
FORMAT
Command Before discussing the format command in detail, let us first see what is meant by the term 'Formatting'. Generally when you purchase a diskette from the market, it is unformatted. It can be compared with a notebook which has blank pages without any ruler lines. You would prefer to put lines, write page numbers and categorise the pages into equal parts so that an index can be made and the required topic can be searched very easily. Similarly, DOS organises the disk into concentric circles which are called tracks. Tracks are further divided into triangular regions. Each such region is called a sector. The organisation of disk into tracks and sectors is called Formatting. The Figure 5.4 makes the formatting concept more clear.
Figure 5.4 Process of Formatting
FORMAT command is used for formatting a hard disk or floppy disk. As FORMAT is an external command, a file by the name FORMAT.COM should be present on your disk. In order to format the floppy disk, issue the following command: Formating done by DOS Unformatted Disk Formatted Disk Sector Track

C:\< FORMAT A: >Enter< Once the above command is executed, the following screen appears:

C:\<FORMAT A:

Insert new diskette in drive A: and strike ENTER when ready

At this point of time DOS wants you to

insert a floppy disk in drive A and hit the >Enter< key. When the formatting of the disk is done, the following message appears on the screen. Enter Volume Label (upto 11 characters):_ Here, you can give a name to the disk for its easy identificaton. A label

of

upto 11 characters can be given to the disk after it is formatted. If you don't want that your disk should carry any label, simply press >Enter< key

without typing anything.

Now, the following message will come: Format Another (Y/N)?_ Now, if you want to format another disk, then hit 'Y' (for Yes) and insert that disk in the drive.

However, if you do not want to format another disk,

type in 'N' (for No) or press any key to end the format program. New disks should always be formatted for using them. But old disks can also be formatted. Formatting will make the disk blank by erasing all its data. You may require to format an old disk if it has bad sectors and is needed again for usage. However, the FORMAT command should be used with extreme caution. Any disk whether hard disk or floppy disk will lose all data stored on it once the formatting operation is done. Therefore, you should not try the FORMAT command for formatting the hard disk. If you format the hard disk, all the contents stored on it are going to be removed permanently and new tracks and sectors will be created. FORMAT command also provides a method for making your disk bootable. The following command is used for this purpose: C:\<FORMAT A:/S >Enter< With the help of above command, all the operating system files (COMMAND.COM and two hidden files) are copied from the hard disk to the floppy disk. This floppy can now be used to load DOS in the computer's memory if you are unable to boot the system from the hard disk. The COPY command cannot serve the above purpose because it can not copy the two hidden files of DOS in the boot sector. Checking a Disk – The CHKDSK Command

If a disk is not used properly, then certain sectors of the disk can get corrupted or damaged.

The command CHKDSK helps to check the status of the disk. After checking the disk, CHKDSK displays several items of information. However to get executed, this command needs the program file CHKDSK.COM. Let's check the status of the disk in drive A through the

in following command. C:\<CHKDSK A: >Enter<

On successfully checking the disk, the following status is shown in Figure 5.5. Figure 5.5 If no drive letter is specified with CHKDSK command, then the currently active drive is checked for. Giving volume Label to disk – The LABEL Command Although you have seen that a volume label to the disk is given at the time of formatting the disk. DOS also provides LABEL command to change, delete or give new label

to the disk.

This command needs a program file LABEL.COM. Let us give a label to the floppy disk by the following command: C:\<LABEL A: >Enter< Once the above command is executed the following screen appears: Volume in drive A has no label Volume label (11 characters, ENTER for none) _ So hit the >Enter< key if you want to delete the volume label without typing in anything. You can also provide volume label directly with the following command. C:\<LABEL A:MANOJ >Enter<

A new label MANOJ is given to the floppy disk. Copying the

Contents of one Floppy Disk to another – The DISKCOPY Command The DISKCOPY command helps you to copy all the contents of one disk onto the other in such a way that both disks become identical. It copies the contents of the floppy disk present in source drive onto the disk present in the destination drive. If you have a single drive on your computer, then the same drive can act as source as well as the destination drive. The command to copy the contents of one floppy onto the other is given below: C:\<DISKCOPY A: A: >Enter< When you issue the above command a screen like the one shown below appears:

Volume SHEFALI created 12-11-1998 12:03a 1,457,664 bytes total disk space 2,560 bytes in 1 directories 747,520 bytes in 74 user files 707,584 bytes available on disk 512 bytes in each allocation unit 2,847 total allocation units on disk 1,382 available allocation units on disk 655,360 total bytes memory 562,048 bytes free

Insert SOURCE diskette in Drive A Press any key to continue

100%   **MATCHING BLOCK 175/291**   W

At this point, insert the diskette whose contents are to be copied and then hit any key. Another message appears on the screen as shown below: Insert TARGET diskette in drive A Press any key to continue So, after this message appears, insert the diskette into which the files are to be copied. Thereafter, press any key to continue the process. Once the process of copying is completed, the following screen appears: Copy Complete Copy Another (Y/N)?_ Press the 'Y' (for Yes) key if you want to copy the contents of some other diskette. DOS will again prompt you to enter the source diskette. However, if you want to stop the DISKCOPY process, press 'N' (for No). DISKCOPY command first formats the target diskette if it is unformatted and then copies files onto it. So, if any contents exist on the target diskette, they are all going to be removed. The DISKCOPY command

only works with floppy disk and not with hard disks and both floppies should also be of same capacity (ie. 1.44 MB or 1.2 MB). The

93%   **MATCHING BLOCK 176/291**   W

DISKCOPY command needs the program file DISKCOPY.COM for execution. Copying Files and Directories – THE XCOPY

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XCOPY Command The XCOPY command is used to copy the files present in sub-directories. The command 'COPY *.*' copies the files of the currently working directory and DISKCOPY command copies the entire contents from one floppy to another. So, they are not helpful in copying files selectively. The XCOPY command offers three special advantages: a. It prompts you to specify the files that you want to copy. b. It can also copy directories and other lower level directories. c. It can be used to copy files from the hard disk to the floppy disk. Now, let us explore the XCOPY command. If you wish that DOS should ask for your confirmation for copying a file, then use the /P option along with the XCOPY command. Consider the following example: C:\<XCOPY C:ACCOUNT A:ACCOUNT /P >Enter< If you want to copy the directories and lower level directories, then use the /S option alongwith the XCOPY command. Look at the following example: C:\<XCOPY C: ACCOUNT A:ACCOUNT /S >Enter< This command will copy the directory and all the sub-directories onto the A disk. However, if the /S option is not specified, then the XCOPY command works within the single directory. You can also use /P and /S option simultaneously with the XCOPY command as shown below: 120

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C:\<XCOPY C:ACCOUNT A:ACCOUNT /P/S >Enter< The whole path can be specified with the XCOPY command. This command again needs the program file XCOPY.EXE in order to get executed.

B AT C H F I L E S

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Very often, you keep keying in the same sequence of commands to do a repetitive job. For example, everyday, when you start your work on the computer, you first see the listing of files present on the hard disk. Then, you copy all the files with extension EXE and TXT from the floppy disk to hard disk. Thus, for achieveing your task, you have to issue the following commands everyday. C:\<DIR/P >Enter< C:\<COPY A: *.EXE C: >Enter< C:\<COPY A: *.TXT C: >Enter< DOS can really simplify your task. All the sequence of commands can be put in a file which is called a batch file. This file offers a great advantage. Any number of commands given in a batch file can be executed by just giving a single command at the DOS prompt. DOS executes all these commands one by one.

It appears as if all these commands were written individually and executed from the DOS prompt.

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All the batch files can have any primary name but the extension given to these kinds of files is BAT. The method of creating a batch file is exactly similar to that of creating any other file on DOS. Let us see it through an example. C:\<COPY CON PREETI.BAT >Enter< DIR/P >Enter< COPY A: *.EXE C: >Enter< COPY A: *.TXT C: >Enter< >CTRL+Z< >Enter< In the above example, a batch file by the name PREETI.BAT has been created.

The contents of the file can be seen using the TYPE command. However,

94%   **MATCHING BLOCK 181/291**   W

if you want to execute this file, simply type in the name of the file at the DOS prompt as shown below: C:\<PREETI.BAT >Enter< or C:\<PREETI >Enter< The commands given in this batch file are going to be executed one by one in the sequence specified. The AUTOEXEC.BAT F I L E The AUTOEXEC.BAT is an autoexecutable batch file. It is a special kind of a batch file. This file is executed as soon as the operating system is loaded in the computer's memory. The AUTOEXEC.BAT file is needed when you want it to be executed automatically each time the system is switched on. Now, as soon as the computer is switched on, DOS searches for the AUTOEXEC.BAT file in the root directory of the bootable disk. If the system finds this file, then all the commands given in it are executed 121

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one by one instantly without even asking for date and time. The AUTOEXEC.BAT file is created like any other batch file. Look at the following example: A:\<COPY CON AUTOEXEC.BAT >Enter< ECHO OFF >Enter< CLS >Enter< ECHO My first Autoexec.bat file successfully executed >Enter< PROMPT PG >Enter< PATH C:\DOS;C:\WINDOWS >Enter< >CTRL+Z< >Enter< Enter the above commands on the root directory of bootable floppy disk. Reset your system. You will notice the above created batch file being executed automatically.

S U M M A R Y DOS is the most commonly used single user operating system. It offers a platform on which different application programs can be run. DOS basically acts as a translator and helps you to communicate with the hardware and vice-versa. DOS offers a very powerful way of organising your files through the directory structure. The directory structure makes the search of a particular file easy. Each file has two parts – the primary name and extension, which are separated by dot. The primary name can have a maximum of eight characters whereas the extension cannot have more than three characters. Before working on the computer system, DOS must be loaded in the computer's memory. When a computer is switched on, DOS is first searched for on the floppy disk.

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If it is not present on the floppy disk, then DOS is searched for on the hard disk

and loaded in the memory. Once DOS is loaded in the computer's memory, a DOS prompt appears on the screen. DOS offers a large number of directory and file commands. The two wildcards offered by DOS are – ? and *. The ? wildcard can replace exactly one character or none.

The * wildcard can replace eight characters or less in the primary name and three or less characters in the extension. A combination of ? and * wildcards can be safely used. DOS also offers the concept of batch processing. DOS commands can be classified as internal and external. Internal commands are the commands which are an inherent copy of DOS itself eg. DIR, COPY, DEL etc. External commands are the commands which need special program files for their execution. A batch file contains a series of commands. All these commands are executed in the same sequence as specified in the batch file. All the batch files have an extension BAT. These files are executed simply by typing in the name of the batch file at the DOS prompt. The AUTOEXEC.BAT file gets executed as soon as the computer system is switched on. Some DOS Commands and their Purposes DIR To see file listing continuously (i.e. without pagewise) DIR/P To see file listing pagewise DIR/W To see file listing widthwise MD To make a sub-directroy

122 Basic Computer Skills RD To remove a sub-directory CD\ To go to the root directory from any directory CD.. To change to the parent or previous sub-directory CD\Directory name To change to a particular directory that is under the root CD To see the name of the currently active directory COPY To copy file(s) REN To give a new name to a file DEL To delete file(s) DATE To show or change the current date TIME To show or change the current time CLS To clear the screen COPYCON To create a new text file TYPE To see the contents of a file ECHO To display a message on the screen PATH To specify the DOS search path PROMPT To change the DOS prompt FORMAT To create tracks and sectors onto the disk CHKDSK To check the status of the disk LABEL To give a label to a disk DISKCOPY To copy the contents of one floppy disk onto the other XCOPY To copy the files and directories that are at lower levels E X E R C I S E Fill in the Blanks: a. The full form of DOS is _____ operating system. b. Text files can be created with the help of _____ command. c.

90%	**MATCHING BLOCK 184/291**	W

All _____ commands can be classified into two categories: Internal and External

command. d.

95%	**MATCHING BLOCK 185/291**	W

The _____ command is used to copy the files present in sub-directories. 123

Introduction to DOS Unsolved Questions 1. What is an operating system? Why is DOS important for a computer system? 2. What is meant by the term Booting? Explain the whole booting process. 3. Explain the directory structure of DOS with examples. 4. What is the difference between a file and a directory? 5. Explain the naming conventions used by DOS. 6. What are wildcards? Explain by giving appropriate examples. 7. Differentiate between the internal and external commands of DOS by giving suitable examples. 8. What is a batch file? What is the difference between a simple batch file and an AUTOEXEC.BAT file? 9. Differentiate between the COPY, XCOPY and DISKCOPY commands with suitable examples. 10. Write down the steps to create a batch file. Create a batch file with name MOHIT.BAT to do the following steps: a To copy all the files from the floppy disk to hard disk. b To give a listing of all the files present on hard disk. c To delete all the files present on the floppy disk. 11. Which of the following are valid file names: a. % # $. ABC b. Letters.doc c. COMPREHEND.A d. LYRICS.PATH e. 999.53 12. Write the commands— a. To create a directory LETTERS on the hard disk. b. To create another directory by the name ZONE on the floppy disk. c. To go to the root directory. d. To display the name of the currently active directory. e. To show the listing of files under the root directory (both pagewise as well as widthwise).

124 Basic Computer Skills f. To remove all the files with any primary name and extension CAT. g. To create a directory PLANNER and copy all the files from the root directory to this directory. h. To show all the files having an extension EXE? i. To create a text file by the name MYFILE. j. To rename the file MYFILE as WONDER. k. To copy the file Wonder from the root directory to the directory PLANNER. 13. Explain the importance of following commands with suitable examples: a. CHKDSK b. DISKCOPY c. LABEL d. FORMAT e. XCOPY

Computer Viruses: Attacks, Prevention and Cure U N I T 6 In previous unit, we discussed the basic concepts of computer and various commands of DOS. By this time, you must be familiar with how to operate a computer. While operating a computer, you must have noticed that at times computers behave in an unexpected and strange manner. The files are either get lost or corrupted. The computer displays unexpected information and strange messages. It is not able to boot itself or gets hanged in between. Most of these problems may be due to viruses. What are viruses? How much can they damage your data or software? How can you prevent your system from viruse attack? A lot of such queries come to the mind of every computer user. In this unit, we will discuss about viruses in detail so that you get to know some important concepts about viruses.

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Definition of a Virus ? Virus Characteristics ? What is Sinister about Viruses? ? Virus History ? How Viruses are Spread ? Different Kinds of Viruses ? Damage Done by Viruses ? Virus Prevention ? Network and Viruses ? Network Protection ? Anti-virus in the Future

126 Basic Computer Skills D E F I N I T I O N O F A V I R U S Biologically, virus is defined as a link between living and non-living organisms. Outside the body of host it behaves like a non-living organism but inside the body of the host it utilizes the resources/machinery of the host and multiplies and behaves like a living entity. Generally viruses are pathogenic in nature and they cause various diseases in plants and animals. But as far as computer related activities are concerned A virus is a program that infects a computer, copies itself onto other programs in the system and may create a lot of problems in the computer. In retrospect, it is unfortunate that the word 'Virus' was used – it makes the problem sound a lot worse than it is. A virus does nothing more than replicate in order to be a virus. Often, 95% of viruses do something insignificant like beeping the keyboard or displaying an absurd message. However, if a program does something nasty which you were not expecting it to do, it simply does not make it a virus unless it replicates. Such a program can also be a 'Trojan'. (Trojan is discussed in the subsequent part of the lesson.) V I R U S C H A R A C T E R I S T I C S A virus has one or more of the following main characteristics: Fast Infection A fast infector spreads rapidly within a computer by infecting everything that is accessed. A fast infector is not as bad as it sounds. It is just as easy to clean a computer with 1000 infected files as one with 10 provided you have an anti-virus program that does a good cleaning job. However, most anti-virus products check memory for viruses. This is because of the possibility of a fast infector in memory. If there is a fast infector in memory and all the files are opened up, you end up with every file infected on the computer. This doesn't matter as long as you follow up by cleaning all those infected files with a good cleaner. S l o w I n f e c t i o n The objective of some viruses is to spread slowly. Since it is slow, it may take you a long time to detect and kill it. There are various ways through which a slow infector works. The classic slow infector works by only infecting those files that you intend to change. This means that if you are running a change detector as an anti-virus measure, the change detector will trigger each time there is an infection. But since you had intended that the file should change anyway, you will tell the change detector to accept the change. 'Starship' is an example of using slow infection. Slow infection can also take place in the following sequence: ? Virus only infects files as you copy them from your hard disk.
127 Computer Viruses: Attacks, Prevention and Cure ? So long as the file on the hard disk does not change, the change detector is satisfied. ? When you copy an infected file to a floppy disk, the copy also gets infected. ? When you take this infected floppy to another computer protected by the change detector, the change detector warns you of the existence of the new file. ? You then reassure the change detector that you already know about the new file. ? The change detector is satisfied and another system gets infected. S t e a l t h Some viruses reside in the boot sector. When any program tries to read the boot sector, the virus presents the information of that boot sector from where it is written. So, you get unexpected information during booting of your system. This characteristic of virus is known as Stealth. It is much more common to see stealth in boot sector viruses than in file viruses because it is much easier for the virus author to implement stealth in a boot sector virus. Po l y m o r p h i s m The commonest kind of ant-ivirus program that people use is the virus-scanner, which looks for a repertoire of viruses. Therefore, for the virus authors, this is the kind of product that they would like to defeat. A polymorphic virus is one where, if you take two instances of the virus, there are no common bytes between them. So, you cannot write down a byte-sequence that can detect this virus. You have to do something is a lot more complex and difficult. W H AT I S S I N I S T E R A B O U T V I R U S E S ? Although, a virus causes no significant harm to your system except copying itself. You have genuine reasons for getting upset if you find that your system has encountered a virus attack. Why? This is because you may come across situations like: ? If you run Windows 95 and you get a partition sector virus, then even if the virus does nothing, you'll lose 32 bit disk access. So, your computer will run slower than it should. ? If you do not get rid of the virus, there is a strong likelihood that eventually you will pass it on to a supplier or customer. This is enough to upset him. ? Many viruses that actually spread in the wild are memory-resident. Therefore, there is a possibility of incompatibilities between the virus and other programs you run. For example, a virus named `Jerusalem' tries to use one of the resources that Novell NetWare uses. So, you cannot run both Novell NetWare and Jerusalem on the same system.

128 Basic Computer Skills ? Even though the virus has been analysed and documented, you might remain nervous that the virus does more than that has been documented. In almost every case you would want to get rid of the virus. Removing viruses from several floppies takes your valuable time. Each PC will take several minutes and each floppy will take several seconds. It would be nice if you only had to worry about those PCs and floppy disks that are infected. However, you do not know which ones of these are infected until you have done a virus-hunt on all floppies. Therefore, you have to check all floppy disks, hard disks and other storage media to verify that all your softwares and data are absolutely virus free. V I R U S H I S T O R Y The history of computer virus can be traced back to the year 1986 when two programmers from Pakistan, Basit and Amjad, were upset over the fact that they could not land up with a good job. They realised that the boot sector of a floppy disk contained executable code and this code is run whenever they start the computer with a disk in drive A:. They thought that they could replace this code with their own program so that the program would become memory-resident. This program could copy itself on each floppy disk used on the same drive. They called it a Virus. But it only infected 360 KB floppy disks. To be able to understand how different types of viruses evolved, following is the brief description of each one of them: 1. '(c) Brain': In 1987, the students of the University of Delaware realised that their computers had a virus when they started seeing the volume label '(c) Brain' on floppy disks. That is all it did – copy itself and put a volume label on disks. This virus did no harm to data or softwares except just putting a volume label on the floppy disk. 2. Charlie: In 1987, Franz Swoboda became aware that a virus was being spread in a program called Charlie. He called it the Charlie virus. 3. Jerusalem: In Tel Aviv, Israel, another programmer was testing his first virus called Suriv-01 (virus spelled backwards). It was a memory-resident virus which could infect any COM file. His second virus was called Suriv-02 which could infect EXE files. His third attempt was called Suriv-03 which could attack both COM and EXE files. His fourth effort escaped into the world and became known as the Jerusalem virus. Every Friday 13th, instead of infecting files that are run, it deletes them. As this date is not common, the virus remains pretty inconspicuous most of the time. It avoids infecting COMMAND.COM because in those days many people believed that this was the file to watch. 4. Ping Pong: In Italy, at the University of Turin, a programmer wrote another boot sector virus. It put a bouncing ball on the screen if the disk was accessed exactly after half an hour. It became famous by the name Ping Pong. It is also known as Italian virus as well as Bouncing Ball. But this virus had a major limitation that it could infect only 8088 or 8086 computers. This is because it uses an instruction

129 Computer Viruses: Attacks, Prevention and Cure that does not work on more advanced chips. Hence, this virus has almost died out. 5. Datacrime: In March of 1989, a new virus was written in Holland. A Dutchman found a virus all over his hard disk. When the virus was disassembled, it was found that on any day after October 12th, it would trigger a low-level format of cylinder zero of the hard disk, which, on most hard disks would wipe out the File Allocation Table and leave the user effectively without any data. As it was another non-memory resident virus, it was very unlikely to spread. 6. Aids Information Disk: In 1989, about 20,000 copies of Aids Information Disk were mailed to users taken from mailing lists. The disk came with installation instructions and a request for $189. When it was installed, it created hidden directories and hidden files and edited the AUTOEXEC.BAT file so that one of these hidden files was run on each boot-up. This counted up to 90 and when it reached that number of boots, the Trojan would trigger up. The Trojan encrypted all the filenames of the infected hard disk and gave them the hidden attribute. It looked as if there was only one file on the hard disk which was an invoice for $189 to be sent to Box 7, Panama. 7. Dark Avenger: The Dark Avenger viruses introduced two new ideas. The first idea is the 'fast infector'. If this virus is in memory, then simply opening a file for reading, triggers the virus infection. Soon, the entire hard disk gets infected. The second idea is that of subtle damage. Dark Avenger–1800 occasionally overwrites a sector on the hard disk. If this is not noticed for a period of time, the corrupted files are backed up and when the backup is restored, the data is of no use. Dark Avenger targets backups, not just data. 8. Whale: In the second half of 1990, a virus called Whale appeared. Whale was a very large and complex virus. Generally, it crashed the computer when you tried to run it. It was an exercise in complexity and confusion. It arrived in the virus researcher's hands like a crossword puzzle to be solved. 9. Vaporware: It was also in 1991 that Dark Avenger announced the first virus 'vaporware'. He threatened a virus that had 4,000,000,000 different forms. In January 1992, this virus appeared but it was not a virus. January 1992 saw the Self- Mutating Engine (MtE) from Dark Avenger. 10. Starship: Another virus that came out at about that time was Starship. Starship is a fully polymorphic virus with a few neat anti-debugging tricks and it also aims to defeat checksummers with a very simple trick. 11. Michelangelo: Probably the greatest event of 1992 was the Michelangelo scare. One of the American anti-virus vendors forecast that five million computers would go down on March the 6th. Many PC users went into a purchasing frenzy as the media whipped up the hype. On March the 6th, only 5,000 to 10,000 computers went down and naturally the US vendors who had been hyping the problem put this down to their timely and accurate warning. It will probably never be known

130 Basic Computer Skills how many people had Michelangelo but certainly in the days leading up to March 6th, many computers were checked for viruses. 12. GIRAFE: In early1993, a new virus writing group appeared in Holland called Trident. The main Trident author, Masud Khafir, wrote a polymorphic engine called the Trident Polymorphic Engine (TPE). He released a virus that was called GIRAFE. This was followed by updated versions of TPE. The TPE virus is much more difficult to detect. 13. NATAS: (Satan spelled backwards) is the most successful American virus ever released. It appeared on bulletin boards in early 1994 and is rampant worldwide particularly in Mexico. It is extremely polymorphic and also multipartite which means that in addition to infecting files, it also infects boot sectors of floppy disks and partition sectors of hard disks. A user who fails to clear up all three infections finds that they keep coming back. This factor and the fact that second rate products fail to detect all instances make the virus spread more quickly. It was written in Czechoslovakia. This virus ranks as the most difficult for anti-virus vendors to handle. 14. ONE HALF: It infects the partition sector of the hard disks in addition to files. It has another nasty habit. Every time the user boots from the infected hard disk, the virus encrypts cylinders of the hard disk, starting one cylinder from the end and working backwards. It keeps a record of the last lowest cylinder that it encrypted in the infected partition sector. When it has encrypted half of them, it displays the message 'is one half', which gives it the name 'ONE HALF' virus. If the user cleans up the partition sector without first copying the files to an external device, the data on the encrypted cylinders are lost. 15. Macro Virus: August 1995 saw a significant new development, the first macro virus. It infects Word for Windows documents (*.DOC) and the NORMAL.DOT template. When an infected document is opened under Word for Windows for the first time, the virus gets control as an AutoOpen macro and infects the NORMAL.DOT template or any other template. A Word for Windows message box with the text 1, appears on the screen. After this, every document saved using the `File\SaveAs' command is infected with the virus. The glut has continued in the year 1997 and 1998 and there are more than 16,000 viruses and variants. Some of the interesting viruses are: Oprah Winfrey virus : 200 MB hard disk will shrink to 80 MB and then slowly expands back to 200 MB. Right to life : Won't allow you to delete a file. Adam and Eve : Takes a couple of Bytes out of your apple. Michael Jackson : Hard to identify because it constantly changes its appearance.

131 Computer Viruses: Attacks, Prevention and Cure Airline Virus : You are in Dallas, your data is in Singapore. Elvis : Your Computer gets fat, slow and lazy and then self− destructs. Star Track : Invades your system in places where no virus has gone before. Health Care : Treats your system for a day, finds nothing wrong and sends you Bill for Rs. 8500/-. H O W V I R U S E S A R E S P R E A D ? It seems to be a common belief that viruses are spread by games, shareware, Internet file downloads or Bulletin Board Systems (BBSs). The truth is more intricate. A physical disk has to be involved in case of a boot sector virus with or without any software on it. You cannot get a boot sector virus by using a BBS. The most likely routes by which a virus gets into an organisation are engineers, parents, or colleagues: ? Hardware engineers use disks on a large number of computers. This increases the chance of picking up an infected disk and spreading a virus. ? The young children quite possibly swap software at school. The disks that they bring home might well be infected and if the parent is taking disks to and from work, a virus could easily be taken to work. ? A boot sector virus could be on a data disk obtained from a colleague. ? The commonest way for a macro virus to enter a company is as an attachment to e-mail. Other ways of getting a virus include: ? Shrink-wrapped software − Some of the large companies have accidentally shipped a virus in shrink-wrapped software. ? Purchased hardware − Most hardware comes with disks containing utilities or drivers. ? Sales persons running Demonstrations − They could unwittingly install the virus they picked up, from the last place they ran their demonstration ? Pirated Software − Commercial softwares are usually scanned for any viruses. On an average pirated softwares can definitely contain a virus. D I F F E R E N T K I N D S O F V I R U S E S To be able to analyse and remove viruses from the computer system it is first important to know about different kinds of viruses. The various kinds of viruses are−

132 Basic Computer Skills 1. Macro viruses 2. Devolving viruses 3. Boot sector viruses 4. TSR file viruses 5. Non TSR file viruses 6. Companion viruses 7. Overwriting viruses 8. Multipartite viruses We are now discussing about these viruses in detail. Macro Viruses Macro viruses are the first viruses to infect data files rather than executable files. Macro viruses infect files in the form of macro or OLE objects and are easier to write than 'traditional' file viruses because they were/are mostly written in assembly codes. Today, many applications have macro languages and so, the problem is a growing one. Macro viruses spread by people sending infected document files to each other, either on floppy disk or via the internal LAN (often attached to e-mail) or via an external e-mail system such as Internet. Many applications provide the functionality to create macros. A macro is a series of commands to perform some application-specific task. Macros are designed to make life easier like automating a few everyday tasks. Macros can be saved as a series of keystrokes. The application records what keys you press. They can also be written in special macro languages which are usually based on real programming languages like C and BASIC. Modern applications combine both approaches. When the macro language allows files to be modified, it becomes possible to create macros which copy themselves from one file to another. Such self-replicating macros are called macro viruses. Most macro viruses are written for Microsoft's Word for Windows and Excel for Windows. However, there are also macro viruses for Lotus AmiPro (e.g. APM/Greenstripe). D e v o l v i n g V i r u s e s Some viruses are badly written and 'lose' their own macros. The original virus may consist of the set {AutoOpen, FileSave, and FileSaveAs}. If it replicates via AutoOpen, the complete macro set will be preserved. However, if the user invokes `File/SaveAs', the virus will fail to copy the FileSave macro. The resulting virus set {AutoOpen, FileSaveAs} is known as a Devolved Macro and original virus is devolving.

133 Computer Viruses: Attacks, Prevention and Cure B o o t Se c to r Vi ru s e s One of the most common kind of viruses are boot sector viruses, for example, Form and Stoned. These viruses infect the floppy disks in either of the following parts: ? Master Boot Record (MBR) ? Partition sector of the DOS Boot Record (DBR) ? DOS boot sector of hard disks. The following example shows how a boot sector virus spreads. You have got a floppy disk with data on it, perhaps some page maker file. This is part of a project that you are doing jointly with a classmate. What your classmate does not know is that their computer is infected with a boot sector virus and so is the disk that has been sent to you. You put the disk in drive A: and start using these files. So far, the virus has not done anything. But when you finish for the day, you switch off the computer and go home. The next day, you come in and switch on. The floppy disk is still in drive A. So the computer tries to boot up from there. It loads the first sector into memory and executes it. If it cannot find DOS on the disk, the message that appears on the screen is: 'Not a system disk, please press any key to continue'. So, you do as instructed. However this disk is infected with a boot sector virus. So, what was executed was not just the program by Microsoft but the virus as well. The virus installs itself on the hard disk, replacing the MBR and copying the original MBR to a location a little further down the disk. When you start up from the hard disk, the MBR runs but this is the virus. The virus goes memory−resident capturing the disk read/write interrupt 13h. It then loads the original MBR and the boot−up process continues as normal. However, since the disk read/write interrupt is captured, every time you make any write or read access to drive A:, the virus decides to write anyway. The floppy disk is examined and infects every disk put in drive A:. Sooner or later one of these will be sent to another person and the cycle continues. The detail of various boot sector viruses is different but the principle is the same. They are carried by the boot sectors of infected disks. A boot sector virus cannot spread across a network. Thus, the only way to get infected is to try to boot from an infected disk even if the boot fails. Boot sector viruses infect PCs. They do not care what operating system is running or what security software is installed. The boot sector virus installs itself when the operating system or security program is not running. However, with some non-DOS operating systems, although the PC is infected, the virus cannot copy itself on to subsequent disks and cannot spread. It can, however, still do damage as was discovered by one surprised UNIX user when Michelangelo went off on March 6th. To most people, the fact that viruses can infect in this way comes as a big surprise which partly accounts for boot sector viruses being so common. Boot sector viruses work under DOS and Windows 3.x. Some work under Windows 95 also but they do not work under Windows NT or OS/2 (including Warp).

134 Basic Computer Skills TSR File Viruses A less popular kind of virus is the Terminate-and-Stay-Resident (TSR) file virus. As the name suggests, this virus usually infects COM and EXE files. Although, over 99% of executable programs have the extension COM or EXE. For a TSR virus to spread, someone has to run an infected program. The virus goes memory-resident, typically looking at each program run thereafter and infects it if it is not already infected. Some viruses are called fast infectors and they infect only if you open the file. For example, a backup might open every file on the drive. Dark Avenger was the first fast infector. In case of the Green Caterpillar, the infection trigger is anything that determines what files are present, for example, DIR. No n -T S R Fi l e V i ru s e s It is much easier to write a non-TSR virus. But it is quite rare for such a virus to be encountered in the wild. There are less than 1% reported outbreaks of a non–TSR virus. Running an infected program runs the virus which at that time looks for another file to infect and then infects it. Vienna is the most common non-TSR virus. Vienna was the first file virus in the wild and is still reported occasionally. There are a lot of viruses based on Vienna. C o m p a n i o n V i r u s e s There are two types of companion viruses which are discussed below: a. COM & EXE Companion If you have a COM file and an EXE file with the same filename, DOS runs the COM file in preference to the EXE file. Companion viruses use this fact. Each EXE file that you have, acquires a companion COM file with the same name. So, when you try to run your EXE program, the COM program is actually run which is a virus. When the virus has finished doing what it wants do, it runs the EXE program. So, everything seems to work normally. There have been a few successful companion viruses. The main advantage to the virus author is that some change-detection software might not realise that a virus is spreading because the EXE file does not change. b. Path Companion This sort of virus puts a program in a directory that is earlier in the DOS PATH. When you run a program that is not in your current subdirectory, DOS searches for the program in various subdirectories as specified by the PATH command in your AUTOEXEC.BAT file. Path companions are harder to write than ordinary companions. So, there are not many of them.

135 Computer Viruses: Attacks, Prevention and Cure Overwriting Viruses An overwriting virus simply overwrites each file it infects with itself. Once overwritten, the program does not function. It will become so glaringly apparent that something is wrong, that either you will get rid of it or copy it again. This is the main reason that overwriting viruses were/are never successful in spreading. Multipartite Viruses Some viruses infect multiple objects. When you run an EXE infected with a multipartite virus, Tequila, it installs itself on the MBR. When you boot up the computer, Tequila runs from the MBR and goes memory-resident. While Tequila is memory-resident, it infects EXE files. Other viruses like Anticad infect COM, EXE and MBRs interchangeably. Some viruses infect COM, EXE, MBRs and device drivers. Multipartite viruses are the third most common kind of viruses. There are some viruses that infect OBJ files. The Starship virus infects by creating a new DOS Boot Record (DBR) leaving the code on the MBR intact. It changes the pointer in the MBR so that the Starship DBR is executed before the original DBR. The Dir Byway virus infects file systems by changing the File Allocation Table (FAT) and directories so that files on the hard disk are all cross–linked to the virus. D A M A G E D O N E B Y V I R U S E S We can categorise the damage done by viruses into six groups according to the severity of the damage. Some authors claim the possibility of a virus that actually does good but no one has yet demonstrated such a virus. We define damage done by virus as the virus doing something different from what it should not do. The damage does not inlcude the damage done during a mistaken attempt to get rid of the virus. For example, it is remarkable that a lot of people will format the hard disk in an effort to repair the Stoned virus. All this will lose your data. The virus is untouched as it resides in the MBR which is not touched by Format. The damage also does not include damage done by obscure incompatibilities between the virus and the system. For example, if a computer that was originally set up under earlier DOS version (but now you are running a later DOS version) is infected by Stoned, then a large number of files will be corrupted because the design of the virus had not anticipated this situation. The major damages done by viruses are discussed below: 1. Trivial Damage: This is the most insignificant damage done by a virus, for example Form. It will simply make the speaker beep on the 18th of every month every time you press a key. All you need to do is to get rid of the virus. This will usually take a few seconds or minutes per computer. 2. Minor Damage: A good example of minor damage is the Jerusalem virus which deletes any program that you try to run after the virus has gone memory-resident on Friday the 13th. At worst, you will have to reinstall some programs but repairing the damage is unlikely to take more than 30 minutes per computer.

136 Basic Computer Skills 3. Moderate Damage: The most famous virus for moderate damage is Michelangelo. Moderate damage is done when a virus formats the hard disk, scrambles the File Allocation Table (FAT) or overwrites the hard disk. The damage is moderate only because you know that it has happened. You can reinstall DOS and reload yesterday's backup. So, you will lose on average half a day's work, plus maybe an hour doing the reinstallation and restoration. 4. Major Damage: Every 16th time a Dark Avenger infected file is run, it overwrites a random sector on the hard disk with 'Eddie lives... somewhere'. Major damage is done when such a virus infects your backups as well as your hard disk. This might go on for several weeks. When you find 'Eddie lives' at several places in several files, you discover Dark Avenger. You might have to go back a few weeks before you can find clean data files. However, when you have restored a 6-week old backup, you will find that you do not actually have any way to redo the work you have lost because you do not have your original documents. 5. Severe Damage: When a virus (e.g. Dark Avenger) makes gradual, progressive changes so much so that backups are also corrupted but the changes are not obvious. So, you end up simply not knowing whether your data is correct or changed. 6. Unlimited Damage: Some viruses make an effort to get to the system manager password and pass it to a third party. Cheeba virus creates a new user with maximum privilege, with a fixed user name and password. The third party person who can log in to the system can do anything and in turn can then do unlimited damage. V I R U S P R E V E N T I O N The question now arises how to prevent viruses from invading our computer systems. A number of solutions have been proposed in the past. A few of these are Legislation, Awareness of Users, Use of Anti-virus software, Use of Virtual device drivers, Use of Scanners and Checksummers. We are discussing a few of these measures in detail. Legislation You should use only legal softwares in order to prevent your system from viruses. The government must punish people who write virus programs. This will reduce the number of viruses written by various authors. However, it cannot make an impact on the thousands of viruses that already exist and it only slows down slightly the creation of new viruses. Awareness of Users Users do not regard computer problems as their own. They regard them as the domain of the MIS department. Users are too busy doing their jobs. They do not pay the required attention looking out for viruses in their computers. Users can be given precise procedures to check all incoming software and how to acquire software. Procedures tell users how to obey the rules. The procedure for checking disks should be written down in detail.

137 Computer Viruses: Attacks, Prevention and Cure However, most of the users just ignore procedures. A user may see a virus once in many years. Thus, after say six months of applying such procedures, they learn that when you go through the procedures, you do not find any viruses. So the procedures fall into disuse. Procedures can be backed up with some rules. A good set of rules might be as follows: ? Any incoming floppy disk must be virus-checked. ? If your anti-virus software finds a virus, tell your PC Support department. ? If the rules are broken, users should be 'punished'. Use of Anti-virus Software Anti-virus software is the solution to many problems created by viruses. There are many kinds and brands of anti-virus softwares available in market today. You should use a scanner on any incoming software. In practice, it always does not happen. Users do not always consider the need of virus checking in many files. So, either you enforce scanning or you try and create a situation where everything is virus checked automatically. Users do not always do as you are told, but computers do. So, the best idea is you tell the computer to virus-check everything each time when it is loaded. This means that your programs will be checked more often than necessary but that is irrelevant as compared to the damage caused by virus attacks. Use of Virtual device drivers On a Windows 3.x or Windows 95 machine, you can install an anti-virus Virtual device driver (VxD). A VxD is a 32−bit device driver which checks everything that arrives on the computer, whether it is a floppy disk, running program or the accessed file. You no longer have to rely on the user knowing what to do. The user interface is simple. The user has to do nothing. He just has to use his computer in the normal manner. If the VxD alerts, then it has found a virus and an alert is displayed on the user's screen. A network message can be sent to the supervisor. On a Windows NT machine, you can install a File System Driver (FSD) which will provide similar coverage. So, anyone having a problem with the concept of virus should install a VxD (or FSD) on their computer and tell the network to update it regularly. This will strangle the virus to death. VxD will check all incoming files no matter where they come from, for example, via the Internet, the parallel port or the floppy drive. Use of Scanners A scanner is a program that knows how to find a particular repertoire of viruses. Scanners are updated quarterly or monthly. For many users, quarterly upgrades are sufficient. But every now and then, a new virus can come out and spread very fast, for example, Tequila or SMEG. In that case, you could be unable to detect this new virus for several weeks depending on where you are in the update cycle. So you should subscribe to monthly upgrades to avoid this situation.

138 Basic Computer Skills VirusGuard (DOS) and WinGuard (Windows 3.x. Windows 95 and Windows NT) are on-access scanners and work continuously. As soon as any disk is accessed, it is checked for boot sector viruses and as soon as any file is used, it is checked for file viruses. Both programs may be optionally configured to check files as they are written onto the hard disk. VirusGuard occupies approximately 9Kb of conventional DOS memory. VirusGuard is a DOS TSR program. It does not have the full facilities of FindVirus. Specifically, it is not able to find macro viruses and a small percentage of extremely polymorphic viruses. VirusGuard will find polymorphic viruses in memory only if an infected program has been run. WinGuard, which is a Windows-specific program, uses zero conventional memory. Any additional time-overhead involved in checking the disk or file is unlikely to be noticeable in most cases. WinGuard does not have the constraints of a DOS TSR program. It has the same detection capability as FindVirus. C h e c k s u m m e r s A checksummer is a change detector. Executable files should not change except for a good reason like updation of the software. A checksummer aims to detect changes. The advantage of checksummers is that they do not detect a repertoire of viruses. So, they do not need updating. The downside of checksummers is that they are more of a hassle than scanners. Files change on your computer more often than you might have thought for good and valid reasons. Moreover, they also do not detect all viruses. For example, checksummers do not detect slow viruses. They do not detect all boot sector viruses (if the hard disk code is left unchanged) and they have problems with stealth viruses also. N E T W O R K S A N D V I R U S E S Network whether it is a local area network or wide area network provides interesting opportunities for viruses to spread to several computers or terminals. There is a common perception that once a virus gets onto a network, it flashes round the whole network very quickly. The truth, of course, is more complex. Boot sector viruses cannot travel across networks if several computers on a network are infected. This is because the boot sector virus spreads via floppy disks in the usual way. An example of how a file virus spreads across a network is as follows: ? User 1 gets his computer infected. The virus goes TSR, memory-resident. ? User 1 runs other programs on his hard disk which also get infected. ? User 1 runs some programs on the network. They get infected. A network emulates a DOS device. So, reading and writing to files on the server is done in exactly the same way as locally. The virus does not have to behave any differently to infect files on the server.

139 Computer Viruses: Attacks, Prevention and Cure ? User 2 logs on to the server and runs an infected file. The virus is now TSR in User 2's computer. ? User 2 runs several other programs on his local hard disk and on the server as well. Each file becomes infected. ? User 3, User 4 and User 5 log on and run infected files. And so on. Macro viruses are especially good at spreading on networks because people commonly share data across networks and e-mail documents to each other. They may even share common templates. N E T W O R K P R O T E C T I O N You should apply the following procedures to protect your network from the attack of virus: ? You can make the directories in the hard disk of server as read-only. However, some packages cannot be run from read-only sub-directories because they want to write to some temporary or other setup files in the same directory. ? You can make programs execute-only. This means that although the directory is read/write, the executables cannot be written, or even read. They can only be run. Some programs will not run if they are execute only, because they have overlays that are added on to the end of the EXE file. So if the EXE file cannot be read, the overlays cannot be loaded. ? You can make individual files read-only using the DOS attribute, and then deny the user the 'modify attribute privilege' in that directory. Using a combination of these techniques, you should be able to make a large percentage of the files on the server uninfectable. This stops viruses infecting most of the executables on the server. However, the user has read/write access to the data (needed to do the job), and so the virus also has read/write access to the data. So you cannot make the data files as read only. The only solution is to keep viruses off the workstation. Things that are not Viruses Certain problems in the system may be misunderstood by you as caused by viruses. However, those may not be viruses. The following are not viruses but something else: 1. Bugs 2. False alarms 3. Jokes 4. Hoaxes 5. Trojans

140 Basic Computer Skills 6. Corrupted programs 7. Intended viruses 8. Droppers Let us discuss about these things in details. Bugs Bug is a persistent error in the software. All sufficiently complex softwares generally have bugs because programmers may make mistakes during development of these softwares. As programmers are human beings, they have pride and hence do not like to admit that they make mistakes, so they call them 'bugs'. F a l s e A l a r m s A false alarm is when you think you have a virus, but you are mistaken. The following things definitely indicate that the alarm (a warning message on system) is false: ? Sometimes, you have some hardware or software fault, and after running some diagnostics, you eliminate the possibility of hardware or software problems, conclude that it is therefore a virus, and proceed on that assumption. ? More often, a false alarm is the result of running anti-virus software. Anti-virus software, in common with other software, is not infallible. The two main mistakes that an anti-virus program can make are to fail to find a virus that is there or to claim that a virus is present when there is not. That is called a false alarm. When an anti-virus program gives a false alarm, it looks pretty much like the real thing. However, there are certain things that might indicate that the alarm is false : ? Only one file is giving the alarm (or perhaps two files, but they are copies of the same file). ? Only one product gives the alarm - other products say the system is clean. ? You get the alarm after running multiple products, but not when cold-booting and running any one product. ? The virus that is detected is not listed as in the wild ? The product says it cannot clean the virus. ? The product says the virus is in memory, but when you boot with a clean disk, the product doesn't find a virus. Actually there is no fix rule that can be applied for knowing whether the alarm is false or not. You cannot say it is a false alarm if one of the above is true. The only way to really check a false alarm is to send the suspected files to the product vendor giving the alarm, and ask them to verify if it is a virus. You might try deleting the offending file and re-installing the software that is causing the false alarm, but sometimes even when you have finished doing that you might still get the false alarm.

141 Computer Viruses: Attacks, Prevention and Cure J o k e s A joke is something that is funny. However, what one person finds funny is not the same as what another person finds funny – it depends on your sense of humor. A program that pretends to format your hard disk, and then reveals that it has not – is that funny? It depends on your sense of humor. Some virus authors love to play practical jokes. Jokes are not viruses. H o a x e s There are a number of common hoaxes, which are widely believed. The most common of these are Good Times, Ghost, Free Money, Eyes, AOL4FREE, Join the crew etc.. The Good Times hoax has been around for couple of years. It is usually in the form of a warning not to read any e-mail with Good Times in the title. People pass along the warning because they are trying to be helpful, not realising the damage that this does. Every now and then, there's a fresh spurt of Good Times warnings. Ghost is another hoax, which has received excessive publicity online after being falsely accused of containing malicious code. Although hoaxes are not viruses, the programs themselves could be infected in the future. The main way to deal with hoaxes is not to pass on warnings unless they have come from a serious source. Tro j a n s A Trojan is a program that does something more than you were expecting. This leads to a problem in detecting Trojans. The problem is to compare what the program does with your expectations. You cannot determine a user's expectations of a program. Therefore, some judgements have to be made. The Aids Information Disk is generally considered to be a Trojan. Approximately 20,000 copies of this were mailed to users in 1989, purporting to be a program that teaches you about AIDS. In fact, it was a Trojan – after you re-boot your computer 90 times, it encrypts and hides all the filenames on your hard disk, and demands that you pay for your license to use it. Although the documentation that came with it told you that something bad was likely to happen, it is generally considered to be a Trojan. A recently appeared Trojan variation targets Internet Service Providers (ISPs) and their users.There is a large family of Trojan programs, designed to steal the passwords of ISP user accounts. The number of password stealing Trojans is growing quickly. Most do not cause damage to your data, but send your confidential data or password to the author of the Trojan. Many of these Trojans are distributed as innocent programs. Typically, they claim to be able to provide better access, or new services (for example, 'new magnificent viewer'), games or images (for example, 'run it - it's fun") and so on. Some Trojans are embedded in DOC or RTF files and when the user double-clicks on the file the Trojan is executed

142 Basic Computer Skills The best way to avoid Trojans is that you should not use programs from untrusted or unknown sources. However, because of the Internet and the ease with which programs can be posted and distributed around the world in minutes, these programs are rapidly becoming a severe menace. If a Trojan is detected, the file should be deleted. Corrupted Programs Some files are simply corrupted perhaps by a hardware problem, and hang the computer when run. For some reason, these sometimes end up in virus collections, unless the collection is carefully maintained. If you look at the collections that can be found on most underground virus exchange sites, you'll find 20% or 30% garbage files. I n t e n d e d V i r u s e s Some virus authors are less capable than they would like to be, and write what is clearly intended to be a virus, but for some reason there is such a major bug that the virus does not work at all. However, they release these in the fond belief that no one will ever test them or perhaps they did not test them themselves. One typical mistake is to get confused about decimal versus hexadecimal, and so their source code presumably says 'int 21' for the DOS function interrupt, but it should have said 'int 21h' (which is 33 in decimal). D ro p p e r s A dropper is a program which is not a virus but when it is run, it installs a virus into memory or onto the disk or a file. Droppers have been written sometimes as a convenient carrier for a virus, and sometimes as an act of sabotage. The Future of Viruses It is very difficult to predict about the future of viruses. In fact it is unwise to try and be too specific about what is likely to happen. There will be more viruses – that is an easy prediction. How many more is difficult to predict. There were over 8,000 viruses by the middle of 1996 and 15,000 by the end of 1997. Nevertheless, it is impossible to make a broad assessment of future virus developments. With over 15,000 known viruses in existence and over 300 new ones surfacing every three months it is really an uphill task for a group of serious anti-virus researchers. Anti-virus in the Future The fundamental truth about viruses is that they are people's problem. The people, who are potential victims of this phenomenon, should acquire knowledge about viruses, which are a real threat to their computer systems. What is likely to happen in the future? Well, the databases that scanners use will get larger. Each new virus needs to be detected, identified and removed. Loading the databases will take longer, and some programs will have memory shortage problems. As Windows 95 and Windows NT

143 Computer Viruses: Attacks, Prevention and Cure become popular, users will be increasingly reluctant to run scanners under DOS. But to run Windows, you have already run software on the hard disk, and if one of the things you have run is infected by a virus, you have a virus in memory. If there is a virus in memory, you cannot trust what the computer is saying - it could be a stealth virus. In other words. Windows will make anti-virus software less secure. The R&D effort to keep scanners up-to-date will continue to increase. The virus problem will be with us for many years to come. S U M M A R Y A virus is a program that copies itself onto other programs. Some viruses spread rapidly while others slowly within the computer system. When viruses attack your computers, you get worked up because you would not only spend a lot of time in removing the viruses but your important data may also be lost. The history of virus can be traced to the year 1986 when first virus was developed by two Pakistanis. After that many viruses viz. `(c)Brain', Charlie, Jerusalem, Ping Pong, Data Crime, Dark Avenger etc. have been evolved. The most likely routes by which a virus gets into an organisation are hardware engineers, parents, children, friends and email. Viruses also spread by pirated and demonstration software. There are many kinds of viruses viz. Macro viruses, Devolving viruses, Boot Sector viruses, TSR viruses, Non-TSR viruses, Companion viruses, Overwriting viruses and Multipartite viruses. Viruses cause many damages to your systems or files, which can be classified into Trivial, Minor, Moderate, Major, Severe and Unlimited damages, depending upon the severity of the damage. Viruses can be prevented by Legislations, Awareness of users in understanding their duties, Use of Anti-virus softwares/ Virtual Device Drivers/ Scanners and by installing Checksummers on your systems. Network provides the best opportunities for viruses in spreading to several computers quickly. So, you should take special precautions to protect your network against virus attacks. This battle between good (You) and evil (Virus) will go on. As always goodness will stay for long, the life of evil is short. E X E R C I S E Fill in the Blanks: a. 'Starship' is an example of _____ infection. b. _____ is known as Italion virus as well as Bouncing Ball. c. _____ viruses are the first to infect data files rather than executive files. d. A _____ is a program which is not a virus but when it is run it installs a virus into memory or into a disk or a file.

144 Basic Computer Skills Unsolved Questions 1. What is a computer virus? How does it differ from a biological virus. 2. Describe the main characteristics of a virus. 3. Although a virus may cause no harm to your system except copying itself, people get so worked up when they have one. Why? 4. Who invented the first virus? Describe the history of viruses in brief. 5. Write a short note on evolution of the following viruses: a. `(c) Brain' b. Jerusalem c. Ping Pong d. Data Crime e. Dark Avenger e. Michelangelo 6. How do viruses spread? Discuss about the most likely routes by which a virus gets into an organisation. 7. What are the different kinds of viruses? Explain with examples. 8. Write a short note on Boot Sector viruses. Give some examples of these viruses. 9. How does a TSR file virus differ from a NonTSR file virus. 10. What are the two types of Companion viruses? Discuss briefly. 11. Discuss about the severity of the damage caused by various viruses with examples. 12. How can you prevent your system from virus attack? 13. What are Checksummers? How do they differ from scanners? 14. How can you prevent your network from viruses? 15. Certain things are misunderstood by users as viruses. What are these and why are they not viruses? 16. What do you think about the future of viruses? Discuss.

Microsoft Word 2000 U N I T 7 S TA R T I N G O F MS-W O R D Microsoft word is a Windows based word processing application. It can be started on a computer, where it is already installed as follows: ? Click on the start button on the Taskbar ? Then Click on the Program option in start menu. ? After that click on the Microsoft Word option identified by icon. This command will launch the Microsoft word 2000 on your computer, which will have typical look as shown below: Figure 7.1

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Starting of MS-Word ? Start Working with Word Document ? Opening of an Existing Document ? Formatting the Text ? Spell Checking

146 Basic Computer Skills The Microsoft Word window starts with a new document opened. Components of the MS-Word Window Components of the Microsoft Word window are: 1. Title or Caption Bar 2. Menu Bar 3. Tool Bars 4. Ruler 5. Cursor 6. Status Bar 7. Scroll Bars 8. Document Navigator 9. Help Assistant Figure 7.2 Function of the

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various components of Microsoft word window: 1. Title Bar: Title bar shows the name of the document and situated in the top of the window application. 9 7 8 1 5 4 3 2 9 147 Microsoft Word 2000 2. Menu Bar: Menu bar contains the various commands under the various topics to perform some special tasks. Menu bar is located

below the title bar 3. Toolbar(s): A Toolbar is a group of graphical shortcut buttons for executing Menu options/commands in easier and faster way. Generally they appear below the menu bar but can be placed anywhere, as we shall see later. 4. Ruler: The window is supplied with a horizontal and a vertical Ruler displayed along the left and the top of the document. Rulers can be used to set

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margins and indents in easier way and they also provide measurement for the page formatting. 5. Cursor: Cursor is

MS-Word
pointer, which tells where on the document the action (that you choose) will appear or affect. The cursor can be moved and placed anywhere on the document with the help of a pointing device like mouse. 6.
Status Bar: This

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bar displays the position of the cursor; status of some important keys of keyboard; the messages for the toolbar button when a mouse points to it, messages for menu option, when a menu option is selected or pointed out by a user

and/or many other relevant information. It is located at the bottom of the window. 7. Scroll Bars: Scroll bars are sliders that can be moved using mouse. As the scroll bar is moved, the window pans through the document, exposing different regions of the document.

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There are two types of scroll bars: i. Horizontal Scrollbar ii. Vertical Scrollbar

Horizontal Scrollbar is placed at the bottom while vertical scroll bar at the right side of the document. 8.

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View Buttons: View buttons are shortcuts of various views in the View Menu,

placed adjacent to the horizontal scroll bar. These buttons select different ways the document can be viewed,

as we shall see later. 9.

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Document Navigator: Document Navigator allows navigating the document in different types of objects and is activated when clicked on the ball type button on the vertical scroll bar. 10. Office Assistant: Office assistant provides you the online help and real-time tips while working

with MS-Word. S TA RT W O R K I N G W I T H W O R D D O C U M E N T

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When you open the Word a blank document appears. You can start typing on it directly. But for performing various other activities, you need to learn about the different menus in the menu bar and the options available under these menu bars.

You can select different menus with the mouse and you can select it through the hotkeys also. Hotkeys are displayed underlined. Just press the underlined combination of keys (usually, Alt,
148 Basic Computer Skills unless specified otherwise) to get the action performed. For example if you wish to select the File menu you have to press the Alt+f keys to open the menu or Alt+v to select the View menu. Before going on menus let's see how to move within the document using various keys. Movement of the Cursor Using Keyboard Movement of the cursor Keys

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Left or Right one character ? Or ? Left or Right one word Ctrl+ ? or Ctrl+? Up or Down one line ? Or ? Up or Down one paragraph Ctrl+ ? or Ctrl + ? Start or end of a line Home or End Up or Down one screen Page up or Page Down Top or bottom of the current screen Ctrl+Page Up or Ctrl+Page Down Start or end of the document Ctrl+Home or Ctrl+End File-Related Operations

File (or document) related operations can be performed through FILE menu. Different file-operations are: ? Opening a new file ? Opening an existing file ? Saving an opened file ? Closing an opened file ? Examining the print preview of an opened file ? Printing an opened file ? Setting the page setup of the file ? Saving different copies of a file ? Exiting from word Figure 7.3
149 Microsoft Word 2000 Opening

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a New File 1. Click on the File menu. Click on the New option or press Ctrl+N through the keyboard

or click at the icon at the standard toolbar. 2.

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Select the Blank document from the General Tab from the dialog box and then press OK button.

Figure 7.4 Note that there are many types of pre-designed documents are available in the dialog window above. i. Blank Document: Start with a blank document when you want to create a traditional printed document. ii. Web Page: Use a Web Document when you want to display the document's contents on an intranet or the Internet in a Web browser. A Web page opens in Web layout view. Web pages are saved in HTML format i.e. a file with .html extension. iii. E-mail Messages: If you use Outlook 2000 or Outlook Express, use an e-mail message when you want to compose and send a message or a document to others directly from Word. An e-mail message includes an e-mail envelope toolbar so that you can fill in the recipient names and subject of the message, set message properties, and then send the message. iv. Templates: Use a template when you want to reuse boilerplate text, custom toolbars, macros, shortcut keys, styles, and auto text entries.

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Save a Document For saving a document: 1. Click on the File-<save option. 150

Basic Computer Skills OR Press Ctrl+S OR Click on the Save tool icon at the

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standard toolbar If you are saving the file for the first time, the Save as window will appear on the

screen. Figure 7.5 2.

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Choose the appropriate folder from Save in combo box. 3. Write the proper file name in the File name text box. 4. Then press the Save button.

Note that if you close an opened document without saving its latest content, MS- Word duly prompts you with option for saving and not saving the document. You can select the appropriate action from these options as well.

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Save and Save as options do the same work of saving a document. However, the difference between both option is that the Save as command

allows the user to save a file by a different name and format. The Save option will save the document by the same name and format as it was saved for very first time. Without even showing the dialogbox to save the document.

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Opening of an Existing Document To open an existing document: 1. Select the Open option from the File menu. OR press Ctrl+O OR Click on the Open tool icon at the standard toolbar. Then the Open dialog box will appear

as shown in Figure 7.6.
151 Microsoft Word 2000 Figure 7.6 1.

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Select the appropriate folder from look-in combo box. 2. Select the required file from the file window. OR Write the required file's name in the file name window. 3. Click on open button on the right hand side OR Press Enter Closing of Document To close an already opened

document,

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just choose the close option from file menu but keep it in your mind that the

only current window or document will be closed since the

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Microsoft Word works in MDI (Multi Document Interface) environment unlike notepad which works in SDI (Single Document Interface).

Save as Web Page Save as Web page option will save the word document in the Web page format i.e. in the html format with the extension .htm. Then you can view it in the web browser. Version A document can be saved in different versions with the Version option in the File menu. Following are the steps for saving different versions of Word document:

152 Basic Computer Skills 1. Click on the Version option of the File menu, then the following Versions window will appear. Figure 7.7 2. Click on the Save Now... button then the following window will appear. Figure 7.8 3. Write the comments of the version for example Ist version or IInd Version. 4. Then, press Ok. Do some changes in the document and repeat steps from 1 to 4. These steps will save your document in different versions. To see the difference between the versions do the following:

153 Microsoft Word 2000 1. Again choose the version option from File menu. Now this time the window will look like: Figure 7.9 Here you can see the two different versions of the same document. The last version i.e. the IInd version is your current version. To compare: 2. Click on Ist version 3. Click on Open How you can see the two windows of two versions and you can compare the text in the two documents. Web Page Preview Web page preview will invoke your default web browser, for example Internet Explorer. In the web browser the document will be shown in the Web page format.

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Page Setup From the Page setup option one can setup the page layout (margins etc.). To use the Page setup option you have to perform the following steps: 1. Click on the Page setup option from the file menu then

the page setup window will appear (Figure 7.10).
154 Basic Computer Skills Figure 7.10 2.

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Adjust the different margins or apply different options from the margin tab. i. In top margin, enter the distance you want between the top of the page and the start line on the page. ii. In Bottom margin, enter the distance you want between the bottom of the page and start last line on the page. iii. In Left option, enter the distance you want between the left edge of the page and the left edge of unindented lines. iv. In Right option, enter the distance you want between the right edge of the page and the right end of a line with no right indent. v. In Gutter option, enter the amount of extra space you want to add to the margin for binding. Word adds the extra space to the left margin of all pages, if you clear the Mirror margins check box, or to the inside margin of all pages if you select the Mirror margins check box. vi. In Header option, under From edge frame, enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii In Footer option, under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer. viii. Check Mirror margin checkbox to adjust left and right margins so that when you print on both sides of the page, the inside margins of facing pages are the same width and the outside margins have the same width. ix. Check the 2 pages per sheet checkbox to print the second page of a document 155

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enter the distance you want between the top of the page and the start line on the page. ii. In Bottom margin, enter the distance you want between the bottom of the page and start last line on the page. iii. In Left option, enter the distance you want between the left edge of the page and the left edge of unindented lines.

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Right option, enter the distance you want between the right edge of the page and the right end of a line with no right indent.

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Gutter option, enter the amount of extra space you want to add to the margin for binding. Word adds the extra space to the left margin of all pages, if you clear the Mirror margins check box, or to the inside margin of all pages if you select the Mirror margins check box.

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enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii In Footer option, under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer.

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left and right margins so that when you print on both sides of the page, the inside margins of facing pages are the same width and the outside margins have the same width.

Microsoft Word 2000

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on the first page. This check box is used when the printed page is folded in half with the two pages

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on the first page. This check box is used when the printed page is folded in half with

accomodated in one sheet. The outer margins and

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the inner margins (gutter) of the page will have the same width. x. In the Apply to list box, click the portion of the document you want to apply the current settings to in the Page Setup dialog box. And the options of this list box are whole document, this point forward etc.,

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click the portion of the document you want to apply the current settings to in the Page Setup dialog box.

which can be selected as per the situation.

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From the Paper size tab you can set the length or width of the page. When you click on the Paper size tab the following window will appear.

Figure 7.11

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In the above window you can adjust the following: i. From Paper size list box you can select the predefined Paper sizes. ii.

In

Width and Height text boxes, the custom Paper size can be defined by adjusting the Height and width of the paper,

if you do not want to select as standard or predifined paper size.

iii. Select the orientation of the paper as Landscape or Portrait from orientation frame.

Portrait orientation is length-wise i.e., vertical while Landscape orientation is width-wise or horizontal on the page. From the Paper source tab, you can select the source of paper from where you are going to insert the paper in the printer. Click on the Paper source tab, the following window will appear.
156 Basic Computer Skills Figure 7.12 In the above window you can adjust the source of the first page and other pages.

Print Option For taking the printout, you have to select the print option of the file menu. After selecting the print option from file menu, the window given below will appear: Figure 7.13 You can set various options before taking printout. i. From the Name combo box you can select the printer if

there are more than one printers installed on your system.
157 Microsoft Word 2000

ii. You can select the range of pages i.e. all pages or current page or number of pages you require from Page range frame. iii From the Print option you can choose which part of

the

document you want to print i.e. the whole document or comments or anything else. iii. From print option the pages can be selected to print i.e. all pages or all even pages or all odd pages. iv. You can choose number of copies from Number of copies option under Copies frame. v. From Pages per sheet option under Zoom frame, you can select the number of pages in the document that you want to print on single sheet of paper. vi. From Scale to paper size option, you can select the paper size on which you want to print the document. For example, you can specify that a B4-size document

will be printed

on A4-size paper by decreasing the size of the font and the graphics. This feature is similar to the reduce/enlarge feature on a photocopy machine.

vii

The collate check box can print the copies of the document in proper binding order.

Send to Option From Send to option you can send the document to various other recipients (application or otherwise) on various places through various technologies like email, fax etc. Properties Option From the Properties option in the file menu you can set the various properties of the document. When you click on the properties option you will see the window given in Figure 7.14. From this window you can set or see the various properties of the document. You can set the author name, company name, title of the document and various other properties. And from other tabs you can see the various properties of the document like. i. From General tab you can see the type of document, the file size, the path of the file where it is saved, date of creation of the document, date of last modification etc.

158 Basic Computer Skills Figure 7.14 ii. From Statistics tab you can see the various statistics of the document like no. of words, no. of characters, no. of lines etc. After the properties option there is a list of last modified or created files. The number of files is 4 by default but it can also be set by you as per your requirement F O R M AT T I N G T H E T E X T

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Once the text of a document has been typed, it is required to be formatted.

Formatting affects the appearance of the document rather than its textual/graphical contents.

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MS-Word provides format menu to give a meaningful format your document so that a user can read and understand the document in an easy

and attractive manner. Following options are available in the format menu.
159 Microsoft Word 2000 Figure 7.15 Fo rmat tin g o f Fo nt

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Format of font i.e. the font type, font size, font style, font color, character spacing etc. can be changed through the option Font of Format menu.

In this section we will discuss about: 1. Changing font, font size and font color. 2. Applying Boldface, italic and underline. 3. Adjusting space between characters. 4. Applying text effects. 5. Choosing a different default font. 6. Copying and removing font formatting. Changing the Font Font means the design/looks of characters. As each and every human being has unique writing style, they use different fonts. You can change the font of the text using two methods: 1. Changing font using the font list. 2. Changing font using the font dialog box.
160 Basic Computer Skills Changing Font using the Font List This is a quicker way of changing a font as compared of using the font dialog box. To change the font using the font list: 1. Select the text. It can be a page, a paragraph, a line, a word or a character. 2. Drop down the Font list box in the Format toolbar. It will show you all the fonts available in the computer. Scroll down the list to find out more fonts. 3. Click on the desired font. Figure 7.16 Word places the fonts you use frequently above the double line in the Font list box. Changing Font Using Font Dialog Box Changing

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the font-using Font dialog box gives you the opportunity to see the result within the dialog box before applying it

to

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the text. Other benefit of using the font dialog box is that you can apply several effects within at the same

time affecting various characteristics of the font. To do so: 1.

Select the desired text to change the font. 2. Select the Font option from Format menu. 161 Microsoft Word 2000 Figure 7.17 3. Scroll through the Font list and select the font that you want. 4. Select the color; underline style and

other

effects of your choice. 5. Select the font style according to the text. 6. Click on Ok button.

You can use formatting toolbar for all these operations to make your task much easier and faster. You can change the following from this toolbar. ? Font Size ? Font Type ? Bold, Italic, Underline ? Make bulleted list ? Indentation of paragraph (left, center, right, or justified) ? Border ? Text Color ? Back Color
162 Basic Computer Skills Figure 7.18 Besides, you can also use key combinations for some of the formatting actions. Bold: Ctrl+B Left aligned: Ctrl+L Underline: Ctrl+U Center aligned: Ctrl+E Italic: Ctrl+I Right aligned: Ctrl+R Increase font size: Ctrl+Shift+< Justified: Ctrl+J Decrease font size: Ctrl+Shift+> Paragraph Formatting Formatting of paragraph includes the following: 1. Indentation of paragraph 2. Alignment of paragraph 3. Changing Line spacing 4. Tabs 5. Bullets and numbering To do the above you need to choose the Paragraph option under the Format menu. When you click on the Paragraph option you will be able to see the following dialog box: Figure 7.19
163 Microsoft Word 2000 I n d e n t a t i o n o f P a r a g r a p h Indent is the space left blank within the page margin. You can indent your paragraph from the left and right margins. You can also create first-line indent, which indents only the first line of a paragraph, or a hanging indent, which indents all the lines in a paragraph except the first one. Indentation can be set in various ways: Indentation through Paragraph dialog box Indentation through Paragraph dialog box is probably the best method for you. You have to follow the following steps: 1. Click in the paragraph which you want to indent. 2. Select Paragraph option under Format menu. This will bring up the above dialog box. 3. Click the Indent and spacing tab. 4. Under Indentation, type the measurement that you want to indent the paragraph in the Left or Right text boxes. 5. Click OK button. Figure 7.20 Indentation through Increase Indent and Decrease Indent button If you want to set left indent at a half-inch increment on the ruler, you can do it through the increase indent and decrease indent buttons on the formatting toolbar. Right Indent Increase Indent Decrease Indent Left Indent First Line Indent Hanging Indent First Line Indent Left Indent Hanging Indent Right Indent
164 Basic Computer Skills 1. Click in the paragraph you want to indent. 2. Click the Increase indent button to increase indent and Decrease Indent button to decrease the indent. Set an Indent with Indent Marker Follow these steps to set an indent by dragging the indent markers. 1. Click in the paragraph that you want to indent. 2. Point to the indent marker that you want to use. 3. Drag the indent marker to the right spot on the ruler, and release the mouse button.

Alignment of Paragraph Alignment refers to the way the right and left edges of a paragraph line up along the right and left margins of your document. Word gives you four alignment choices-left, centered, right and justified

as shown in figure 7.21. Figure 7.21 By default word takes left alignment. To change the alignment of the paragraph

you have to perform the following steps: 1. Click on the paragraph in which you want to change the

alignment. 2. Bring up the Paragraph dialog box as stated above. 3. Choose the alignment from alignment drop down list box: 4. Press the Ok button. You can do the alignment with the alignment button in format toolbar.
165 Microsoft Word 2000 Changing Line Spacing Figure 7.22 Line space is the space between two lines in a paragraph. By default it is single-spaced. To change the line space, perform the following steps: 1. Click the paragraph in which you want to change line spacing. 2. Bring up the Paragraph dialog box. 3. In the line spacing list box select the space you want in between the lines or write the number in the text box if you want to choose the last three options under the Line spacing list box. 4. Click the Ok button. Tabs Tab is a position you set for placing and aligning text on a page. Microsoft Word has four kinds of tab stops, as shown below. Left text extends to the right from the tab stop. Center text is centered

until the tab's space is filled, and then the text extends to the right. Decimal number before the decimal point extends to the left, and number after the decimal point extends to the right. Bar tabs generates a bar.

166 Basic Computer Skills Figure 7.23 To Set the Tabs 1. On the Format menu, Click Tabs option. Figure 7.24 2. In the Tab stop position box, type the position for a new tab, or select an existing tab stop. 3. Under Alignment section, select the alignment for text typed at the tab stop. 4. Under Leader, click the leader option you want, and then click set. Bullets and Numbering Word's bulleted and numbered list features add the bullets or numbers in your document, and they create hanging indents so that when text in an item wraps to the next line, it

167 Microsoft Word 2000 doesn't wrap underneath the number of bullet. Word enables you to create single level lists as well as multilevel lists. Single Level Lists Single level lists are shown below in the Figure 7.25. Figure 7.25 Follow these steps to create a single-level bulleted or numbered list: 1. Click where you want to start a list. 2. Click the Bullets and Numbering button in the Formatting toolbar 3. Type the first item in the list and press Enter. Word automatically inserts a bullet or number on the next line for you. 4. After the last item press Enter twice to turn off the bullets or numbers. Instead of turning on the bulleted or numbered list feature and then typing the list, you can also type the list first, select it, and then click the Bullets and Numbering toolbar button. Changing the Appearance of Bullets and Number Changing the Appearance of Bullets To change the appearance of the Bulleted list you have to follow these steps. 1. Click where you want the bulleted list to start. 2. Click on the Bullets and Numbering option in Format menu to display the Bullets and Numbering dialog box. Bulleted Numbered

168 Basic Computer Skills Figure 7.26 3. If you don't want to use a bullet given in the dialog box, click any of the seven gallery positions (Other than None), and click the Customize button to display the Customize Bulleted list dialog box. Figure 7.27 4. Click the Bullets button to display the Symbol Dialog box. Select the desired symbol or choose the others from the font list.

169 Microsoft Word 2000 Figure 7.28 5. Click the OK button. Change the appearance of Numbering in Number list 1. Click where you want the numbered list to start. 2. Choose Bullets and Numbering option from the Format Menu. Figure 7.29 3. If you don't see the Numbering that you want to use, click any of the gallery positions other than None and click Ok button, or click the customize button to display the Customize Numbered List dialog box.

170 Basic Computer Skills Figure 7.30 4. If you want to revise the format of the numbers, type the change in the Number Format text box. Choose the Number style from Number Style list box etc. when you finish click OK button. Creating Multilevel List Outline numbered list A list can be created by using the Bullets and Numbering command (Format menu) to apply a hierarchical structure to any list or document, including a legal or technical document. A document can have up to nine levels, and Microsoft Word does not apply built-in heading styles to the items in the list. Figure 7.31

171 Microsoft Word 2000 Create an Outline Numbered List Outline numbered lists can have up to nine levels. 1. On the Format menu, click Bullets and Numbering, and then click the Outline Numbered tab. 2. Click a list format that does not contain the text "Heading 1", and then click OK. 3. Type the list, pressing ENTER after each item. 4. To move an outline numbered item to the appropriate numbering level, do one of the following as in Figure 7.32 below: Figure 7.32 To demote the item to a lower numbering level, click anywhere in the item and click Increase Indent. To promote the item to a higher numbering level, click anywhere in the item, and click Decrease Indent. Borders and Shading When you draw an object, it automatically appears with a border around it - a thin line that defines its shape. You can also add borders to text, paragraphs, pictures, and important art. You can change or format a border in the same way you change or format a line. Follow these steps to add borders and shading to your text:

172 Basic Computer Skills Figure 7.33 1. Click on the paragraph or text around which you want border. 2. Click the Borders and Shading option of Format menu. You will find the following dialog box. Figure 7.34

173 Microsoft Word 2000 3. Select Setting, style, color and width of the border. 4. For shading click the Shading tab. Figure 7.35 5. Choose the desired shade from the fill box and select style. 6. Press the OK button. You can also do it with the help of format toolbar

Figure 7.36
174 Basic Computer Skills

Figure 7.37 4. Leave the mouse button. Adjust Column width and Add a Vertical Line between Columns 1. Click anywhere in the column-text. 2. Choose Column option from Format menu to display the column dialog box. Figure 7.38 3. Select the preset that you want for the column. 4. If you have specific requirements for column widths, fill it into the Width and spacing and fill the Number of columns box.

175 Microsoft Word 2000 5. Check the Line between check box to insert a line between two columns. 6. Press Ok Button. Background and Themes Background and Themes are used to create a web page in Word. To apply themes follow these steps: 1. Click on the Theme option under Format menu. Figure 7.39 2. Select the desired theme 3. Press Ok Button Working with Style

A style is a set of formatting characteristics that you can apply to text in

your document to quickly change its appearance. When you apply a style, you can apply a whole group of formats in one simple task. For example, you may want to format the title of a report to make it stand out. Instead of taking three separate steps to format your title as 16 pt, Arial, and center-aligned, you can achieve the same result in one step by applying the Title style. When you start Microsoft Word, the new blank document is based on the Normal template, and text that you type uses the Normal style. This means that when you start typing, Word uses the font, font size, line spacing, text alignment, and other formats

176 Basic Computer Skills currently defined for the Normal style. The Normal style is the base style for the Normal template, i.e. it's a building block for other styles in the template. There are a number of other styles besides Normal available in the Normal template. A few basic ones are shown in the Style list on the Formatting toolbar. You can preview and select others in the Style dialog box (Format menu, Style command). Figure 7.40 Advantage of Using Styles 1. Styles can dramatically reduce the time it takes to format a document often by 90% or more. 2. Styles can also help you make sure all your documents look consistent, with very little effort on your part. 3. If you export your word document to a desktop publishing program, most programs can use Word styles to help automate their work. 4. If you need to change the way your styled document looks, you need to change only a few styles, not hundreds of manual formats. 5. It's much easier to take advantage of Word's powerful automation and organization features if you use styles. For example, word can automatically build and update a table of contents based on the styles in your document. Without styles, you would have to manually apply a field to every single item you want to include in your table of contents.

177 Microsoft Word 2000 Ty p e s o f S t y l e Style can be set in two types: 1. Character based style 2. Paragraph based style Character Based Style A character style affects selected text within a paragraph, such as the font and font Style size of text, and bold and italic formats. Characters within a paragraph can have their own style even if a paragraph style is applied to the paragraph as a whole. If you want to give certain types of words or phrases same kind of formatting, and the formatting isn't in an existing style, you can create a new character style. Paragraph Based Style A paragraph style controls all aspects of a paragraph's appearance, such as text alignment, tab stops, line spacing, and borders, and can include character formatting. If you want a paragraph to have a particular combination of attributes that aren't in an existing style (for example, a bold, italic, center-aligned heading in the Arial Narrow font), you can create a new paragraph style. Apply a Different Style 1. Do one of the following: ? To apply a paragraph style, click the paragraph or select the group of paragraphs you want to change. ? To apply a character style, click the word or select the words you want to change. 2. In the Format menu, click Style. 3. In the Styles box, click the style you want to apply, and then click Apply. If the style you want is not listed, select another group of styles in the List box. A paragraph mark appears to the left of each paragraph style. A bold, underlined letter "a" appears to the left of character styles. Create a New Character Style 1. On the Format menu, click Style.

178 Basic Computer Skills Figure 7.41 2. Click New, the following dialog box will appear: 3. In the Name box, type a name for the style. 4. In the Style type box, click Character. 5. Select the other options you want, and then click Format to set attributes for the style. Figure 7.42 6. Click Ok button.

179 Microsoft Word 2000 Create a New P aragrap h Style The quickest way to create a new paragraph style is to format a paragraph, select it, and then base the new style on the formatting and other properties applied to the selected text. 1. Select the text that contains the formatting you want to use for your new style. 2. On the Formatting toolbar, click inside the Style box. 3. Type over the existing style name to create the name for the new style. 4. Press ENTER. Mo di f y a Styl e 1. On the Format menu, click Style. 2. In the Style box, select the style you want to modify, and then click Modify. 3. Click Format, and then click the attribute - such as Font or Numbering - you want to change. Figure 7.43 4. Click OK after you've changed each attribute, and then repeat for any additional attributes you want to change.

180 Basic Computer Skills MS-Word is equipped with a number of software tools and utilities that enhance the user's work and provides extra word-processing power to the user. They help users make their work accurate and faster. These tools and utilities are grouped into Tools menu bar of the Ms-Word as shown in the figure below. Figure 7.44 S p e l l i n g a n d G r a m m a r This utility, as the name suggests, helps users identify spelling and grammatical mistakes in the document. Moreover, it offers suggestion(s) for possible corrections, from which users may choose the right one. For this MS-Word maintains internal dictionaries. At one time one dictionary is active. Online Spelling and Grammar Checking As you type, Word automatically checks your document and underline possible spelling and grammatical errors. Spelling errors by default are underlined in RED color and grammatical errors are underlined in GREEN. Note that the incorrectness of a word only means that the particular word is not available in the active dictionary. To correct the Spelling of words and Grammar: 1. Right click at the word to check. A context menu will appear with a list of suggested correct spellings nearest to the word concerned. It also has a list of command options. 2. Select the best suitable spelling or grammar. The misspelt word is replaced by the word you chose. 3. If you think that the word you typed is correct then you would like to add it in the active dictionary so that Word will treat it as correct word thereafter. You can add that word in the active dictionary using Add option.

181 Microsoft Word 2000 Figure 7.45 4. If you don't want to add the word and yet you want Word not to treat it as incorrect, you can ignore it. Usi ng the Spe l li ng and Grammar Chec ke r The spell checker lets you check the spelling and grammar of an entire document all at once. You won't really need to use it if you use automatic spelling checking to fix your spellings. However, if you are working on a rather larger document, the spelling and grammar checker comes handy. To check your document with spelling and Grammar checker: 1. Click on the Spelling and Grammar button of Format toolbar, or Spelling and Grammar option on Tools menu, or press F7 key. Spelling and Grammar Spelling and Gram m ar Figure 7.46 2. MS-Word will bring you the following dialog box with the first error it encounters within the red color text and the suggestions in the next window. 3. Sometimes, Word doesn't offer the correct spelling or the grammar for a misspelt word. If this happens, select the word in the top half of the dialog box and type the correct grammar or the word there. 4. If the word is rightly spelled, then click the Add button to add it to the dictionary.

a. Microsoft Word is a _____ based word processing application. b. File or document related oprations can be performed through _____ menu.

Microsoft Excel 2000 U N I T 8 I N T R O D U C T I O N

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To start Excel: 1. Click on the Start button at windows taskbar. 2. Select

Programs option 3. Select Microsoft Excel option. Figure 8.1

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Introduction ? Components of Excel Window ? Start Working with Menu Options ? Data Entry and Editing ? Reversing/Reapplying Commands ? Find, Replace and Goto Options ? Working with Toolbars ? Resizing of Columns and Rows

186 Basic Computer Skills Clicking on this option will open up the Microsoft excel and you will see the following screen: Figure 8.2 C O M P O N E N T S O F E X C E L W I N D O W A normal Excel window has the following components. 1. Title Bar 2. Menu Bar 3. Standard Toolbar 4. Formatting Toolbar 5. Status Bar 6. Formula Bar 7. Cell 8. Rows 9. Columns 10. Name box 11. Help Assistant 12. Scroll Bars 13. Worksheets

187 Microsoft Excel 2000 Figure 8.3 Function of

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Various Components of Microsoft Excel Functions of various components of Microsoft Excel is given below: 1. Title

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Title Bar: Title bar shows the name of the document and is situated in the top of the window application. 2. Menu Bar: Menu bar contains various commands under various topics to perform some special tasks. Menu bar is located below the title bar 3. Standard Toolbar: Toolbar is nothing more than the shortcuts of different Menu options to execute or perform the menu options in the easier and faster way. Standard toolbar contains icons for the Excel's most frequently used commands. 4. Formatting Toolbar: Formatting toolbar contains the various

short cut icons for

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the commands related to the formatting of the document. 5. Status Bar: It displays the positioning of the cursor, displays the status of some important keys of keyboard, shows the messages for the toolbar button when a mouse points to it, displays messages for menu option when a menu option is selected or pointed out by a user. 6.

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Formula Bar: Formula bar shows you the formula instead of the result whenever you click on a cell in which you have a formula. 7. Rows: Rows are combination of all the cells joined together in

a

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single horizontal line. An Excel workbook has maximum 65,536 rows in a worksheet 188 Basic Computer Skills 8. Columns: Columns are combination of all the cells joined together in

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single vertical line. An Excel workbook has maximum 256 columns in a worksheet 9. Cell: A Cell is an intersection of

a row and a

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column. It is used to store data. There are 65536 x 256 = 16777216 cells in a single worksheet. 10. Name Box: This box shows the name or the address of the currently active cell. 11. Office Assistant: Office assistant provides you online help

and

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real-time tips while working. 12. Scroll Bars: There are two scroll bars The scroll bar is used to move the Worksheet in either directions.

i. Horizontal Scrollbar ii. Vertical Scrollbar 13. Worksheets: As the

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name suggests, it is the working area in which you can work. Each worksheet of a single workbook has its own identity

and is

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separate from other worksheets. The maximum limit of the worksheets in a workbook is 255.

S TA R T W O R K I N G W I T H M E N U O P T I O N S The eight menus in the Excel 2000 are 1. File Menu 2. Edit Menu 3. View Menu 4. Insert Menu 5. Format Menu 6. Tools Menu 7. Data Menu 8. Window Menu 9. Help Menu We will discuss each of the menus in different unit. To start with here is the

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File menu. File Menu To open a new workbook: 1. Click on the File Menu (Figure 8.4) 2. Select option New or press Ctrl+N.

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To open a new workbook: 1. Click on the File Menu (Figure 8.4) 2. Select option New

You will get the following window (Figure 8.5)
189 Microsoft Excel 2000 Figure 8.4 Figure 8.5 3.

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Click the OK Button. Now you will get a fresh new workbook to work on.

Figure 8.6
190 Basic Computer Skills To Save

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a Workbook 1. Click on the File-<save option. OR Press Ctrl+S OR Click the Save Button on standard toolbar If you are saving the file for the first time the, Save as window will appear. 2. Choose the appropriate folder from Save in combo box. Figure 8.7 3. Write the proper file name in the File name text box 4. Press the Save button Save and Save As options do the same work of saving a document

if you are saving the document for the first time.

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The difference between both options is that the Save as command every time gives you the Save as dialog box and you can save the file with different name also, but the Save option gives you the Save As dialog box when you are saving the document for very first time. Next time it will save the document with the previous name without showing any dialog box.

You can also set password and some other options by clicking the Tools drop down list in save as dialog box. Clicking on the General option window will give you the following dialog box: Figure 8.8

191 Microsoft Excel 2000 Options you can Set 1. Password to open: If you set the Password to open then it will restrict any unauthorized user to open a workbook. Setting the Password to open option will ask the user for the password when anyone tries to open the document. 2. Password to modify: Password to modify will decide if to allow the user to modify a workbook or not. If user knows the password he/she will be allowed to work on workbook and can make the changes. The user who doesn't know the password to modify but knows the password to open can only read the workbook but can't make any change. 3. Always create backup: Checking this option will result in a backup copy of the workbook when it is saved.

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Opening an Existing Workbook To open an existing workbook following steps are required: 1. Select the Open option from the File menu OR Press Ctrl+O OR Click on the Open tool from the standard toolbar Then the open dialog box will appear

as shown in Figure 8.9. Figure 8.9 2.

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Select the appropriate folder from Look in combo box. 3. Select the required file from the file window OR Write the required file's name in the File name window 192 Basic Computer Skills 4. Click on open button on the right hand side OR Press Enter Closing

Document

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To close an already opened workbook just choose the close option from

the file menu but keep it in your mind that the only current window or document will get closed because the

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Microsoft Excel works in MDI (Multi Document Interface) environment unlike notepad which works in SDI(Single document interface).

Save as Web Page Save as Web page option will save the Excel workbook in the Web page format i.e., in the html format with the extension of .htm. You can view it in the web browser. To save a Workbook as a Web page follow the following steps: 1. Click on the File Menu. 2. Choose the Save as Web page option. It will show you the following dialog box. Figure 8.10 3. Select the option what you want - to save Entire workbook or Selection. 4. Change the Title by clicking on the Change Title button. 5. If you want to save it click on the save button. But if you want to publish it, click on the Publish button. 6. If you have chosen the publish button then the following dialog box will appear.

193 Microsoft Excel 2000 Figure 8.11 Note: The difference between saving a file or publishing a file is that saving a file saves the file only in html format. But publishing a file means it not only saves the workbook but also any other object you have inserted in the workbook e.g. picture, sound etc. 7. You can choose the item you want to publish from the Choose combo box. 8. Click the browse button if you want to change the path of publishing file. 9. Click on publish button after finishing off. This will save your file in appropriate folder. Figure 8.12 10. Open the file from windows explorer to see the result.

194 Basic Computer Skills Web Page Preview Web page preview will make you able to see how your document will look like on the web browser before saving it as web page or before publishing it. Save Workspace By creating a workspace file you can open a group of workbooks in one step. A workspace file saves information about all open workbooks, such as their locations, windows size, and screen positions. When you open a workspace file by using open command, Microsoft Excel will open all workbooks saved in the workspace. The workspace file does not contain the workbooks themselves, and you must continue to save changes you make to the individual workbooks. 1. Open all the workbooks that you want to open as a group. 2. Size and position the workbook windows, as you want them to appear the next time you use the workbooks. 3. On the File menu, click Save Workspace option. The following dialog box will appear: Figure 8.13 4. Give a suitble name to the Workspace and Press Ok button.

Page Setup From the Page setup option, one can setup the page layout according to his work.

To use

the Page setup option you have to perform the following steps: 195 Microsoft Excel 2000 1. Click on the Page setup option from the file menu then

the following

window will appear: Figure 8.14 2. Select the page Orientation from Portrait or Landscape options. 3. Setting the Adjust to scaling option will reduce or enlarge the printed worksheet. Select the Adjust to check box, and then enter a percentage number in the % normal size box. You can reduce the

size of worksheet to 10 per cent of its normal size or enlarge it to 400 per cent of its

normal size. 4. Change the value in Fit to option to fit the worksheet or selection you

want to print in

the specified number of pages. Select the Fit to check box; enter a number in the page(s) wide by box; and enter a number in the tall box. To fill the paper width and use as many pages as necessary, type 1 in the pages(s) wide by box and leave the tall box blank. 5. Select the Paper size 6.

Click on the Margins tab to set the Margins. You will find the following dialog box (Figure 8.15): Figure 8.15 196 Basic Computer Skills 7. Adjust different margins or apply different options from the margins tab i. In the

top option enter the distance you want between the top of the page and the first line on the page. ii. In the Bottom option enter the distance you want between the bottom of the page and the last line on the page. iii. In the Left option enter the distance you want between the left edge of the page and the left edge of unindented lines. iv. In Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent. v. In Header option enter the

enter the distance you want between the top of the page and the first line on the page. ii. In the Bottom option enter the distance you want between the bottom of the page and the last line on the page. iii. In the Left option enter the distance you want between the left edge of the page and the left edge of unindented lines.

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Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent.

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Header option enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Excel prints the body text below the header. vi. In Footer option enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Excel stops printing the body text above the footer 8.

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distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Excel prints the body text below the header. vi. In Footer option enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Excel stops printing the body text above the footer 8.

Click on the Header/Footer tab to set the header and footer for the Worksheet. You will find the following dialog box. Figure 8.16 9. Set the header by clicking on the Custom Header button. 10. Set the footer by clicking on the Customer Footer button.

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Print Option For taking the printout, you have to select the print option of the file menu. After selecting the print option from file menu the window given below will appear. You can set various options before taking printout. 197

Microsoft Excel 2000 Figure 8.17 i.

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From the Name combo box you can select the printer if

there are more than one printers installed on your system. ii.

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You can select the range of pages i.e. all pages or current page or number of pages you require from Print range frame. iii From the print what option you can choose which part of a worksheet you want to print i.e. some selection or Entire workbook or active sheets only. iv. You can choose number of copies

to be printed from Number of copies option under Copies frame. D ATA E N T R Y A N D E D I T I N G
A cell contains the data entered by you. At any time, one cell is always highlighted which is called the currently active cell. The address of this currently active cell is shown in the 'Name' box, which lies in the upper left corner of the screen, exactly above the column letter A. You can place your data in any portion of the worksheet. Move your cell pointer wherever you want to enter your data,
in any portion of the worksheet. You can select
the cell either with the help of mouse pointer or you can move to that particular cell with the help of arrow keys. Similarly, in order to select a group of continuous cells, take your mouse pointer
to
the cell from where you want your range to start. Click at that cell and then drag your mouse pointer diagonally to the opposite corner, release the mouse pointer when the desired range is selected. All the cells in the range become selected and highlighted. Range Operations There may be a situation when you have to perform a task on a single cell. Performing this action is very simple. Just put the cursor on the cell and perform the task. But

198 Basic Computer Skills consider the situation when you have to perform the same action with a group of cells. Lets take an example of deleting data in a group of cells. One way to delete text in all cells is that you can go to each cell and press the >del< key until the entire text is deleted. But this is very tedious job to perform. A better solution for this is to entire the range of the cells and then perform the action on the whole group of cells with single command i.e. if you want to delete the text of entire range, then select the range of the cells and press >del< key only once. Making Range of the Cells Selection of cells (or creating range of cells) can be performed in the following ways. 1. Selecting a group of cells 2. Selecting a row 3. Selecting a column 4. Selecting the whole worksheet To select a group of cells: i. Place the mouse pointer on the first cell from where you want to start the range Figure 8.18 ii. Press the left button of mouse and drag it till the last cell up to which you want the range OR Place the cursor on the first cell from where you want to start the selection and then press shift+arrow key till the last cell up to which you want the range (Figure 8.18). To Select a row: i. Point the mouse pointer on the row number. ii. Click the left mouse button only once.

199 Microsoft Excel 2000 Figure 8.19 To select a Column i. Point the mouse pointer on the column Name. ii. Click the left mouse button only once. Figure 8.20 To select entire worksheet i. Point the mouse pointer on the common point of row and column i.e. before starting of rows and before starting of columns. ii. Click the left mouse button only once. Figure 8.21

200 Basic Computer Skills R E V E R S I N G /R E A P P L Y I N G C O M M A N D S Undo

To reverse changes while editing undo command is used. To undo you can i. Click on the Undo option under Edit menu OR

ii.

Click on the Undo button on Standard toolbar OR iii. Press Ctrl+z. Redo If an undo has to

be performed on the

last reversed action, this is known as Redo. To perform redo you can: i. Click on the Redo option under Edit Menu OR ii. Click on the Redo button on Standard Toolbar OR iii. Press Ctrl+y

Cut and Paste Cut and Paste operations are used to move
the Contents of a cell or a range of cells to some other
location. To move the text, first we have to cut the text from its current location and then we have to paste it at the desired new location. The procedure to move the text is being discussed in the following steps: To cut text or cells: i. Select the cells or make the range of the cells as required ii. Select cut from

Edit menu OR Click on the cut button of standard toolbar OR Press

the ctrl+x button OR Place the mouse pointer on the selected text, click right mouse button and select cut from the context menu as shown in the Figure 8.22:
201 Microsoft Excel 2000 Figure 8.22 To Paste the Selection i. Place the cursor at the location where the text is to be pasted ii. Select Paste from Edit menu OR Click paste button on the standard toolbar OR Press Ctrl + v Or Place the cell pointer on the first cell of the new locatin. Click the right mouse button and select paste from the context menu as shown in the Figure 8.23: Figure 8.23
202 Basic Computer Skills Copy and Paste

Copying means duplicating the contents of the document at some other desired place. The procedure for copying text is almost the same as that of moving text with a little difference, which is being discussed in following steps:

To copy a particular text i. Select the cell or make the range of the cells ii. Select copy from

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Edit menu OR Click on the copy button of standard toolbar OR Press

the ctrl + c button OR Place the mouse pointer on the selected text, click right mouse button and select copy from the context menu as shown in Figure 8.24. Figure 8.24 Paste operation is same as described in the cut and paste section F I N D R E P L A C E A N D G O T O O P T I O N S Find Sometimes while working on a Worksheet you need to find a particular text. This is how you can find a particular text:
203 Microsoft Excel 2000 i. In

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the Edit menu, click Find. Find what dialog box will appear (Figure 8.25). ii. In the Find what box, enter the text that you want to search for. iii. Select the direction of search from Search list box. iv. Select any other options that you want. Match Case: To find the characters that are a word by themselves and are not a part of another word. Find Entire Cell Only: To find the characters that are

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In the Find what box, enter the text that you want to search for.

contained in a single cell and not spread over multiple cells. Figure 8.25 v. For Help on an option, click the question mark and then click the option. vi. Click Find Next. vii. If you want to

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find similar word again in the rest of the document click on the Find next button. Replace If you have to replace a word in the document with another word you can use find and replace command

to do that. i. On the Edit menu, click Replace. A dialog box will show up. ii.

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In the Find what box, enter the text that you want to search for.

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the Find what box, enter the text that you want to search for. iii. In the Replace with box, enter the replacement text. iv. Select other options that you want. 204

Basic Computer Skills v. For Help on an option, click the question mark and then click the option. vi

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Click Find Next, Replace, or Replace All. vii To cancel a search in progress, press ESC. Figure 8.26 Goto To go to a particular location or particular item use Goto option under the Edit menu.

Steps to do so are as follows: 1.

Figure 8.27

205 Microsoft Excel 2000 2. Enter the parameter as page number or cell name in the reference text box. 3. Click on the Ok button. Fill in a Series of Numbers, Dates or other Items (A utoFil l) 1. Select the first cell in the range you want to fill, and then enter the starting value for the series. To increment the series by a specified amount, select the next cell in the range and enter the next item in the series. The difference between the two starting items determines the amount by which the series is incremented. 2. Select the cell or cells that contain the starting values. 3.

Drag the fill handle over the range you want to fill.

To fill in increasing order, drag down or to the right. To fill in decreasing order, drag up or to the left. Figure 8.28 Note: Fill handle : ? The small black square in the corner of the selection.

When you point to the fill handle, the pointer changes to a black cross. To copy contents to adjacent cells or to fill in a series such as dates, drag the fill handle. ? To display a shortcut menu that contains fill options, hold down the right mouse button as you drag the fill handle. ? To specify the type of series, use the right mouse button to drag the fill handle over the range, and then click the appropriate command on the shortcut menu.

206 Basic Computer Skills For example, if the starting value is the date JAN-2002, click Fill Months for the series FEB-2002, MAR-2002, and so on; or click Fill Years for the series JAN- 2003, JAN-2004, and so on. ? To manually control how the series is created, or use the keyboard to fill in a series, use the Series command. 4. In the Step value box, enter the value that you want to increase the series by. In a linear series, the step value is added to the first starting value and then added to each subsequent value. In a growth series, the first starting value is multiplied by the step value. The resulting product and each subsequent product is then multiplied by the step value. 5. Under Type, click Linear or Growth. 6. In the Stop value box, enter the value you want to stop the series at. Clear Command Clear command is used to clear a cell from its contents, format, comments etc. Figure 8.29 1. Format: Clearing format means that if there is any content with some format in the current cell then by issuing clear format command will clear only the format not its contents. The content will remain same as it is but the format of the cell or the format of the content will be cleared. 2. Contents: Clearing content means that if there is any content with some format in the current cell then by issuing clear content command will clear that content only, not the formats. The format remains same as it is but the contents of the cell will be cleared.

207 Microsoft Excel 2000 3. Comments: Clear Comments will clear the comments attached in a cell for reference. 4. All: Clearing All means to clear all i.e. format, content, comments etc., whatever is there in the cell or in the range. Delete Issuing Delete command from Edit menu will allow you four options for deletion. These are: 1. Delete cell and shift the right cell in the place of current cell, which is going to be deleted. 2. Delete cell and shift the left cell in the place of current cell, which is going to be deleted. 3. Delete the entire row. 4. Delete the entire column. Figure 8.30 Delete Sheet Delete sheet command is used to delete the current sheet. Remember that once a sheet is deleted it can't be recovered. So be careful while issuing this command to make sure that you actually want to delete the sheet. Move or copy Worksheet A sheet can be copied or moved to the same workbook as well as to the other workbook. To do this the user has to make use of the Move or copy sheet option from the edit menu.

208 Basic Computer Skills To copy or to move a worksheet, follow these steps. 1. Select the workbook from To book list box in which you want to copy or move the current worksheet. 2. If you want to create a copy of the current work sheet check mark the Create a copy option. Otherwise if you want to move the current worksheet, keep the Create a copy option unchecked. 3. Press OK button. Figure 8.31 Vi e w View menu includes the following options: Figure 8.32

209 Microsoft Excel 2000 There are two different ways to view a work book. 1. Normal view: In this view the entire worksheet is displayed with no reference to pagination. The print area is not specified. 2. Print Layout view: Shows you what data will go on each page and lets you quickly adjust the print area and page breaks. In this view you can see the page number as the background of the page. But it will not appear in the printout. Also in the page break view the view of the page is limited up to the data i.e. up to the position where the data ends. Figure 8.33 Full Screen View If you like working in a completely spick and span environment, you'll like the Full Screen view. To switch to this view, choose Full screen option from view menu. Your document enlarges to cover the entire desktop. The title bar and toolbars in the Excel window are temporarily hidden to give you as much room as possible to see your text. Full screen view of a worksheet is given below. Figure 8.34

210 Basic Computer Skills Zooming the Views The Zoom feature of MS-Excel lets you increase or decrease the size of the display to make the text easily visible. The zoom percentage can be set between 10% and 400% of actual size. To set the zoom percentage either use the Zoom box on the standard toolbar or the Zoom dialog box can be used. To zoom the view using the Zoom box on the Standard toolbar: 1. Display the Standard toolbar if it isn't visible, using the Toolbars command from the view menu. 2. Click the drop-down control of the Zoom box to display a list of zoom percentage. 3. Select a percentage from the list or type a different percentage in the Zoom box as shown in figure Figure 8.35 W O R K I N G W I T H T O O L B A R Toolbar is a quicker way to issue a command. Excel comes with 14 toolbars. By default it displays only two toolbars i.e. standard toolbar and formatting toolbar. One can display any toolbar from the other fourteen toolbars or can hide any toolbar. To display or to hide a toolbar

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you have to perform the following steps. 1. Click on the

view menu. 2. Select the Toolbar option 3. This will display all the toolbar names. Toolbars that are currently displayed have check marks in front of them and those, which are hidden, don't have any check mark. 4. Check mark the toolbar name which you want to view.

211 Microsoft Excel 2000 5. Remove the check mark from toolbar name, which you want to hide. Figure 8.36 With the format menu one can give a new format to cell, row, column or even worksheet and can have control over how they are displayed or behave. Options of format menu are given below. Figure 8.37 Formatting Cells Different Cell Formats Format a cell entry in a particular number format. To give a particular number format to a cell i. Select a range of cells on which you want to apply a number format. ii. Choose Cell option from format menu.

212 Basic Computer Skills Figure 8.38 iii. Select the number format you want to apply on the cells or a range of cells. iv. Adjust the Decimal places. v. Select the other settings. vi. Preview of the number can be seen from Sample Frame. vii. Click on the Ok button. Formatting Alignment of the Cell To change the Alignment of the cell follow the following steps. i. Select the cell on which you want to change the alignment. ii. Click on the Cell option from format menu. iii. Select the Alignment tab. Figure 8.39

213 Microsoft Excel 2000 iv. Set the vertical and horizontal alignment. v. Select the orientation of the Text, e.g. set it to 45 degrees. Then the selected cell's text will rotate to 45 degrees upward. Figure 8.40 vi. In the option you can select the wrap text to make the text to fit in one cell only if it is going outside the cell. It will adjust the text in one cell and in multiple lines. Figure 8.41 vii. To fit the text within the cell without wrapping you have the option of shrinking text. It will shrink the text within the cell. viii. To merge two or more cells select the cells and check mark the merge cell option and press Ok button.

214 Basic Computer Skills Change the Formatting of the Text The format of the text (i.e. font, font size, font color, font style etc.) can be changed as desired. To change the formatting of the text i. Select the cells in which you want to format the text. ii. Select the Cell option from Format menu. iii. Select the Font tab. iv. Select the options you want to change. v. Click on the Ok button. Figure 8.42 Formatting the Border Settings To change the format of the border of the cells i. Select the cells for which you want to change the border formatting. ii. Choose the Cell option from the Format menu. iii. Click on the Border tab. Figure 8.43

215 Microsoft Excel 2000 iv. Select the desired border and border styles. v. Click on Ok button. vi. Do it again with other cells until your task gets completed. Changing the Pattern of the Cell To change the pattern of the cell i. Select the cells for which you want to change the pattern. ii. Choose the Cell option from Format menu. iii. Select the Pattern tab. Figure 8.44 iv. Select the color and the pattern of the cells. v. Click on the Ok button. Figure 8.45

216 Basic Computer Skills Resizing of Columns and Rows Resizing of Row Height Sometimes it is needed to change the row height according to the text due to certain reasons. To change the row height

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you have to follow these steps: 1. Put the cursor on the cell

whose row's height you want to change. 2. Drag the boundary below the row heading until the row is the height you want. Or Select the height option from row option of format menu. Figure 8.46 3. Fill in the row height manually. Figure 8.47

217 Microsoft Excel 2000 4. Press the OK button. The other options in row option of format menu are 1. Fit the contents: To make the row height fit the contents, double-click the boundary below the row heading. 2. Hide and Unhide the rows: Some times you may need to hide particular rows. To do so you have to follow these steps: i. Select the rows which you want to hide ii. Choose the option Row under Format menu. iii. Select the Hide option Figure 8.48 iv. After clicking the hide option the rows will be hidden. Figure 8.49 v. To again unhide these rows select the respective row and click on unhide option.

218 Basic Computer Skills Resizing Column Width 1. Drag the boundary on the right side of the column heading until the column attains the width you want. Or 2. Manually change the width: To manually change the width, select the column, point to Column in the Format menu, click Width, and then enter a number in column width manually. Figure 8.50 The result will be: Figure 8.51 3. Fit the contents: To make the column width fit the contents, double-click the boundary to the right of the column heading. To do the same for all columns on the worksheet, click the Select All button, and then double-click a boundary to the right of one of the column headings.

219 Microsoft Excel 2000 4. Copy a width: To copy the width of one column to another, select a cell in the column, click Copy on the Standard toolbar, and then select the target column. In the Edit menu, click Paste Special, and then click Column widths. AutoFormat Microsoft excel provides you some predefined formats of the table that be can applied to your cells. To select the predefined formats of a table, perform the following steps: 1. Select the range to provide auto format 2. Click the Format 3. Select the option AutoFormat. Figure 8.52 4. Select the format you want. 5. Select the options you want. 6. Press Ok Button. Figure 8.53

220 Basic Computer Skills E X E R C I S E Fill in the Blanks: a. Microsoft Excel works in _____ environment. b. By creating a _____ file you can open a group of workbooks in one step. c. _____ will clear the comments attached in a cell for reference. d. The zoom percentage can be set between 10% and _____ of actual size. Unsolved Questions 1. Differentiate between the Normal, Print and Web views of an Excel2000 worksheet. 2. Describe the protection mechanism in Excel2000. 3. Is there a limitation on number of worksheets in a workbook? If yes how many? 4. Explain the purposes of options available for ptinting a worksheet. How can the worksheet be printed without the cell gridlines? 5. Explain the purposes of Custom header and footer. 6. Can a range of cells formed with non-rectangular selection of cells? How? 7. Differentiate between Clearing content and Clear Format commands. 8. What purpose is served by AutoFill command? 9. Explain the difference between deleting cells and a complete row. 10. Comment on usefulness of Find and Replace commands. 11. Which aspects of a cell or a range of cells may be formatted? 12. Write a short note on formatting of rows and columns. 13. What is conditional formatting? What is the use of conditional formatting? 14. Explain the purpose of auto format?

I N T R O D U C T I O N There is computer in the car you drive, there could be a PC on your desk or your study table at home. The weather report you get daily also involves computer but all of them do not fall into the same category. They are different by means of hardware, software, built purpose and everything. Initially computers were classified on the basis of their size, speed and cost but now there are many more attributes attached to them. Each and every computer must fall in one of the four categories described below: 1. Supercomputer 2. Mainframe computer 3. Mini computer 4. Micro computer Whereas super computers are most powerful and largest, micro computers are the smallest ones. Supercomputers are the most powerful computer available today. It is another thing that microcomputer of 21st century might be as powerful as of super computer of today. Today technology is developing so fast that it has become difficult to predict anything for the future. Although all the above four computers have been around for quite some time but the capabilities of each type have changed tremendously. Supercomputers are highly sophisticated computers used for very special tasks like scientific researches etc. Mainframes are large and expensive and are designed to meet the needs of a large organization. Minicomputers, although smaller than mainframes, are still big enough to cater to a medium sized organization or a small- scale business. PCs or the microcomputers solely cater to individuals. Microcomputers Classification of Computers U N I T 9

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L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

Introduction ? Work Stations and Personal Computers

222 Basic Computer Skills could be PCs or the desktops or laptops or even the notebooks. All the computers around us like those in microwave ovens, washing machines, automobiles etc. are embedded computers which are special purpose and are generally used to perform control functions. Super Computers These are the most powerful computers made till now. They are made to process huge amounts of data. Many users can access them at the same time. They are primarily used for scientific research that are mathematically intensive such as in aerospace, satellites, chemical, electronics, petroleum, nuclear power industries. Supercomputers are used in weather forecasts. It would not have been possible to warn the people around the coastal areas when there would be a hurricane but for a computer. It is because of computers only that such a large scale devastation can be controlled well in time saving human lives of financial and infrastructural resources. Computers are also found in public, private and government research centres such as universities, government labs and R&D departments of organizations. One main area where these supercomputers are used is when nuclear fissionable material approaches a critical mass, the researchers are required to know what is happening at every nanosecond of the nuclear chain
reaction. A supercomputer can monitor the actions and reactions of million of atoms when they interact.
Another main area where supercomputers were used was to find out the pollution in Los Angeles. The model comprised of more than 5,00,000 variables including geographic elevation, temperatures, airborne chemicals etc. and it was required to create an accurate simulation of Los Angeles Basin to decide upon various strategies to be used to control air pollution. This would have taken months with less powerful computers but supercomputers did it in just half an hour. Figure 9.1
223 Classification of Computers The 1st supercomputer was built in 1960's for US Department of Defense. That was supposed to be the fastest and most powerful computer of that time. Millions of dollars are being spent on R&D of the technology enhancement of supercomputers. The main feature of supercomputer is multiprocessing that enables the computer to perform number of operations simultaneously. The first supercomputer had 4 CPUs. Today's supercomputers have hundreds of processors. The speed of supercomputer is measured in nanosecond and gigaflops. Nanosecond (10-9 of a second), Gigaflop (1 billionth floating-point arithmetic operation per second). A supercomputer can perform upto 128 gigaflops. Market and R&D leaders of supercomputers include IBM, Silicon Graphics, Cray Research Corporation, Fuifitsy and Intel, Thinking Machines etc. Thinking Machines has produced a supercomputer called Connection Machine, which has over 64,000 processors. Its price is about $5 million. Supercomputers are priced from $2 million to $20 million and they consume electricity enough to lighten about 100 homes. Mainframes

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The largest type of computer commonly used is mainframes. Mainframe computers are used where many people in a large organization need frequent access to the same information, which is usually organized

information of one or more large databases. After UNIVAC I was sold in 1951, the mainframes caught attention of the computer industry. IBM, the computer giants captured the mainframes market in late 1950's and made their name and money in mainframes market. A mainframe computer system is generally made up of several computers, called terminals (
A terminal is a keyboard and a screen wired to mainframe. It does not necessarily have its own CPU or storage it just Figure 9.2
224 Basic Computer Skills has input and output devices that functions as the windows of the computer placed elsewhere), in addition to the mainframes, or host processor. The host processor is responsible for controlling rest of the processors, operations and the peripheral devices attached to it. A front-end processor is the one who handles communication to and from all the remote terminals connected to the computer system. At times, a backend processor is also used to handle data retrieval operation. Although host computer is capable of doing all the operations by itself but it is still better to have rest two processors to share the load and saving time and increasing speed. Figure 9.3 The mainframe computer has processor that handles input, controls the database and output needs of the terminals attached to it. Each user has access to the contents of database. It is difficult to store such massive amount of data and it would be too slow also. Many modem MFS have multiprocessing capabilities however they are generally limited to 8 or less processor. They are slower than supercomputer and their speed is measured in megaflops and not in gigaflops. Mainframes can cost anything above $35,000.

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It used to be common for mainframe computers to occupy

the

entire rooms or even an entire floor of a high rise building. Typically, they were placed inside glass offices with special air conditioning to keep them cool and on raised floors to accommodate all the wiring needed to tie the systems together. This setup is not used anymore. Mainframes today,

look more like a file cabinet although they still need the same type of environment. These computer can support upto several hundred user simultaneously. It supports all of them by keeping number of programs in primary memory and rapidly switching backs and forth between programs. These operations are so fast that users even do not come to know that it is working on others tasks. This property of processing many tasks concurrently for multiple user's called as "multiprogramming". No one really knows from where this

term mainframe originated from. Earlier IBM documents define the term frame as an integral part of a computers: "the housing .... Hardware supports structures, ... And all the parts and components

there in". It was only when computer of various sizes and shapes came into existence, the big computers were referred as mainframes and eventually became one-word mainframes.

225 Classification of Computers Minicomputers This era started in 1960's when DEC (Digital Equipment Corporation) began shipping its PDB series computer, the press name them as minicomputer because of their small sizes as compared to other prevailing computers. The easiest way to explain minicomputer is that they lie somewhat in between mainframes and microcomputer. They can handle a great amount of data like mainframe. It can also support number of terminals. Although they are also designed for 100's of terminals, but they differ in speed i.e. minicomputers are slower than mainframes and they can not supports as many terminals as a mainframe can. They have less storage capacity and their printers too are slow. They are meant for smaller organizations which can neither afford mainframe's nor do they require such big computer. They range from $18,000 to $50,000. The major manufactures of minicomputers are DEC, Data General, IBM and Hewlett Packard. W O R K S TAT I O N S A N D P E R S O N A L C O M P U T E R S Clients and Ser vers A configuration in which several workstations/PCs are interconnected by a communication network is called a distributed computer system. A common use of distributed computers is the so-called client-server computing. In this mode several specialized-services are provided by servers. For example, there may be workstations providing high speed CPU for numeric intensive programs, another with high speed printers, third with plotters and a fourth with a large disk to store big files. A user having a PC or a smaller workstation may do some local computing, debugging, etc., and may then requisition the services of the other workstations for storing files, providing language translators and carrying out intensive numeric computing. The workstation requisitioning services is called the client and the workstation providing the services is known as a server. Sometimes there are problems requiring either large storage or high speed processing which cannot be solved using it may be single workstation in a network. In such a case it may be possible to get a set of workstations connected in the network to cooperate and solve the problem. In a client-server computer system it often happens that many workstations are not fully utilized; either they are idle because no one is presently logged on or the user may be doing task such as editing or word processing which does not use the available computing power. In such a case a user requiring more CPU resources than what he has in his workstation can steal CPU cycles from idle processors to do his job. Software systems have been designed which permit this. The client-server computing system allows only one message to be communicated between two computers at a time. The network is usually a Local Area Network.

226 Basic Computer Skills When working on minicomputer and mainframes through the terminals, the users can just control the input and output of the computer. Whereas a single user computer gives you the power of controlling the total processing cycle i.e. input and output, processing and storage, you can select your own programs and do not need to be dependent on mainframes or mini's for storage. They are designed to meet the needs of an individual and thus called as Personal Computer also. Terms PC and microcomputers are interchangeable. When we talk about computers today, we generally mean a PC or a microcomputer. Microcomputers have a great impact on the computer industry. Till 1975, they did not even exist and in 1995 the sale of PC was $16 billion. Microcomputers are the fastest growing segment of computer industry. One of the sources of the PC's popularity is the rate at which improvements are made in the technology. As the technology is growing, microprocessor, memory, chips and storage devices keep getting faster and better and bigger. Today, a typical PC (

of the same price as 90 years ago) has 8 times as much RAM, 150 times more storage capacity and a microprocessor

that is at least 100 times faster than a PC 10 years earlier. Analysts believe that the pace of this growth will be same for another 20 years. In 1981, IBM called its first microcomputer the IBMPC. Within few years there were many more companies in the race to design computer compatible to IBMPC. Thus the term IBMPC became the name of the family of computer that included IBM's and IBM compatibles. The vast majority of computers fall in this family except Apple Macintosh. It is another family of microcomputer made by Apple computer. It is appropriate to say that Macintosh is personal computer but not a PC. Presently IBM has about 28 percent of the market where as Apple holds about 8 percent of market share. Figure 9.4 Few years ago, Apple computers, IBM and Motorola joined to develop the Power PC chip, which enables Apple computer to run IBM applications and vice versa. Most Apple Macintosh computer and compatible computers are based on this chip.

227 Classification of Computers Single computer can actually fall into category of either microcomputer or workstation. A workstation is a powerful desktop computer designed to meet the computing needs of engineers, architects and other professionals, who need graphic display. Workstations are generally used for CAD (Computer Aided Design) applications. For this type of complex programs the computer needs great processing power and much storage. They are also used as services for LANs (Local Area Networks). Workstations are sometimes called "Supermicros". Although they look like desktops but the chip inside is different. Most workstation use RISC (Reduce Instruction Set Computer) microprocessors. RISC processors are used in special purpose applications, where speed is criticle. Now boundary between workstations and PC is becoming less distinct. Today's PCs are better than workstations of past. Pentium pro has multiprocessing capabilities. Most microcomputers support multitasking (enabling the user to switch between the tasks). Multitasking saves a lot of time. The user can open another activity when one activity task is being processed, for example till the computer is down loading one thing in the browser, user can open another window for writing a mail (say notepad) or a calculator to perform some calculation. This not only saves time but rescues also. One style of PC is desktop. These type of computer are small enough to fit on a desk but are too big to carry around. There are number of models in desktops. The cabinets come in flat (horizontal) and vertical (tower model) depending upon the space management of the user. Laptop Computers They were the first portable computer and weighed about 28 pounds. Infact they were called "luggables" initially. As the size reduced the term also changed to "laptop". They weigh about 10 to 12 pounds. The name was probably given because they are used by keeping it on the laps while users are on move (in a car, an airplane or train). Figure 9.5 Notebook Computers As the name suggests, their size is about 8.5 by 11 inch and can easily fit inside a briefcase. They were initially called laptops only but gradually as the size decreased

228 Basic Computer Skills smaller ones were called notebooks. They can be operated on batteries also. They are fully functional microcomputers. They can have input devices Hard Disk Drives, Floppy Disk Drives, a CD-ROM, a modem and an inbuilt mouse. Personal Digital Assistants (PDA's) These are the smallest portable computers and are no bigger than chequebooks. They all also called palmtops. They are not as powerful as notebooks and laptops. They are used for some special applications like keeping record of phone numbers, dates, agendas and calculations. They can be connected with large computer to exchange data. They also come with electronic pen that lets user write on a touch- sensitive screen. The latest PDA's can use infrared light to communicate with nearby computers. They may also have built in fax, cellular phones, faxes and e-mails. Figure 9.6 They are meant for the people who avoid carrying lot of weight and do not need the full collection of applications while away from home or office. These computers use inexpensive batteries. They do not have any disk drivers. They use PC card, a card of a size of credit card, to store programs and data. Notebook and desktop computers now adopt these PC cards also. They are version of smart cards, small cards developed in France. They were earlier used to pay highway tolls, making STD calls, to pay bills etc. A smart card has a microprocessor and a memory chip. Figure 9.7

229 Classification of Computers Embedded Computers Have you ever noticed that computer everywhere surrounds you. Be it your car, kitchen, bathroom, entertainment and everywhere. You start using computers the time you get up in the morning and keep using it till you go off to sleep. These type of computers, which are working inside another machines, are called embedded computers. Cars use computer to control the engine, alarm clocks use these computers and to wake you up VCR and TV's also use computers. The users do not even realize while using these equipments that they are using the embedded computers. E X E R C I S E Fill in the Blanks: a. _____ are used for scientific research etc. b. A mainframe computer system is generally made up of several computers called _____. c. Workstations are sometimes called _____. d. Laptop were the first portable computer and weighted above _____ pounds. Unsolved Questions 1. Define the following: ? Mainframe Computers ? Super Computers ? Micro Computers 2. Write a note on workstation and personal computers.

Hit and source - focused comparison, Side by Side

| Submitted text | As student entered the text in the submitted document. |

Matching text   As the text appears in the source.

| 1/291 | **SUBMITTED TEXT** | 28 WORDS | **88%** | **MATCHING TEXT** | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 2/291 | **SUBMITTED TEXT** | 9 WORDS | **100%** | **MATCHING TEXT** | 9 WORDS |

a set of instructions telling the computer what to do."

A set of instructions telling the computer what to do

W   http://gkvacho.blogspot.com/2018/06/computer.html

| 3/291 | **SUBMITTED TEXT** | 9 WORDS | **100%** | **MATCHING TEXT** | 9 WORDS |

a set of instructions telling the computer what to do."

A set of instructions telling the computer what to do

W   https://kashmirportal.in/computer-mcqs-for-competitive-exams/

| 4/291 | **SUBMITTED TEXT** | 12 WORDS | **87%** | **MATCHING TEXT** | 12 WORDS |

Electronic Numerical Integrator and Calculator (ENIAC) which was the first electronic computer.

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

| 5/291 | **SUBMITTED TEXT** | 16 WORDS | **75%** | **MATCHING TEXT** | 16 WORDS |

Transistorized circuits were smaller, generated little heat, were less expensive and consumed less power than vacuum

Transistorized circuits were much smaller and much more reliable, generated little heat, were less expensive, and required less power than vacuum

SA   Computer Application.pdf (D166063658)

| 6/291 | **SUBMITTED TEXT** | 13 WORDS | **87%** | **MATCHING TEXT** | 13 WORDS |

In 1958, Jack St Clair Kelby and Robert Noyce invented the first IC.

In 1958, Jack St. Clair Kilby and Robert Noyce invented the first IC.

W   https://ebin.pub/objective-computer-awareness-bank-po-and-clerk-examinations-like-ibps-po-amp-cle ...

| 7/291 | **SUBMITTED TEXT** | 13 WORDS | **87%** | **MATCHING TEXT** | 13 WORDS |

In 1958, Jack St Clair Kelby and Robert Noyce invented the first IC.

In 1958, Jack St. Clair Kilby and Robert Noyce invented the first IC.

W   https://dokumen.pub/objective-computer-awareness-bank-po-and-clerk-examinations-like-ibps-po-amp- ...

| 8/291 | **SUBMITTED TEXT** | 12 WORDS | **87%** | **MATCHING TEXT** | 12 WORDS |

Some of the popular third generation computers are- IBM- 360, series, IBM-370 series

some of the popular third-generation computers include IBM-360 Series, IBM-370 Series,

SA Computer Application.pdf (D166063658)

| 9/291 | **SUBMITTED TEXT** | 12 WORDS | **95%** | **MATCHING TEXT** | 12 WORDS |

Automatic programming, computational logic, pattern recognition and control of robots, the processes

Automatic Programming, Computational Logic Pattern Recognition and Control of Robots are the processes,

SA Computer Application.pdf (D166063658)

| 10/291 | **SUBMITTED TEXT** | 13 WORDS | **88%** | **MATCHING TEXT** | 13 WORDS |

Electronic Numerical Integrator and Calculator (ENIAC) which was the first electronic computer. It

SA ITM_B1_U1.docx (D142211551)

| 11/291 | **SUBMITTED TEXT** | 11 WORDS | **100%** | **MATCHING TEXT** | 11 WORDS |

billions of instructions per second and will have unimaginable storage capacities.

billions of instructions per second, and will have unimaginable storage capacities.

SA Computer Application.pdf (D166063658)

| 12/291 | **SUBMITTED TEXT** | 13 WORDS | **89%** | **MATCHING TEXT** | 13 WORDS |

internal architectural design of computers differs from one model to another, however the basic

internal architectural design of computers differ from one model to another. However, the basic

SA Computer Application.pdf (D166063658)

| 13/291 | **SUBMITTED TEXT** | 28 WORDS | **88%** | **MATCHING TEXT** | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 14/291 | **SUBMITTED TEXT** | 13 WORDS | **100%** | **MATCHING TEXT** | 13 WORDS |

Input Unit is used to enter data and instructions into a computer.

Input unit is used to enter data and instructions into a computer.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 15/291 | SUBMITTED TEXT | 14 WORDS | 66% | MATCHING TEXT | 14 WORDS |

The internal architectural design of computers differs from one model to another, however the basic

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

| 16/291 | SUBMITTED TEXT | 17 WORDS | 100% | MATCHING TEXT | 17 WORDS |

is responsible for controlling the transfer of data and instructions among other units of a computer. It

SA   Participant Guide Fundamentals of Computers.docx (D21534911)

| 17/291 | SUBMITTED TEXT | 10 WORDS | 100% | MATCHING TEXT | 10 WORDS |

which are used to store data, instructions and memory addresses (

which are used to store data, instructions and memory addresses

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 18/291 | SUBMITTED TEXT | 109 WORDS | 98% | MATCHING TEXT | 109 WORDS |

Clock Clock is another important component of CPU, which measures and allocates a fixed time slot for processing each and every micro-operation (smallest functional operation). In simple terms, CPU is allocated one or more clock cycles to complete a micro-operation. CPU executes the instructions in synchronization with the clock pulse. The clock speed of CPU is measured in terms of Mega Hertz (MHz) or Millions of Cycles per second. The clock speed of CPU varies from one model to another in the range 4.77 MHz (in 8088 processor) to 266 MHz (in Pentium II). CPU speed is also specified in terms of Millions of Instructions Per Second (MIPS) or Million of Floating Point Operations Per Second (MFLOPS).

Clock: Clock is another important component of CPU, which measures and allocates a fixed time slot for processing each and every micro-operation (smallest functional operation). In simple terms, CPU is allocated one or more clock cycles to complete a micro-operation. CPU executes the instructions in synchronization with the clock pulse. The clock speed of CPU is measured in terms of Mega Hertz (MHz) or Millions of Cycles per second. The clock speed of CPU varies from one model to another in the range 4.77 MHZ (in 8088 processor) to 66 MHz (in Pentium) CPU speed is also specified in terms of Millions of Instructions Per Second (MIPS) or Million of Floating Point Operations Per Second (MFLOPS).

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 19/291 | SUBMITTED TEXT | 58 WORDS | 97% MATCHING TEXT | 58 WORDS |

Memory Unit is that component of a computer system, which is used to store the data, instructions and information before, during and after the processing by ALU. It is actually a work area (physically a collection of integerated circuits) within the computer, where the CPU stores the data and instructions. It is also known as a Main/Primary/Internal Memory. It is of

Memory Unit is that component of a computer system, which is used to store the data, instructions and information before, during and after the processing by ALU. It is actually a work area (physically a collection of integrated circuits) within the computer, where the CPU stores the data and instructions. It is also known as a Main/Primary/Internal Memory. It is of

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| 20/291 | SUBMITTED TEXT | 23 WORDS | 100% MATCHING TEXT | 23 WORDS |

following three types: a. Read Only Memory (ROM pronounced as "Ra-om") b. Random Access Memory (RAM pronounced as "R-aem") c. Complementary Metal Oxide Semiconductor Memory (CMOS)

following three types: (a) Read Only Memory (ROM pronounced as "Ra-om") (b) Random Access Memory (RAM pronounced as "R-aem") (c) Complementary Metal Oxide Semiconductor Memory (CMOS) (

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 21/291 | SUBMITTED TEXT | 66 WORDS | 99% MATCHING TEXT | 66 WORDS |

Read Only Memory is an essential component of the memory unit. We know that the computer, being a machine, itself has no intelligence or memory and requires instructions which are given by man. Whenever the computer is switched on, it searches for the required instructions. The memory, which has these essential instructions, is known as Read Only Memory (ROM). This memory is permanent and is not erased when

Read Only Memory is an essential component of the memory unit. We know that the computer, being a machine, itself has no intelligence or memory and requires the instructions which are given by man. Whenever the computer is switched on, it searches for the required instructions. The memory, which has these essential instructions, is known as Read Only Memory (ROM). This memory is permanent and is not erased when

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 22/291 | SUBMITTED TEXT | 115 WORDS | 100% | MATCHING TEXT | 115 WORDS |

system is switched off. As appears with its name, it is read type of memory i.e. it can be read only and not be written by user/ programmer. The memory capacity of ROM varies from 64 KB to 256 KB (1 Kilobyte = 1024 bytes) depending on the model of computer. ROM contains a number of programs (set of instructions). The most important program of ROM is the Basic Input Output System (BIOS, pronounced as "bye-os") which activates the hardware (physical components of computer) such as keyboard, monitor, floppy disk etc. in communicating with the system and application software (set of instructions or programs). Types of ROM There are many types of ROM available for microcomputers like Mask ROM, PROM, EPROM, EEPROM and EAPROM. 21

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W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 23/291 | SUBMITTED TEXT | 33 WORDS | 95% | MATCHING TEXT | 33 WORDS |

Mask ROM: Mask ROM is the basic ROM chip. In this type of ROM, the information is stored at the time of its manufacturing. So, it cannot be altered or erased later on. ii. PROM:

Mask ROM: Mask ROM is the basic ROM chip. In this type of ROM, the information is stored at the time of its manufacturing. So, it cannot be altered or erased later on. PROM

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 24/291 | SUBMITTED TEXT | 23 WORDS | 100% | MATCHING TEXT | 23 WORDS |

PROM: PROM stands for Programmable Read Only Memory. In this type of ROM, the information is stored by programmers after its manufacturing. It

PROM: PROM stands for Programmable Read Only Memory. In this type of ROM, the information is stored by programmers after its manufacturing. It

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 25/291 | SUBMITTED TEXT | 47 WORDS | 91% | MATCHING TEXT | 47 WORDS |

EEPROM: EEPROM stands for Electrically Erasable Programmable Read Only Memory. It is similiar to EPROM, but its information can be erased by using an high voltage current. v. EAPROM: EAPROM stands for Electrically Alterable Read Only Memory. As compared to EPROM and EEPROM, the information stored in EAPROM can be altered later.

EEPROM: EEPROM stands for Electrically Erasable Programmable Read Only Memory. It is similar to EPROM, but its information can be erased by using a high voltage current. EAPROM: EAPROM stands for Electrically Alterable Read Only Memory. As compared to EPROM and EEPROM, the information stored in EAPROM can be altered later. 15

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 26/291 | SUBMITTED TEXT | 12 WORDS | 95% MATCHING TEXT | 12 WORDS |

Memory Unit. It is used to store data and instructions during the

Memory Unit. It is used to store the data and instructions during the

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 27/291 | SUBMITTED TEXT | 20 WORDS | 100% MATCHING TEXT | 20 WORDS |

computer is switched off. RAM is a read/ write type of memory, and thus can be read and written by

computer is switched off. RAM is a read/write type of memory and, thus can be read and written by

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 28/291 | SUBMITTED TEXT | 58 WORDS | 100% MATCHING TEXT | 58 WORDS |

user/ programmer. As it is possible to randomly use any location of this memory, therefore, this memory is known as random access memory. The memory capacity of RAM varies from 640 KB to several megabytes (1 Megabyte = 1024 KB) with different models of PC. Types of RAM There are two types of RAM used in PCs - Dynamic and Static RAM.

user/programmer. As it is possible to randomly use any location of this memory, therefore, this memory is known as random access memory. The memory capacity of RAM varies from 640 KB to several megabytes (1 Megabyte = 1024 KB) with different models of Pc. Types of RAM: There are two types of RAM used in PCs - Dynamic and Static RAM. (

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| 29/291 | SUBMITTED TEXT | 30 WORDS | 100% MATCHING TEXT | 30 WORDS |

Dynamic RAM (DRAM): The information stored in Dynamic RAM has to be refreshed after every few milliseconds, otherwise it is erased. DRAM has higher storage capacity and is cheaper than Static RAM.

Dynamic RAM (DRAM): The information stored in Dynamic RAM has to be refreshed after every few milliseconds, otherwise it is erased. DRAM has higher storage capacity and is cheaper than Static RAM.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 30/291 | SUBMITTED TEXT | 31 WORDS | 100% MATCHING TEXT | 31 WORDS |

Static RAM (SRAM): The information stored in Static RAM need not be refreshed, but it remains stable as long as power supply is provided. SRAM is costlier but has higher speed than DRAM.

Static RAM (SRAM): The information stored in Static RAM need not be refreshed, but it remains stable as long as power supply is provided. SRAM is costlier but has higher speed than DRAM. 16

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 31/291 | SUBMITTED TEXT | 20 WORDS | 100% MATCHING TEXT | 20 WORDS |

Complementary Metal Oxide Semiconductor (CMOS) memory is used to store the system configuration, date, time and other important data. When

Complementary Metal Oxide Semiconductor (CMOS) memory is used to store the system configuration, date, time and other important data. When

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

32/291	SUBMITTED TEXT	28 WORDS	93%	MATCHING TEXT	28 WORDS

of computer, as it manages and coordinates all the units of the computer. It obtains the instructions from the memory, interprets them and directs the operation of the computer. It

SA   Participant Guide Fundamentals of Computers.docx (D21534911)

33/291	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

computer is switched on, BIOS matches the information of CMOS with the peripheral devices and displays error in case of mismatching. 22

computer is switched on, BIOS matches the information of CMOS with the peripheral devices and displays error in case of mismatching.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

34/291	SUBMITTED TEXT	29 WORDS	92%	MATCHING TEXT	29 WORDS

BYTES BIT stands for Binary Digit. It is single digit in a binary number which can be either 0 or 1. Within the computer, a single bit can be stored

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

35/291	SUBMITTED TEXT	19 WORDS	89%	MATCHING TEXT	19 WORDS

In memory, each byte occupies a unique address (storage location). Byte is considered as the smallest unit of memory.

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

36/291	SUBMITTED TEXT	21 WORDS	63%	MATCHING TEXT	21 WORDS

units of memory along with their equivalents. Unit of Memory Equivalent Units Byte 8 BITS Word 2 Bytes Doubleword 4 Bytes Quadword 8 Bytes Paragraph 16 Bytes

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37/291	SUBMITTED TEXT	23 WORDS	97%	MATCHING TEXT	23 WORDS

binary number. Two other number systems which are used in computers are Octal (base of 8) and Hexadecimal (base of 16) Number Systems. These

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

SUBMITTED TEXT 52 WORDS **100%** **MATCHING TEXT** 52 WORDS

Decimal Binary Hexadecimal Octal 0 0000 0 0 1 0001 1 1
2 0010 2 2 3 0011 3 3 4 0100 4 4 5 0101 5 5 6 0110 6 6 7
0111 7 7 8 1000 8 10 9 1001 9 11 10 1010 A 12 11 1011 B
13 12 1100 C 14 13 1101 D 15 14 1110 E 16 15 1111 F 17

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

SUBMITTED TEXT 92 WORDS **52%** **MATCHING TEXT** 92 WORDS

A 10100001 11000001 S 10110011 11100010 B 10100010
11000010 T 10110100 11100011 C 10100011 11000011 U
10110101 11100100 D 10100100 11000100 V 10110110
11100101 E 10100101 11000101 W 10110111 11100110 F
10100110 11000110 X 10111000 11100111 G 10100111
11000111 Y 10111001 11101000 H 10101000 11001000 Z
10111010 11101001 I 10101001 11001001 0 01010000
11110000 J 10101010 11010001 1 01010001 11110001 K
10101011 11010010 2 01010010 11110010 L 10101100
11010011 3 01010011 11110011 M 10101101 11010100 4
01010100 11110100 N 10101110 11010101 5 01010101
11110101 O 10111111 11010110 6 01010110 11110110 P
10110000 11010111 7 01010111 11110111 Q 10110001
11011000 8 01011000 11111000 R 10110010 11011001 9
01011001 11111001 32

A • B • C • D • E • F • G • H • I • J • K • L • M • N • O • P • Q
• R •

W   http://dotwhat.net/file/extension/123/1187

40/291   **SUBMITTED TEXT**   135 WORDS   **94%**   **MATCHING TEXT**   135 WORDS

Computer components can be broadly divided into two categories - Hardware and Software. Hardware refers to any physical component of a computer. For example, CPU, Monitor, Keyboard, Hard Disk, Floppy Disk etc. are physical components and thus, are hardwares. Software refers to the programs which are required to operate the computer. For example, DOS (Disk Operating System), BASIC, COBOL, dBASE, An Accounting Software etc. are all softwares. An analogy of hardware can be the book which you are reading and then software would be the text written on this book. Another analogy could be - 'brain' is a hardware but 'memory stored in brain' is a software. Both hardware and software are dependent on each other. CPU, Memory Unit, Hard Disk etc. are useless unless they are provided with instructions and data for storage and processing. Similarly, BASIC or COBOL language has no

Computer components can be broadly divided into two categories - Hardware and Software. Hardware refers to any physical component of a computer. For example, CPU, Monitor, Keyboard, Hard Disk, Floppy Disk etc. are physical components and thus, are hardware. Software refers to the programmes which are required to operate the computer. For example, DOS (Disk Operating System), BASIC, COBOL, dBASE, An Accounting Software etc. are all software. An analogy of hardware can be the book which you are reading and then software would be the text written on this book. Another analogy could be - 'brain' is a hardware but 'memory stored in brain' is a software. Both hardware and software are dependent on each other. CPU, Memory Unit, Hard Disk etc. are useless until they are provided instructions and data for storage and processing. Similarly, BASIC or COBOL language has no

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

41/291   **SUBMITTED TEXT**   12 WORDS   **100%**   **MATCHING TEXT**   12 WORDS

input unit is used to enter data and instructions into a computer.

Input unit is used to enter data and instructions into a computer.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

42/291   **SUBMITTED TEXT**   21 WORDS   **92%**   **MATCHING TEXT**   21 WORDS

BCD (Binary Coded Decimal) Code. These codes are derived by converting each digit of a decimal number into its 6 bits binary

SA   3-Introduction to Information Technology-Block 1.pdf (D142210333)

43/291   **SUBMITTED TEXT**   38 WORDS   **36%**   **MATCHING TEXT**   38 WORDS

Central Processing Unit, the main component of a computer consists of Arithmetic Logic Unit, Control Unit, Registers, Buses and Clock. The arithmetic and logic unit is responsible for all arithmetic and logical operations. The control unit controls the transfer of

SA   Module 5.docx (D17190824)

44/291	SUBMITTED TEXT	13 WORDS	96% MATCHING TEXT	13 WORDS

control unit controls the transfer of data and instructions among other units of

Control Unit) which controls the transfer of data and instructions among other units of

W https://www.docsity.com/en/computer-applications-in-management/2326921/

45/291	SUBMITTED TEXT	19 WORDS	85% MATCHING TEXT	19 WORDS

to transfer data between them. Clock measures and allocates a fixed time for processing each and every micro-operation. Memory

to transfer data between registers and clock measures and allocates a fixed time slot for processing each and every micro operation. Memory

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46/291	SUBMITTED TEXT	12 WORDS	95% MATCHING TEXT	12 WORDS

Input unit is used to enter data and _____ into a computer.

Input unit is used to enter data and instructions into a computer.

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47/291	SUBMITTED TEXT	26 WORDS	97% MATCHING TEXT	26 WORDS

Convert the following decimal numbers to equivalent binary numbers: a. 64 b. 4096 c. 175.5695 d. 1231 13. Convert the following binary numbers to equivalent decimal numbers: 34

Convert the following decimal numbers to equivalent binary numbers: (a) 32 (b) 57 (c) 2035 (d) 5.75 (e) 3.25 2. Convert the following binary numbers to equivalent decimal numbers: (

SA Computer Application.pdf (D166063658)

48/291	SUBMITTED TEXT	28 WORDS	78% MATCHING TEXT	28 WORDS

numbers: a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following

numbers: (a) 32 (b) 57 (c) 2035 (d) 5.75 (e) 3.25 2. Convert the following binary numbers to equivalent decimal numbers: (a) 1001, (b) 11101, (c) 10101, (d) 0.1101, (e) 0.011011, (f) 0.0010010 3. Perform the following

SA Computer Application.pdf (D166063658)

49/291	SUBMITTED TEXT	41 WORDS	45% MATCHING TEXT	41 WORDS

a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following decimal numbers to equivalent hexadecimal numbers: a. 375 b. 55 c. 66.3 d. 1343 17.

a. 246.125 b. 765.525 c. 435 d. 1001 6. Convert the following numbers to decimal numbers: a. (B2CA)16 b. (110011)2 c. (2517)8 d. (152F)16 7. Convert octal numbers to Hexadecimal number system: a. 6337 b. 6715 c. 7432 d. 4372 8.

SA Computer Fundamentals.pdf (D166063527)

| 50/291 | SUBMITTED TEXT | 20 WORDS | 87% | MATCHING TEXT | 20 WORDS |

numbers: a. 375 b. 55 c. 66.3 d. 1343 17. Convert the following hexadecimal numbers to equivalent decimal numbers: a. 15 b.

numbers: (a) 32 (b) 57 (c) 2035 (Convert the following binary numbers to equivalent decimal numbers: (a) 1001, (b) 11101, (

SA   Computer Application.pdf (D166063658)

| 51/291 | SUBMITTED TEXT | 36 WORDS | 79% | MATCHING TEXT | 36 WORDS |

Convert the following octal numbers to equivalent binary numbers: a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following

Convert the following decimal numbers to equivalent binary a) 32 (b) 57 (c) 2035 (d) 5.75 (e) 3.25 2. Convert the following binary numbers to equivalent decimal numbers: (a) 1001, (b) 11101, (c) 10101, (d) 0.1101, (e) 0.011011, (f) 0.0010010 3. Perform the following

SA   Computer Application.pdf (D166063658)

| 52/291 | SUBMITTED TEXT | 31 WORDS | 43% | MATCHING TEXT | 31 WORDS |

a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following hexadecimal numbers to

a. 246.125 b. 765.525 c. 435 d. 1001 6. Convert the following numbers to decimal numbers: a. (B2 CA)16 b. (110011)2 c. (2517)8 d. (152F)16 7. octal numbers to

SA   Computer Fundamentals.pdf (D166063527)

| 53/291 | SUBMITTED TEXT | 137 WORDS | 23% | MATCHING TEXT | 137 WORDS |

a. 11011 b. 101110 c. 0.001101 d. 1110101.11 14. Convert the following decimal numbers to equivalent octal numbers: a. 332 b. 0.125 c. 632 d. 4429.97 15. Convert the following octal numbers to equivalent decimal numbers: a. 623 b. 0.125 c. 44 d. 453 16. Convert the following decimal numbers to equivalent hexadecimal numbers: a. 375 b. 55 c. 66.3 d. 1343 17. Convert the following hexadecimal numbers to equivalent decimal numbers: a. 15 b. AB4 c. 2AC5 d. 9.1A 18. Convert the following octal numbers to equivalent binary numbers: a. 33762 b. 2473 c. 623 d. 3146.52 19. Convert the following binary numbers to equivalent octal numbers: a. 10110111 b. 1001111 c. 011.1011011 d. 11010111 19. Convert the following hexadecimal numbers to equivalent binary numbers: a. 2AC5 b. CD c. AB2.1A d. 1B 20. Convert the following binary numbers to equivalent hexadecimal numbers: a. 11101 b. 101101111010 c. 1101.11010 d. 110110100 35

a) 01010010 (b) 01000000 (✓) (c) 00110110 (d) 01001000 78, Convert hexadecimal value C1 to a) 11000001 (✓) (b) 1000111 (c) 111000100 (d) 111000001 79, Convert the 178 octal number to decimal: (a) 51 (b) 82 (c) 57 (d) 15 (✓) 80, Convert the 010111100, binary number to octal: (a) 172, (b) 272, (c) 174, (d) 274, (✓) 81, many binary digits are required to count to 10010? (a) 7 (✓) (b) 2 (c) 3 (d) 100 82, The BCD number for decimal 347 a) 1100 1011 1000 (b) 0011 0100 0111 (✓) (c) 0011 0100 0001 (d) 1100 1011 0110 83, The binary number for octal 458 is _____: (a) 100010 (b) 100101 (✓) (c) 110101 (d) 100100 84, The sum of 11101 +10111 equals _____: (a) 110011 (b) 100001 (c) 110100 (✓) (d) 100100 85, Convert the (001101011), following binary number to octal: (a) 1538 (✓) (b) 3518 (c) 2538 (d) 3528 86,

W   https://sdak24.com/mcq-information-technology-bcom/

54/291	**SUBMITTED TEXT**	19 WORDS	**80%**	**MATCHING TEXT**	19 WORDS

d. 1B 20. Convert the following binary numbers to equivalent hexadecimal numbers: a. 11101 b. 101101111010 c. 1101.11010 d. 110110100 35

d) 5.75 (e) 3.25 2. Convert the following binary numbers to equivalent decimal numbers: (a) 1001, (b) 11101, (d) 0.1101, (

SA Computer Application.pdf (D166063658)

55/291	**SUBMITTED TEXT**	16 WORDS	**91%**	**MATCHING TEXT**	16 WORDS

of a computer. In today's computer industry, a wide variety of hardware components are available for microcomputers.

OF MICRO COMPUTER In today's computer industry, a wide variety of hardware components are available for microcomputers.

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56/291	**SUBMITTED TEXT**	12 WORDS	**100%**	**MATCHING TEXT**	12 WORDS

must be aware of the working and uses of different hardware components.

must be aware of the working and uses of different hardware components,

W https://www.docsity.com/en/computer-applications-in-management/2326921/

57/291	**SUBMITTED TEXT**	32 WORDS	**100%**	**MATCHING TEXT**	32 WORDS

following types : a. Motherboard b. Input Devices c. Output Devices d. Storage Devices e. Cards f. Ports and Cords g. Power Supply All these hardware devices except motherboard are called peripheral devices, as they are connected to the motherboard.

following types: (A) Motherboard (B) Input Devices (C) Output Devices (D) Storage Devices (E) Cards (F) Ports and Cords (G) Power Supply All these hardware devices except motherboard are called peripheral devices, as they are connected to the motherboard.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

58/291	**SUBMITTED TEXT**	28 WORDS	**88%**	**MATCHING TEXT**	28 WORDS

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W https://www.docsity.com/en/computer-applications-in-management/2326921/

59/291	**SUBMITTED TEXT**	14 WORDS	**96%**	**MATCHING TEXT**	14 WORDS

Motherboard ? Input Devices ? Output Devices ? Storage Devices ? Cards ? Ports and Cords ? Power Supply 38

motherboard, Input devices, output devices, storage devices, cards, ports and cords and power supply.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

60/291 — SUBMITTED TEXT — 43 WORDS — 100% MATCHING TEXT — 43 WORDS

SUBMITTED TEXT

Motherboard, also called as System Board, is the most important hardware component of a microcomputer. Motherboard is so called as all the other boards (printed circuit boards having chips or other electronic components) of the computer are connected to this board, hence it is like

MATCHING TEXT

Motherboard, also called as System Board, is the most important hardware component of a microcomputer. Motherboard is so called as all the other boards (printed circuit boards having chips or other electronic components) of the computer are connected to this board, hence it is like

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

61/291 — SUBMITTED TEXT — 27 WORDS — 98% MATCHING TEXT — 27 WORDS

SUBMITTED TEXT

mother of all other boards. Components of Motherboard A motherboard contains the CPU chip, Memory chip (ROM and RAM chips), I/O interface, expansion slots and many other logic circuits

MATCHING TEXT

mother of all other boards. Notes Components of Motherboard A motherboard contains the CPU chip, Memory chip (ROM and RAM chips), I/O interface, expansion slots and many other logic circuits.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

62/291 — SUBMITTED TEXT — 16 WORDS — 100% MATCHING TEXT — 16 WORDS

SUBMITTED TEXT

It may also contain a maths co-processor chip. CPU or processor chip is the main component of

MATCHING TEXT

It may also contain a maths co-processor chip. CPU or processor chip is the main component of

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

63/291 — SUBMITTED TEXT — 37 WORDS — 100% MATCHING TEXT — 37 WORDS

SUBMITTED TEXT

motherboard. The types of CPU chip (8088/ 80286/ 80386/ 80486 etc.) vary from one model of PC to another. The function of maths coprocessor chip (8088/ 80287 etc.) is to support the CPU chip in processing of mathematical calculations.

MATCHING TEXT

motherboard. The types of CPU chip (8088/80286/ 80386/80486 etc.) vary from one model of PC to another. The function of maths coprocessor chip (8088/80287 etc.) is to support the CPU chip in processing of mathematical calculations.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 64/291 | SUBMITTED TEXT | 110 WORDS | 99% | MATCHING TEXT | 110 WORDS |

Memory chips are physically installed on the motherboard by different packing methods. There are three different types of packing of RAM chips - DIP, SIMM and SIPP. DIP (Dual Inline Package) is the most common packing, having a small rectangle box with leads on both sides. SIMM (Single Inline Memory Module) packing contains a number of chips soldered on an expansion board having an edge connector. SIPP (Single Inline Pin Package) is similar to SIMM, but uses pin rather than an edge connector. Expansion slots are connectors on motherboard where expansion cards like display card, hard disk controller card etc. can be connected. I/O interface is the channel between the CPU and peripheral devices (keyboard, monitor etc.).

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W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 65/291 | SUBMITTED TEXT | 17 WORDS | 61% | MATCHING TEXT | 17 WORDS |

which senses the movement of the mouse and sends the corresponding signals to CPU on pressing the buttons.

SA SLM FOC.pdf (D46702471)

| 66/291 | SUBMITTED TEXT | 17 WORDS | 61% | MATCHING TEXT | 17 WORDS |

which senses the movement of the mouse and sends the corresponding signals to CPU on pressing the buttons.

SA SLM FOC.pdf (D46802927)

| 67/291 | SUBMITTED TEXT | 16 WORDS | 100% | MATCHING TEXT | 16 WORDS |

is a stick having a spherical ball at its both lower and upper ends

SA SLM FOC.pdf (D46702471)

| 68/291 | SUBMITTED TEXT | 16 WORDS | 100% | MATCHING TEXT | 16 WORDS |

is a stick having a spherical ball at its both lower and upper ends

SA SLM FOC.pdf (D46802927)

SUBMITTED TEXT   33 WORDS   **95%**   **MATCHING TEXT**   33 WORDS

Joystick is also a pointing device which is used to move cursor position on a monitor screen. Joystick is a stick having a spherical ball at its both lower and upper ends

SA   Participant Guide Fundamentals of Computers.docx (D21534911)

SUBMITTED TEXT   41 WORDS   **100%**   **MATCHING TEXT**   41 WORDS

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

SA   Participant Guide Fundamentals of Computers.docx (D21534911)

SUBMITTED TEXT   41 WORDS   **100%**   **MATCHING TEXT**   41 WORDS

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

SA   Trainer Guide Fundamentals of Computers.docx (D21534917)

SUBMITTED TEXT   42 WORDS   **98%**   **MATCHING TEXT**   42 WORDS

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games. Figure 3.8

SA   SLM FOC.pdf (D46702471)

SUBMITTED TEXT   42 WORDS   **98%**   **MATCHING TEXT**   42 WORDS

The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games. Figure 3.8

SA   SLM FOC.pdf (D46802927)

74/291 **SUBMITTED TEXT** 53 WORDS **93%** **MATCHING TEXT** 53 WORDS

Optical Mark Reader (OMR) is a special type of optical scanner used to recognise the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked. It is especially used for checking the answer sheets of examination having multiple choice questions.

SA Participant Guide Fundamentals of Computers.docx (D21534911)

75/291 **SUBMITTED TEXT** 53 WORDS **93%** **MATCHING TEXT** 53 WORDS

Optical Mark Reader (OMR) is a special type of optical scanner used to recognise the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked. It is especially used for checking the answer sheets of examination having multiple choice questions.

SA Trainer Guide Fundamentals of Computers.docx (D21534917)

76/291 **SUBMITTED TEXT** 11 WORDS **100%** **MATCHING TEXT** 11 WORDS

Bar-coded data is generally used in labelling goods, numbering the books

SA Participant Guide Fundamentals of Computers.docx (D21534911)

77/291 **SUBMITTED TEXT** 11 WORDS **100%** **MATCHING TEXT** 11 WORDS

Bar-coded data is generally used in labelling goods, numbering the books

SA Trainer Guide Fundamentals of Computers.docx (D21534917)

78/291 **SUBMITTED TEXT** 16 WORDS **100%** **MATCHING TEXT** 16 WORDS

c. HGA (Hercules Graphics Adapter) d. EGA (Enhanced Graphics Adapter) e. VGA (Video Graphics Adapter) f. SVGA (Super VGA)

c) HGA (Hercules Graphics Adapter) (d) EGA (Enhanced Graphics Adapter) (e) VGA (Video Graphics Adapter) (f) SVGA (Super VGA)

W https://www.docsity.com/en/computer-applications-in-management/2326921/

79/291

SUBMITTED TEXT	20 WORDS	78% MATCHING TEXT	20 WORDS

of display, monitors can be classified as Monochrome (with single colour black/white display) and Colour (with all colours display) Monitors.

of display, monitors can be classified as Monochrome (with single color black/white display) and Color (with all colors display) Monitors.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

80/291

SUBMITTED TEXT	50 WORDS	94% MATCHING TEXT	50 WORDS

Printer Printer is the most important output device, which is used to print information on paper. Printers are essential for getting output of any computer based application. Types of Printers There are many types of printers which are classified on various criteria as illustrated in Figure 3.15. Printers can be broadly categorised into

Printer: Printer is the most important output device, which is used to print information on Printers are essential for getting output of any computer based application. Types of Printers: There are many types of printers which are classified on various criteria as illustrated in Figure 1.5 Printers can be broadly categorized into

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81/291

SUBMITTED TEXT	30 WORDS	100% MATCHING TEXT	30 WORDS

a. Impact Printers: The printers that print the characters by striking against the ribbon and onto the paper, are called Impact Printers. These printers are of two types - i Character;

a) Impact Printers: The printers that print the characters by striking against the ribbon and onto the paper, are called Impact Printers. These printers are of two types (i) Character

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82/291

SUBMITTED TEXT	76 WORDS	93% MATCHING TEXT	76 WORDS

Character Printers: These printers print one character at a time. These printers are again of two types - Daisy Wheel and Dot Matrix Printers. Daisy Wheel Printers: These printers print the characters by a mechanism that uses a plastic or metal hub with spokes, called daisy wheel. The characters are embossed on the radiating spokes and printed by striking these spokes against the ribbon and paper. Daisy Wheel printers give a good quality but they are more expensive than Dot Matrix printers.

Character Printers: These printers print one character at a time. These printers are again of two types Daisy Wheel and Dot Matrix Printers. Daisy Wheel Printers these printers print the characters by a mechanism that uses a plastic or metal hub with spokes, called daisy wheel. The characters are embossed on the radiating spokes and printed by striking these spokes against the ribbon and paper. Daisy Wheel printers give a good quality but they are expensive than Dot Matrix printers. Printers

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SUBMITTED TEXT 53 WORDS **100%** **MATCHING TEXT** 53 WORDS

Dot Matrix Printers: These printers print the characters by putting dots onto the paper. They do not give better printing quality than daisy wheel printers, but are faster in speed. The printing speed of a dot matrix printer can be upto 360 cps (characters per second). They are widely used with microcomputers in most of the offices.

Dot Matrix Printers these printers print the characters by putting dots onto the paper. They do not give better printing quality than daisy wheel printers, but are faster in speed. The printing speed of a dot matrix printer can be upto 360 cps (characters per second). They are widely used with microcomputers in most of the offices. (

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SUBMITTED TEXT 169 WORDS **100%** **MATCHING TEXT** 169 WORDS

ii. Line Printers: These printers print one line at a time. Their printing speed is much more than character printers. They are again of two types - Drum Printers and Chain Printers. Drum Printers: These printers print the line by a rotating drum having a ring of characters for each print position. The hammers strike each character of the drum simultaneously, so that entire line is printed for one full rotation of the drum. These printers are also called as Barrel Printers. The printouts obtained from these printers, have even character spacing but uneven line height. Chain Printers: These printers print the line by a rotating chain having ring characters for each print position. Their printing mechanism is similar to drum printers. The printouts obtained from these printers, have uneven character spacing but even line height b. Non-impact Printers: The printers that print the characters without striking against the ribbon and onto the paper, are called Non-Impact Printers. These printers print a complete page at a time, therefore, also called as Page Printers. Page printers are of three types− i Laser Printers,

ii) Line Printers: These printers print one line at a time. Their printing speed is much more than character printers. They are again of two types Drum Printers and Chain Printers. Drum Printers these printers print the line by a rotating drum having a ring of characters for each print position. The hammers strike each character of the drum simultaneously, so that entire line is printed for one full rotation of the drum. These printers are also called as Barrel Printers. The printouts obtained from these printers, have even character spacing but uneven line height. Chain Printers these printers print the line by a rotating chain having ring characters for each print position. Their printing mechanism is similar to drum printers. The printouts obtained from these printers, have uneven character spacing but even line height. (b) Non-Impact Printers: The printers that print the characters without striking against the ribbon and onto the paper, are called Non-Impact Printers. These printers print a complete page at a time, therefore, also called as Page Printers. Page printers are of three types (i) Laser Printers:

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| 85/291 | SUBMITTED TEXT | 214 WORDS | 90% | MATCHING TEXT | 214 WORDS |

Laser Printers: These printers look and work like photocopiers. They are based on laser technology, which is the latest development in high speed & high quality printing. In these printers, a laser beam is used to write the image on a paper. First, the image is formed by electrically charging thousands of dots on a paper by laser beam. Then, the paper is sprayed with a toner having the opposite charge and is passed over a heated roller to make the image permanent. Laser printers are very popular and have become an essential part of Desk Top Publishing (DTP). Although laser printers are costlier than dot matrix, they are generally preferred in all offices due to their high quality of printing. There are many models of laser printers depending upon the speed and number of dots printed. The latest model of laser printer is 1200 DPI (Dots Per Inch), which can print 10 pages/minute. Some high speed laser printers give a speed of upto 100 pages/minute. ii. Ink Jet Printers: These printers print the charcters by spraying the paper with electrically charged ink. These printers give better quality than character printers but not better than laser printers. They are cheaper than laser printers, hence used widely in many offices. They also offer an option of using colour cartridges for multi-colour printing. iii. Thermal Printers: These printers print the characters by melting a

Laser Printers: These printers look and work like photocopiers. They are based on laser technology, which is the latest development in high speed and best quality printing. In these printers, a laser beam is used to write the image on a paper. First, the image is formed by electrically charged thousands of dots on a paper by laser beam. Then, the paper is sprayed with a toner having the opposite Figure 1.6: Classification of Printers 26 Computer Application in Management charge and is passed over a heated roller to make the image permanent. Laser printers are very popular and have become an essential part of Desk Top Publishing (DTP). Although laser printers are costlier than dot matrix, they are generally preferred in all offices due to their best quality of printing. There are many models of laser printers depending upon the speed and number of dots printed. The latest model of laser printer is 1200 DPI (Dots Per Inch), which can print 10 pages/ minute. Some high speed laser printers give a speed of upto 100 pages/minute. (ii) Inkjet Printers: These printers print the characters by spraying the paper with electrically charged ink. These printers give better quality than character printers but not better than laser printers. They are cheaper than laser printers, hence used widely in many offices. They also offer an option of using color cartridges for multi-color printing. (iii) Thermal Printers: These printers print the characters by melting a

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| 86/291 | SUBMITTED TEXT | 23 WORDS | 100% | MATCHING TEXT | 23 WORDS |

ink off a ribbon onto a special heat sensitive paper. They give Letter-quality printing but are relatively expensive in maintenance than other printers. 49

ink off a ribbon onto a special heat sensitive paper. They give letter-quality printing but are relatively expensive in maintenance than other printers.

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| 87/291 | SUBMITTED TEXT | 39 WORDS | 100% | MATCHING TEXT | 39 WORDS |

Plotter is an important output device, used to print high quality graphics and drawings. Although the graphics can be printed on printers, the resolution of such printing is limited on printers. Plotters are generally used for printing/ drawing graphical images 50

Plotter is an important output device, used to print high quality graphics and drawings. Although the graphics can be printed on printers, the resolution of such printing is limited on printers. Plotters are generally used for printing/drawing graphical images

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| 88/291 | SUBMITTED TEXT | 17 WORDS | 100% | MATCHING TEXT | 17 WORDS |

such as charts, drawings, maps etc. of engineering and scientific applications. Some important types of plotters are

such as charts, drawings, maps etc. of engineering and scientific applications. Some important types of plotters are

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| 89/291 | SUBMITTED TEXT | 11 WORDS | 90% | MATCHING TEXT | 11 WORDS |

Magnetic Ink Character Recognition (MICR) Magnetic Ink Character Recognition (MICR) is

SA ITM_B1_U1.docx (D142211551)

| 90/291 | SUBMITTED TEXT | 67 WORDS | 95% | MATCHING TEXT | 67 WORDS |

are discussed below: i Flat Bed Plotters: These plotters print the graphical images by moving the pen on stationary flat surface material. They produce very accurate drawings. ii Drum Plotters: These plotters print graphical images by moving both the pen and the drum having paper. They do not produce as accurate drawings as printed by flat bed plotters. iii Inkjet Plotters: These plotters use inkjets in place of pens. They are faster than

are discussed below: (i) Flatbed Plotters: These plotters print the graphical images by moving the pen on stationary flat surface material. They produce very accurate drawings. (ii) Drum Plotters: These plotters print the graphical images by moving both the pen and the drum having paper. They do not produce as accurate drawings as printed by flat bed plotters. (iii) Inkjet Plotters: These plotters use inkjets in place of pens. They are faster than

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| 91/291 | SUBMITTED TEXT | 119 WORDS | 97% | MATCHING TEXT | 119 WORDS |

Computer Output Microfilm (COM) is a technique to produce output on a microfilm media (microfilm reel or microfiche card) as illustrated in Figure 3.18. A microfilm is a continuous film strip that can store several thousands miniaturized document pages. A microfiche card is a 4 X 6 inch film sheet, which can store several hundred pages. The process of producing microfilm or microfiche takes place on a special COM unit. The information recorded on the microfilm is read with the help of a microfilm viewing system. It is generally easier to read a microfiche than microfilm. Computer Output Microfilm is particularly useful for organisations which need to store and manipulate large amount of data. It helps them in tremendous savings in paper and document handling costs.

Computer Output Microfilm (COM) is a technique to produce output on a microfilm media (microfilm reel or microfiche card) as illustrated in Figure 1.7. A microfilm is a continuous film strip that can store several thousands miniaturized document pages. A microfiche card is a 4 by 6 inch film sheet, which can store several hundred pages. The process of producing microfilm or microfiche takes place on a special COM unit. The information recorded on the microfilm is read with the help of a microfilm viewing system. It is generally easier to read a microfiche than microfilm. Computer Output Microfilm is particularly useful for organizations which need to store and manipulate large amount of data. It helps them in tremendous savings in paper and document handling costs.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

92/291	**SUBMITTED TEXT**	44 WORDS	**100%**	**MATCHING TEXT**	44 WORDS

ones are Serial Port, Parallel Port, Game Port and Video Port. Serial Port is used to connect a mouse, modem or scanner. Parallel Port is generally used to connect a printer. Game Port is used to connect the joystick while Video Port is a connector for

ones are Serial Port, Parallel Port, Game Port and Video Port. Serial Port is used to connect a mouse, modem or scanner. Parallel Port is generally used to connect a printer. Game Port is used to connect the joystick while Video Port is a connector for

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93/291	**SUBMITTED TEXT**	41 WORDS	**100%**	**MATCHING TEXT**	41 WORDS

monitor. Cords are the cables used to plug into the ports. There are different types of cables for connecting different types of input, output and storage devices. The important cords used in a PC are keyboard cords, power cords, monitor cords and printer cords.

monitor. Cords are the cables used to plug into the ports. There are different types of cables for connecting different types of input, output and storage devices. The important cords used in a PC are keyboard cords, power cords, monitor cords and printer cords.

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94/291	**SUBMITTED TEXT**	11 WORDS	**100%**	**MATCHING TEXT**	11 WORDS

Power supply is considered as the 'Heart' of a PC.

Power supply is considered as the 'Heart' of a Pc.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

95/291	**SUBMITTED TEXT**	49 WORDS	**99%**	**MATCHING TEXT**	49 WORDS

A computer requires a clean and steady power source for working properly. Power supply is that important hardware, which provides the power source to a computer. It provides a voltage range of 4.95 to 5.25 volts for the highest performance of the system. Power supplies vary in size and power (in watt).

a Pc. Computer requires a clean and steady power source for working properly. Power supply is that important hardware, which provides the power source to a computer. It provides a voltage range of 4.95 to 5.25 volts for the highest performance of the system. Power supplies vary in size and power (in watt).

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96/291	**SUBMITTED TEXT**	13 WORDS	**84%**	**MATCHING TEXT**	13 WORDS

Plotters: These plotters print graphical images by moving both the pen and the

SA   ITM_B1_U1.docx (D142211551)

| 97/291 | **SUBMITTED TEXT** | 10 WORDS | **100%** | **MATCHING TEXT** | 10 WORDS |

An Uninterrupted Power Supply (UPS) keeps the computer running for

An Uninterrupted Power Supply (UPS) keeps the computer running for

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| 98/291 | **SUBMITTED TEXT** | 30 WORDS | **100%** | **MATCHING TEXT** | 30 WORDS |

few minutes even when the electricity supply goes off. UPS is not a part of computer and is purchased separately. It is optional but mostly preferred to CVT (Constant Voltage Transformer).

few minutes even when the electricity supply goes off. UPS is not a part of computer and is purchased separately. It is optional but mostly preferred to CVT (Constant Voltage Transformer)

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| 99/291 | **SUBMITTED TEXT** | 23 WORDS | **58%** | **MATCHING TEXT** | 23 WORDS |

classified into 7 types – i. Motherboard, ii. Input Devices, iii. Output devices, iv. Storage Devices, v. Cards, vi. Ports and Cords

classified into following types: (A) Motherboard (B) Input Devices (C) Output Devices (D) Storage Devices (E) Cards (F) Ports and Cords (

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| 100/291 | **SUBMITTED TEXT** | 14 WORDS | **70%** | **MATCHING TEXT** | 14 WORDS |

Motherboard contains mainly the CPU chip, memory chip, I/O interface, expansion slots and logic circuits.

motherboard contains the CPU chip, Memory chip (ROM and RAM chips), I/O interface, expansion slots and many other logic circuits.

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| 101/291 | **SUBMITTED TEXT** | 23 WORDS | **80%** | **MATCHING TEXT** | 23 WORDS |

Light Pen, Touch Screen, Joystick, Digitizer, Scanner, Optical Mark Reader (OMR), Optical Character Reader (OCR), Bar Code Reader, MICR and Voice Input Devices

light pen, touch screen, Joy stick, digitizer, Scanner, Optical Mark Reader (OMR), Optical Character Reader (OCR) Bar Code Reader (BCR), Magnetic Ink Character Recognition (MICR) voice input devices

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| 102/291 | **SUBMITTED TEXT** | 13 WORDS | **96%** | **MATCHING TEXT** | 13 WORDS |

is used for checking the answer sheets of examinations having multiple choice questions? 8.

SA Participant Guide Fundamentals of Computers.docx (D21534911)

| **103/291** | **SUBMITTED TEXT** | 10 WORDS | **100%** | **MATCHING TEXT** | 10 WORDS |

What is the difference between Impact and Non-impact Printers?

What is the difference between Impact and non-impact printers? 28.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| **104/291** | **SUBMITTED TEXT** | 45 WORDS | **91%** | **MATCHING TEXT** | 45 WORDS |

the computer. Many types of software are available for various applications. The software development field is so advanced that day by day existing software are becoming outdated and new software are coming in the market. So, we must get aware of the latest developments in the software industry.

the market. Many types of software are available for 41 PC-Software Packagesvarious applications. The software development field is so advanced that day by day existing software are becoming outdated and new software are coming in the market. So we must get aware of the latest developments in the software industry.

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| **105/291** | **SUBMITTED TEXT** | 26 WORDS | **100%** | **MATCHING TEXT** | 26 WORDS |

In this unit, we are discussing all the important software concepts and providing you the latest knowledge of all the software available in the market.

In this unit, we are discussing all the important software concepts and providing you the latest knowledge of all the software available in the market.

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| **106/291** | **SUBMITTED TEXT** | 28 WORDS | **88%** | **MATCHING TEXT** | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

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107/291 — SUBMITTED TEXT — 107 WORDS — 96% MATCHING TEXT — 107 WORDS

SUBMITTED TEXT	MATCHING TEXT
Software are broadly classified into following two types : a. System Software b. Application Software System Software Software that are required to control the working of hardware and aid in effective execution of a general user's applications are called System Software. These software perform a variety of functions like file editing, storage management, resource accounting, I/O management, database management, etc. Some of the examples of system software are DOS (Disk Operating System), Windows, BASIC, COBOL and PC TOOLS. These software are developed by System Programmers. Types of System Software System software can be further categorised into following three types: i. System Management Software (Operating Systems, DBMSs, Operating Environments) ii. System Development Software (Language Translators, Application Generators, CASE Tools) iii. System Software Utilities	Software are broadly classified into following two types: (a) System Software (b) Application Software System Software Software, which are required to control the working of hardware and aid in effective execution of a general user's applications are called system software. These software perform a variety of functions like file editing, storage management, resource accounting, I/O management, database management, etc. Some of the examples of system software are DOS (Disk Operating System), Windows, BASIC, COBOL and PC TOOLS. These software are developed by System Programmers. Types of System Software System software can be further categorized into following three types: (i) System Management Software (Operating Systems, DBMS, Operating Environments) (ii) System Development Software (Language Translators, Application Generators, CASE Tools) (iii) System Software Utilities

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108/291 — SUBMITTED TEXT — 42 WORDS — 95% MATCHING TEXT — 42 WORDS

SUBMITTED TEXT	MATCHING TEXT
Software that are required for general and special purpose applications like database management, word processing, accounting etc. are called Application Software. Some of the examples of application software are dBASE, Word Star, Tally etc. Application software are developed using system software by Application Programmers.	Software which are required for general and special purpose applications like database management, word processing, accounting etc. are called as application software. Some of the examples of application software are dBASE, Word Star, Tally etc. Application software are developed using system software by Application Programmers.

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109/291 — SUBMITTED TEXT — 14 WORDS — 84% MATCHING TEXT — 14 WORDS

SUBMITTED TEXT	MATCHING TEXT
General Purpose Application Software (Database Management Packages, Word Processors, Spreadsheets etc.) ii. Special Purpose Application Software (	General Purpose Application Software (Database Management Packages, Word Processors, Spreadsheets, Office Automation Packages) (ii) Special Purpose Application Software (

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| 110/291 | SUBMITTED TEXT | 12 WORDS | 95% | MATCHING TEXT | 12 WORDS |

An operating system performs, basically three types of functions: i. Essential Functions:

an operating system performs basically three types of functions. (a) Essential Functions:

SA Computer Application.pdf (D166063658)

| 111/291 | SUBMITTED TEXT | 52 WORDS | 91% | MATCHING TEXT | 52 WORDS |

Storage management and processor management are two essential functions of an operating system. Storage management is concerned with allocation and reclamation of storage when a program is initiated and terminated. Process management is concerned with scheduling of programs in a time-sharing system. ii. Monitoring Functions: These functions are concerned with collection of resource utilisation and system performance information.

Storage management and processes management are two important essential functions of an operating system. Storage management is concerned with allocation and reclamation of storage when a program is initiated and terminated. Processor management is concerned with scheduling of programs in a time sharing system. (b) Monitoring Functions: These functions are concerned with collection of resource utilization and system performance information.

SA Computer Application.pdf (D166063658)

| 112/291 | SUBMITTED TEXT | 11 WORDS | 95% | MATCHING TEXT | 11 WORDS |

Service Functions: These functions of operating system enhance facilities provided to users.

Service Functions: These functions of operating system enhance facilities provided to the users.

SA Computer Application.pdf (D166063658)

| 113/291 | SUBMITTED TEXT | 80 WORDS | 96% | MATCHING TEXT | 80 WORDS |

Table 4.3 Uses of 4GLs (Fourth Generation Languages). Language Uses dBASE Used for development of mainly single user DOS based database appliactions. Foxbase Used for development of both single and multiuser DOS based database applications. Foxpro Used for development of both DOS and Windows based database applications. Oracle Used for development of relational database applications on any operating environment. Sybase Mainly used for development of on-line applications such as Decision Support Systems and Transaction Processing. Ingres Used for development of relational database applications of VAX/UNIX operating system. Object Oriented Languages

Table 1.5: Uses of 4GLs (Fourth Generation Languages) Language Uses dBASE Used for development of mainly single user DOS based database appliactions. Foxbase Used for development of both single and multiuser DOS based database applications. Foxpro Used for development of both DOS and Windows based database applications. Oracle Used for development of relational database applications on any operating environment. Sybase Mainly used for development of on-line applications such as Decision Support Systems and Transaction Processing. Ingres Used for development of relational database applications of VAX/UNIX operating System. Object Oriented Languages (

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114/291	SUBMITTED TEXT	56 WORDS	97%	MATCHING TEXT	56 WORDS

Table 4.4 Uses of Object Oriented languages (Fifth Generation Languages). Language Uses Smalltalk Used for development of mainly graphical applications. C++ Used for development of all types of object oriented applications Object COBOL Used for development of object oriented applications on mainframe computer. Object PASCAL Used for general object oriented applications. Simula Mainly used in a research environment. Eiffel Used for general

Table 1.6: Uses of Object Oriented Languages (Fifth Generation Languages) Language Uses Smalltalk Used for development of mainly graphical applications. C++ Used for development of all types of object oriented applications. Object COBOL Used for development of object oriented applications on mainframe computer. Object PASCAL Used for general object oriented applications. Simula Mainly used in research environment. Eiffel Used for general

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115/291	SUBMITTED TEXT	13 WORDS	96%	MATCHING TEXT	13 WORDS

is used for checking the answer sheets of examinations having multiple choice questions? 8.

SA   Trainer Guide Fundamentals of Computers.docx (D21534917)

116/291	SUBMITTED TEXT	57 WORDS	92%	MATCHING TEXT	57 WORDS

object oriented applications. Visual J++ Very popular for development of Windows based applications. 73 Software Concepts There are certain languages which support most of the features of object oriented programming except inheritance. These languages are not pure object oriented languages and are known as Object Based Languages. For example, Ada, an high level language designed for process control, is an object based language.

object oriented applications. Visual J++ Very popular for development of Windows based applications. Notes: There are certain languages which support most of the features of object-oriented programming except inheritance. These languages are not pure object-oriented languages and are known as object- based languages. For example, Ada, a high level language designed for process control, is an object-based language. 1.16

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117/291	SUBMITTED TEXT	48 WORDS	89%	MATCHING TEXT	48 WORDS

Regardless of the programming language used (except machine language), the symbolic instructions have to be translated into a form, that can be executed by computer. The software, which converts the codes of other languages into machine code, are collectively called Language Translators. Language Translators are categorised into three types - a. Assemblers

Regardless of the programming language used (except machine language), the symbolic instructions have to be translated into a form, that can be executed by computer. The software, which convert the codes of other languages into machine code, are collectively called as Language Translators. Types of Language Translators Language Translators are categorized into three types (a) Assemblers:

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

SUBMITTED TEXT 51 WORDS **100% MATCHING TEXT** 51 WORDS

Assemblers translate the assembly language code (source program) into machine language code (object program). After assembling, a linker program is used to convert the object program into an executable program. The Microsoft assembler program (MASM) and Borland Turbo assembler program (TASM) are two popular assemblers. Assemblers are used mainly in development of system software.

Assemblers translate the assembly language code (source program) into machine language code (object program). After assembling, a linker program is used to convert the object program into an executable program. The Microsoft Assembler Program (MASM) and Borland Turbo Assembler Program (TASM) are two popular assemblers. Assemblers are used mainly in development of system software. (

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SUBMITTED TEXT 22 WORDS **93% MATCHING TEXT** 22 WORDS

Instructions of a high-level language are coded in many statements. At the time of their execution, they are converted statement by statement

Instructions of a high-level language are coded in many statements. At the time of their execution, they are converted into machine code statement by statement,

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SUBMITTED TEXT 67 WORDS **93% MATCHING TEXT** 67 WORDS

into machine code, by using system software, called Interpreters. For example, programs written in BASIC language are executed by using BASICA or GWBASIC interpreters. Programs written in some fourth generation languages, like dBASE III plus are also executed using dBASE interpreter. There are certain disadvantages of interpreters. As instructions are translated and executed simulateously using interpreters, they are very slow for executing large programs. Hence, interpreters are not suitable for most of applications development.

into machine code statement by statement, by using system software, called Interpreters. For example, programs written in BASIC language are executed by using BASIC A or GWBASIC interpreters. Programs written in some fourth generation languages, like dBASE III plus are also executed using dBASE interpreter. There are certain disadvantages of interpreters. As instructions are translated and executed simultaneously using interpreters, they are very slow for executing large programs. Hence, interpreters are not suitable for most of applications development. 35

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SUBMITTED TEXT 58 WORDS **100% MATCHING TEXT** 58 WORDS

contrast to interpreters, compilers provide faster execution speed. Compilers do not translate and execute the instructions at the same time. They translate the entire program (source code) into machine code (object code). Using linker, the object code is converted into executable code. Compilers are widely used in translating codes of high level languages (e.g. COBOL, FORTRAN, PASCAL, Turbo/ Quick BASIC, 74

contrast to interpreters, compilers provide faster execution speed. Compilers do not translate and execute the instructions at the same Time. They translate the entire program (source code) into machine code (object code). Using linker, the object code is converted into executable code. Compilers are widely used in translating codes of high level languages (e.g. COBOL, FORTRAN, PASCAL, Turbo/ Quick BASIC,

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122/291 **SUBMITTED TEXT** 18 WORDS **100%** **MATCHING TEXT** 18 WORDS

Turbo/ Microsoft C etc.) and fourth generation languages (dBASE IV, Foxpro etc.). As compared to interpreters or assemblers,

Turbo/ Microsoft C etc.) and fourth generation languages (dBASE IV, Foxpro etc.). As compared to interpreters or assemblers,

W https://www.docsity.com/en/computer-applications-in-management/2326921/

123/291 **SUBMITTED TEXT** 51 WORDS **100%** **MATCHING TEXT** 51 WORDS

DOS is the most commonly used operating system. The full form of DOS is Disk Operating System. It is a single user operating system which means that only one application can be made to run at one time. DOS provides a 'Platform' or an

DOS is the most commonly used operating system. The full form of DOS is Disk Operating System. It is a single user operating system which means that only one application can be made to run at one time. DOS provides a 'Platform' or an '

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124/291 **SUBMITTED TEXT** 28 WORDS **88%** **MATCHING TEXT** 28 WORDS

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W https://www.docsity.com/en/computer-applications-in-management/2326921/

125/291 **SUBMITTED TEXT** 188 WORDS **97%** **MATCHING TEXT** 188 WORDS

Environment' which lets the application program to interact with CPU and I/O devices. Many application software require DOS for running. The common among these are word processors like Wordstar, Professional write; spreadsheet programs like Lotus 123, VP Planner Plus; accounting software like Tally, EX, etc. Each software package has a specific command to get itself running on DOS. For example, in order to run the spreadsheet program, Lotus 123, you will have to enter 123 at the DOS prompt. DOS will run Lotus 123 for you. Once any application software shuts down, the control again has to come back to DOS and the DOS prompt can be seen again on the screen. Now, DOS is ready to accept more commands from you. MS DOS (Microsoft Disk Operating System), a product of Microsoft Corporation of USA., is the most popular operating system for PCs. Another operating system available in the market is the PC DOS, a product of IBM, which is almost similar to MS DOS. Whether you use MS DOS or PC DOS, the basic commands of DOS remain the same.

Environment' which lets the application program to interact with CPU and I/O devices. Many application software requires DOS for running. The common among these are word processors like Wordstar, Professional write; spreadsheet programs like Lotus 123, VP Planner Plus; accounting software like Tally, EX, etc. Each software package has a specific command to get itself running on DOS. For example, in order to run the spreadsheet program, Lotus 123, you will have to enter 123 at the DOS prompt, DOS will run Lotus 123 for you. On any application software shuts down, the control again has to come back to DOS and the DOS prompt can be seen again on the screen. Now, DOS is ready to accept more commands from you. MS DOS (Microsoft Disk Operating System), a product of Microsoft Corporation of USA, is the most popular operating system for PCs. Another operating system available in the market is the PC DOS, a product of IBM, which is almost similar to MS DOS. Whether you use MS DOS or PC DOS, the basic commands of DOS remains the same.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

126/291 | SUBMITTED TEXT — 103 WORDS | 98% MATCHING TEXT — 103 WORDS

SUBMITTED TEXT	MATCHING TEXT
The booting happens automatically when the computer is switched on, provided DOS is available on it. DOS can be present on both hard disk as well as the floppy disk. So, when the system is turned on, a search for DOS is done on floppy drive first. If it is not present on the floppy drive, the DOS is searched for on the hard disk. Thus, for booting to happen, the DOS must be present either on the floppy or on the hard disk. So, if DOS is not present on the hard disk, insert the floppy carrying DOS software in the A drive before switching on the system.	The booting happens automatically when the computer is switched on, provided DOS is available to it. DOS can be present on both hard disk as well as the floppy disk. So, when the system is turned on, a search for DOS is done on floppy drive first. If it is not present on the floppy drive, the DOS is searched for on the hard disk. Thus, for booting to happen, the DOS must be present either on the floppy or on the hard disk. So, if DOS is not present on the hard disk, insert the floppy carrying DOS software in the A drive before switching on the system.

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127/291 | SUBMITTED TEXT — 15 WORDS | 62% MATCHING TEXT — 15 WORDS

SUBMITTED TEXT	MATCHING TEXT
the following screen can be seen: Current date is Mon 11-02-98 Enter new date (mm-dd-yy): 11-12-98	the following screen appears: Current date is Thu 11-12- Enter new date (mm-dd-yy):_

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128/291 | SUBMITTED TEXT — 82 WORDS | 99% MATCHING TEXT — 82 WORDS

SUBMITTED TEXT	MATCHING TEXT
the screen. However, if booting has been done from the hard disk, then the following Prompt will come: C:\<_ C:\< or A:\< is the DOS Prompt. Looking at DOS Prompt, you can easily make out the currently active drive. If you want to switch yourself over to another drive, then simply type its drive letter after the prompt and hit the >Enter< key as shown below: C:\<A: >Enter< A:\<_ Now again if you want to go back to the C drive, then type in C: and hit the >Enter< key.	the screen. However, if booting has been done from the hard disk, then the following prompt will come: C:\< C:\< or A:\< is the DOS Prompt. Looking at DOS Prompt, you can easily make out the currently active drive. If you want to switch yourself over to the another drive, then simply type its drive letter after the prompt and hit the >Enter< key as shown below: C:\<A: >Enter< A:\< Now again if you want to go back to the C drive, then type in C: and hit the >Enter< key. 44

W https://www.docsity.com/en/computer-applications-in-management/2326921/

129/291 | SUBMITTED TEXT — 95 WORDS | 93% MATCHING TEXT — 95 WORDS

SUBMITTED TEXT	MATCHING TEXT
A number (0-9) 3. Special characters such as $, #, &, @, !, %, (,), ~, { , }, ', ^ etc. except *, ?, fullstop (.) and space ( ). It is a good practice to give meaningful names to your files. However, no two files can have exactly the same name on the disk. Thus, a name given to a file on a disk has to be unique. A look at a few valid and invalid filenames: VALID INVALID MYHUNT MY BOOK.DOC DRAGON.TXT B.R.ARORA UPHILL.UP S?JAIN.BAS VIJAYA EXCELBOOKS EMPLOYEE.EMP ANURAG*.* 157.IN VICKY.MEHTA The rules for naming a directory are the same as that of naming files.	A number (0-9) 3. Special characters such as: $, #, &, @, !, %, (,), -, { , }, " A, etc. except *, ?, full stop (.) and space ( ). It is a good practice to give meaningful names to your files. However, no two files can have exactly the same name on the disk. Thus, a name given to a file on a disk has to be unique. A look at a few valid and invalid file names: VALID INVALID MYHUNT MY BOOK.DOC Dragon.Txt B.R. Arora Uphill.up S?JAIN.BAS VIJAYA EXCELBOOKS Employee.Emp ANARAG.** 157.IN VICKY.MEHTA The rules for naming a directory are the same as that of naming files.

W https://www.docsity.com/en/computer-applications-in-management/2326921/

130/291	SUBMITTED TEXT	95 WORDS	100%	MATCHING TEXT	95 WORDS

DOS offers a variety of commands to perform various functions. With the help of DOS commands, you can display the list of files and directories that are present on the disk, create new files and directories, remove unwanted files and directories and much more. DOS commands can be entered either in uppercase or lowercase letters. The format of a DOS command is called syntax. All DOS commands begin with command name. When DOS carries out the instructions given by you, it is called the execution of DOS command. Let us discuss some of the DOS commands in detail. 104

DOS offers a variety of commands to perform various functions. With the help of DOS commands, you can display the list of files and directories that are present on the disk, create new files and directories, remove unwanted files and directories and much more. DOS commands can be entered either in uppercase or lowercase letters. The format of a DOS command is called syntax. All DOS commands begin with command name. When DOS carries out the instructions given by you, it is called the execution of DOS command. Let us discuss some of the DOS commands in detail. (

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131/291	SUBMITTED TEXT	74 WORDS	96%	MATCHING TEXT	74 WORDS

are written as bold letters throughout this chapter) Directory Commands of DOS The directory commands help you to create new directories and remove existing ones. They also allow you to travel from one directory to another. You can also view the listing of files and directories that are present on the disk. Displaying a List of Files on the Disk – DIR Command This particular DOS command helps you in displaying a list of files or directories present on

are written as bold letters throughout this unit). Directory Commands of DOS The directory commands help you to create new directories and remove existing ones. They also allow you to travel from one directory to another. You can also view the listing of files and directories that are present on the disk. 1. Displaying a List of Files on the Disk: DIR command This particular DOS command helps you in displaying a list of files or directories that are present on

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132/291	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

disk. Thus, to see the contents of your hard disk, issue the following command: C:\<DIR >Enter<

disk. Thus, to see the contents of your hard disk, issue the following command: C:\<DIR >Enter<

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133/291	SUBMITTED TEXT	23 WORDS	58%	MATCHING TEXT	23 WORDS

windows are Windows 1.x, Windows 2.x, Windows 3.0, Windows 3.1, Windows 3.11, Windows for Workgroups 3.11, Windows 95, Windows 98 and Windows NT. Windows 1.

Windows 3.0 • Windows 3.1x Windows 9x • Windows 95 (Development) • Windows 98 • Windows Me Windows NT • Windows NT 3.1 • Windows NT 3.5 • Windows NT 3.51 • Windows

W   https://en.wikipedia.org/wiki/Windows_3.1x

134/291	SUBMITTED TEXT	11 WORDS	95%	MATCHING TEXT	11 WORDS

Volume in drive C has no label Volume Serial Number is 1421-15AB

SA   Computer Fundamentals and PC Software (Block 1).pdf (D148967917)

135/291	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

If you wish to view the contents of the floppy drive, then you

If you wish to view the contents of the floppy drive, then you

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136/291	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

First switch yourself to the floppy drive and then issue the DIR command.

first switch yourself to the floppy drive and then issue the DIR command

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137/291	SUBMITTED TEXT	16 WORDS	97%	MATCHING TEXT	16 WORDS

if you wish to view the contents of the sub-directory EXPENSE, issue the following command: C:\<DIR \EXPENSE >Enter<

If you wish to view the contents of the sub-directory EXPENSE, then issue the following command: C:\<DIR \EXPENSE >Enter<

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138/291	SUBMITTED TEXT	11 WORDS	95%	MATCHING TEXT	11 WORDS

Volume in drive C has no label Volume Serial Number is 1421-15AB

SA   Fundamental of PC Software BLOCK 1.pdf (D164969260)

139/291	SUBMITTED TEXT	27 WORDS	100%	MATCHING TEXT	27 WORDS

Let us assume that there is one more sub-directory by the name BUSINESS existing under EXPENSE. To view the contents of this sub-directory, issue the following command: C:\<DIR \EXPENSE\BUSINESS >Enter<

Let us assume that there is one more sub-directory by the name BUSINESS existing under EXPENSE. To view the contents of this sub-directory, issue the following command: C:\<DIR \EXPENSE\BUSINESS >Enter<

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140/291	SUBMITTED TEXT	44 WORDS	91%	MATCHING TEXT	44 WORDS

If you have a large number of files on the disk, then on issuing DIR command, the screen scrolls up and only a few filenames are shown. In such a case, issue the following command: C:\<DIR/P >Enter< This command will show the contents of the disk pagewise.

If you have a large number of files on the disk, then on issuing, DIR command, the screen scrolls up and only a few file names are shown. In such a case, issue the following command: C:\<DIR/P >Enter< The above command will show the contents of the disk pagewise

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if you are interested only in seeing the filenames, issue the following command: C:\<DIR/W >Enter< This command shows the names of files and directories widthwise. So, in one line only five names of files and directories are shown. The other details like the size of file, the 106	if you are interested only in seeing the file names, then issue the following command: C:\<DIR/W >Enter< The above command shows the names of files and directories widthwise. So, in one line only five names of files and directories are shown. The other details like the size of file, the

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date and time of each file creation are not shown. The directories are shown in square ([ ]) brackets. Making a Directory – MD Command In the earlier part of this chapter, we discussed that all the related files should be clubbed at one place, called a directory or sub-directory. So, to club all the related files under one head, new directories and sub-directories have to be created. Let us create a new sub-directory by the name INCOME under the Root directory. The following command can achieve this: C:\<MD INCOME >Enter< where MD stands for Make Directory Further, let us create another sub-directory by the name HOSPITAL under the sub-directory INCOME. C:\<MD INCOME\HOSPITAL >Enter< Removing a Directory – RD Command With times, certain directories grow old and are no more needed. It is better to delete such directories because they can save	date and time of each file creation are not shown. The directories are shown in square ([]) brackets. 2. Making a Directory: MD Command In the earlier part of this unit, we discussed that all the related files should be clubbed at one place, called a directory or sub-directory. So, to club all the related files under one head, new directories and sub-directories have to be created. Let us create a new sub-directory by the name INCOME under the Root directory. The following command can achieve this: C:\<MD INCOME >Enter< where MD stands for Make Directory. Further, let us create another sub-directory by the name HOSPITAL under the sub-directory Income. C:\<MD INCOME\HOSPITAL >Enter< 3. Removing a Directory: RD command With time, certain directories grow old and are no more needed. It is better to delete such directories because they can save

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many precious bytes on the disk. So, let us delete the sub-directory HOSPITAL with the following command: C:\<RD INCOME\HOSPITAL >Enter< where RD stands for Remove Directory A directory or a sub-directory has to be essentially empty before removing it. For example, in order to remove the sub-directory HOSPITAL, there should not be any directories and files under it. So, you must first delete all the files and remove all the sub-directories present under the sub-directory HOSPITAL before removing it. We will discuss the method for deleting files	many precious bytes on the disk. So, let us delete the sub-directory HOSPITAL with the following command: C:\<RD INCOME\HOSPITAL >Enter< where RD stands for Remove Directory A directory or a sub-directory has to be essentially empty before removing it. For example, in order to remove the sub-directory HOSPITAL, there should not be any directories and files under it. So, you must first delete all the files and remove all the sub-directories present under the sub- directory HOSPITAL before removing it. We will discuss the method for deleting files

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| 147/291 | **SUBMITTED TEXT** | 181 WORDS | **96%** | **MATCHING TEXT** | 181 WORDS |

At times, you may have to work on some other machine. So, this involves copying files from one disk to another. Copying of files can happen from hard disk to floppy or vice- versa. Files can also be copied onto the same disk with a different name. The COPY command helps us to accomplish all these tasks. The syntax of the copy command is: COPY >Source drive<: (File spec 1) >Target drive<: (File spec 2) where, Source drive refers to the drive from where the file has to be copied. It can be A, B or C. `File Spec 1' refers to the path from where the file that has to be copied. 'Target drive' refers to the drive where the file is going to be copied. 'File Spec 2' refers to the destination where the file is going to be copied. 108 Basic Computer Skills Copying a File to another Drive under the Same Name A file can have the same name if it is stored on different disks. Thus, to copy a file by the name SCENE from hard disk to floppy disk, issue the following command: C:\< COPY C:SCENE A:SCENE >Enter< After the

At times, you may have to work on some other machine. So, this involves copying files from one disk to another. Copying of files can happen from hard disk to floppy or vice-versa. Files can also be copied onto the same disk with a different name. The COPY command helps us to accomplish all these tasks. The syntax of the copy command is: COPY >Source drive<: (File spec 1) >Target drive<: (File spec 2) Where Source drive refers to the drive from where the file has to be copied. It can be A, B or C. 'File Spec l' refers to the path from where the file that has to be copied. 'Target drive' refers to the drive where the file is going to be copied. 'File Spec 2' refers to the destination where the file is going to be copied. (i) Copying a file to another drive under the same name: A file can have the same name if it is stored on different disks. Thus, to copy a file by the name SCENE from hard disk to floppy disk, issue the following command: C: \< COPY C:SCENE A:SCENE >Enter< As the

| 148/291 | **SUBMITTED TEXT** | 27 WORDS | **51%** | **MATCHING TEXT** | 27 WORDS |

copied from the active drive, then specifying the source drive can be very easily avoided. On similar grounds, if the filename remains unchanged then there is no need

copied from the active drive, then there is no need to specify the source drive in the above command. On similar grounds, if the file name remains unchanged then there is no need

| 149/291 | **SUBMITTED TEXT** | 40 WORDS | **98%** | **MATCHING TEXT** | 40 WORDS |

specify it after the target drive. Thus, the above command can also be given in the following way: C:\<COPY SCENE A: >Enter< Copying a File to another Disk under a Different Name The name of the file can be changed very easily while copying.

specify it after the target drive. Thus, the above command can also be given in the following way: C:\<COPY SCENE A: >Enter< (ii) Copying a file to another disk under a different name: The name of the file can be changed very easily while copying.

| 150/291 | **SUBMITTED TEXT** | 13 WORDS | **86%** | **MATCHING TEXT** | 13 WORDS |

Volume in drive C has no label Volume Serial Number is 1421-15AB Directory of C:\

SA CF and PC software.pdf (D157200793)

| 151/291 | **SUBMITTED TEXT** | 20 WORDS | **100%** | **MATCHING TEXT** | 20 WORDS |

The following command copies the file SCENE from the hard disk onto floppy disk by the name SERENE. C:\<COPY SCENE A:SERENE >Enter<

The following command copies the file SCENE from the hard disk onto floppy disk by the name SERENE. C:\<COPY SCENE A:SERENE >Enter< 49

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| 152/291 | **SUBMITTED TEXT** | 12 WORDS | **76%** | **MATCHING TEXT** | 12 WORDS |

the following command: C:\<DIR O *.* >Enter< The above command will list the

the following command: C:\<DIR/P >Enter< The above command will show the

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| 153/291 | **SUBMITTED TEXT** | 12 WORDS | **75%** | **MATCHING TEXT** | 12 WORDS |

hard disk to floppy, issue the following command: C:\<COPY \EXPENSE*. A: >Enter< The

hard disk to floppy disk, issue the following command: C:\< COPY C:SCENE A:SCENE >Enter< As the

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| 154/291 | **SUBMITTED TEXT** | 60 WORDS | **100%** | **MATCHING TEXT** | 60 WORDS |

giving the above command, the following message will come on the screen: Are you Sure (Y/N)?_ Press `Y' if you really want to delete all files otherwise press any key. Never try the above command on root directory of hard disk, otherwise your most important DOS file COMMAND.COM will also be deleted and thereafter you will not be able to boot the 112

giving the above command, the following message will come on the screen: Are you Sure (Y /N)? _ Press 'Y' if you really want to delete all files otherwise press any key. Never try the above command on root directory of hard disk, otherwise your most important DOS file COMMAND. COM will also be deleted and thereafter you will not be able to boot the

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| 155/291 | **SUBMITTED TEXT** | 22 WORDS | **95%** | **MATCHING TEXT** | 22 WORDS |

the directory and file commands of DOS. Now, let us make ourselves familiar with other commonly used commands. Displaying and/or Changing the

the directory and file commands of-DOS. Now, let us make ourselves familiar with other commonly used commands. (A) Displaying and/or changing date: The

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156/291 — SUBMITTED TEXT — 47 WORDS / 94% MATCHING TEXT — 47 WORDS

SUBMITTED TEXT

C:\<DATE >Enter< After issuing the above command the following screen appears: C:\<DATE Current date is Thu 11-12-98 Enter new date (mm-dd-yy):_ So, key in the new date in `month-date-year' format. However if you do not want to change this date simply hit the >Enter< key. The current date will be taken as new date.

MATCHING TEXT

C:\<DATE >Enter< After issuing the above command the following screen appears: Current date is Thu 11-12- Enter new date (mm-dd-yy):_ So, key in the new date in 'month-date-year' format. However if you do not want to change this date simply hit the >Enter< key. The current date will be taken as new date. (

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157/291 — SUBMITTED TEXT — 27 WORDS / 95% MATCHING TEXT — 27 WORDS

SUBMITTED TEXT

and/or Changing the Current Time – The Time Command The TIME command is used to display and change the current time. C:\<TIME >Enter< On issuing this command, the following screen appears: C:\<TIME

MATCHING TEXT

and/or changing the current time: The TIME Command The TIME command is used to display and change the current time. C: \< TIME >Enter< On issuing this command, the following screen appears: Current time

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158/291 — SUBMITTED TEXT — 36 WORDS / 100% MATCHING TEXT — 36 WORDS

SUBMITTED TEXT

Current time is 11:05:10:01 Enter new time:_ Enter the new time in hours: minutes: seconds format. Hit the >Enter< key if you do not want to change the time. The new time can also be specified along with TIME command. C:\<

MATCHING TEXT

Current time is 11:05:10:01 Enter new time: Enter the new time in hours: minutes: seconds format. Hit the >Enter< key if you do not want to change the time. The new time can also be specified along with TIME command. (C)

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159/291 — SUBMITTED TEXT — 43 WORDS / 98% MATCHING TEXT — 43 WORDS

SUBMITTED TEXT

Clearing Screen – The CLS Command In order to clear the cluttered and clumsy screen, issue the CLS command. This will remove the contents shown on your screen thus making it look neater and cleaner. The CLS command is given in the following manner. C:\<CLS >Enter< Creation

MATCHING TEXT

Clearing screen: The CLS Command In order to clear the cluttered and clumsy screen, issue the CLS command. This will remove the contents shown on your screen thus making it look neater and cleaner. The CLS command is given in the following manner. C:\<CLS >Enter< (D) Creation 01

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| 160/291 | **SUBMITTED TEXT** | 13 WORDS | **100%** | **MATCHING TEXT** | 13 WORDS |

a New File – The COPY CON Command Text Files can be created

a new file: The COPY CON Command Text Files can be created

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| 161/291 | **SUBMITTED TEXT** | 117 WORDS | **98%** | **MATCHING TEXT** | 117 WORDS |

COPY CON command. Look at the following example: C:\<COPY CON HELLO.TXT >Enter< This command tells DOS to copy the information from the keyboard or console and put it in the file HELLO.TXT. On issuing the command the following screen appears: C:\<COPY CON HELLO.TXT _ You will find a blinking cursor in the second line. Enter the text and terminate each line by pressing >Enter< key as illustrated below: My first DOS file. The name given to this file is Hello.Txt. >Enter< It is very easy to create files in DOS. >Enter< Once all the required text is entered, hit the >Ctrl+Z< keys together to mark the end of text. >Ctrl+Z< keys tell DOS that no more text is going to be entered now. Again hit the >Enter< key.

COPY CON command. Look at the following example: C:\<COPY CON HELLO.TXT >Enter< 50 Computer Application in Management This command tells DOS to copy the information from the keyboard or Console and put it in the file HELLO.TXT. On issuing the command the following screen appears: C:\<COPY CON HELLO.TXT _ You will find a blinking cursor in the second line. Enter the text and terminate : each line by pressing >Enter< key as illustrated below: My first DOS file. The name given to this file is Hello.Txt.>Enter< It is very easy to create files in DOS. >Enter< Once all the required text is entered, hit the >Ctrl+Z< keys together to mark the end of Text. >Ctrl+Z< keys tell DOS that no more text is going to be entered now. Again hit the >Enter< key. (

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| 162/291 | **SUBMITTED TEXT** | 44 WORDS | **96%** | **MATCHING TEXT** | 44 WORDS |

Displaying Contents of Files – The TYPE Command The contents of any file can be viewed very easily by giving the TYPE command followed by the filename. Let us see the contents of file HELLO.TXT that we have just created by issuing the following command. C:\<TYPE HELLO.TXT >Enter<

Displaying contents of files: The TYPE Command The contents of any file can be viewed very easily by giving the TYPE command followed by the file name. Let us see the contents of file HELLO.TXT that we have just created by issuing the following command. C:\<TYPE HELLO.TXT >Enter<

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| 163/291 | **SUBMITTED TEXT** | 20 WORDS | **97%** | **MATCHING TEXT** | 20 WORDS |

My first DOS file. The name given to this file is Hello.Txt. It is very easy to create files in DOS.

My first DOS file. The name given to this file is Hello.Txt.>Enter< It is very easy to create files in DOS. >

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SUBMITTED TEXT 26 WORDS **100%** **MATCHING TEXT** 26 WORDS

You can also send the output of a file to the printer. The following command starts the printing job, provided the printer is on. C:\<TYPE HELLO.TXT <PRN >Enter<

You can also send the output of a file to the printer. The following command starts the printing job provided the printer is on. C:\<TYPE HELLO.TXT <PRN >Enter< (

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SUBMITTED TEXT 62 WORDS **99%** **MATCHING TEXT** 62 WORDS

At times you may require to display a text on the screen while executing a set of commands. The ECHO command helps you to display a meaningful message on the screen. This command is issued as illustrated below: C:\<ECHO Please insert floppy in drive A: >Enter< The ECHO command is a special DOS command used exclusively in batch files (files containing a set of DOS commands)

At times, you may require to display a text on the screen while executing a set of commands. The ECHO command helps you to display a meaningful message on the screen. This command is issued as illustrated below: C:\<ECHO Please insert floppy in drive A: >Enter< The ECHO command is a special DOS command used exclusively in batch files (the files containing a set of DOS commands).

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SUBMITTED TEXT 30 WORDS **100%** **MATCHING TEXT** 30 WORDS

There is one more form of ECHO command i.e. ECHO OFF as shown below: C:\<ECHO OFF >Enter< The above command tells DOS not to display other commands in the batch file.

There is one more form of ECHO command i.e., ECHO OFF as shown below: C:\<ECHO OFF >Enter< The above command tells DOS not to display other commands in the batch file. (

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SUBMITTED TEXT 89 WORDS **95%** **MATCHING TEXT** 89 WORDS

Users always prefer to see the prompt for currently logged sub-directory. The PROMPT command tells DOS to include the sub-directory, greater than (<) sign, date, time or any text as a part of the prompt. The various forms of PROMPT command are discussed below: i. To display the path designation (e.g. \ACCOUNT\EXPENSE) and the greater than sign as a DOS prompt, issue the following command: C:\<PROMPT pg >Enter< After giving the above command, if you are logged to EXPENSE sub-directory of ACCOUNT sub-directory in the root directory, then the following prompt will come on the screen: C:\ACCOUNT\EXPENSE<_ 115 Introduction to

Users always prefer to see the prompt for currently logged sub-directory. The PROMPT command tells DOS to include the sub-directory, greater than (<) sign or any text as a part of the prompt. The various forms of PROMPT command are discussed below: (i) To display the path designation (e.g., \ACCOUNT\EXPENSE) and the greater than sign as a DOS prompt, issue the following command: C:\< PROMPT pg >Enter< After giving the above command, if you are logged to EXPENSE sub-directory of ACCOUNT sub-directory in the root directory, then the following prompt will come on the screen: C: \ACCOUNT\EXPENSE<_ (ii) To

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SUBMITTED TEXT   29 WORDS   **70%**   **MATCHING TEXT**   29 WORDS

along with path designation and greater than prompt, issue the following command: C:\<PROMPT Welcome to IMT pg >Enter< The above command will display the following prompt: Welcome to IMT C:\<_ iii. To display

along with path designation and greater than prompt, issue the following command: C:\<PROMPT I Love p$g >Enter< The above command will display the following prompt: I Love C: \<_ 51 PC-Software Packages(iii) To display

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SUBMITTED TEXT   45 WORDS   **84%**   **MATCHING TEXT**   45 WORDS

issue the following command: C:\<PROMPT $d $t pg >Enter< The above command will display the following prompt: SUN 11-15-1998 13:21:23.36 C:\<_ iv. To display just greater than sign without path designation, you can give the following command: C:\<PROMPT >Enter< The command will display the following prompt: C<_ Specifying a Sub-directory PATH – The PATH

issue the following command: C:\<PROMPT I Love India pg >Enter< The above command will display the following prompt: I Love India C: \<_ 51 PC-Software Packages(iii) To display just greater than sign without path designation, you can give the following command: C:\<PROMPT >Enter< The command will display the following prompt: C <_ (H) Specifying a sub-directory PATH: The PATH

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SUBMITTED TEXT   20 WORDS   **100%**   **MATCHING TEXT**   20 WORDS

By this time, you must be familiar with the directory structure of DOS. Suppose your program (say PRINCE.COM file) lies

By this time, you must be familiar with the directory structure of DOS. Suppose your program (say PRINCE.COM file) lies

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SUBMITTED TEXT 119 WORDS **100%** **MATCHING TEXT** 119 WORDS

the GAME sub-directory of the root directory and you want to execute it from any other sub-directory (say WINDOWS). To execute PRINCE.COM file, first you will have to make GAME as the currently active sub- directory and then issue the following command: C:\GAME<PRINCE >Enter< DOS provides a shortcut way to locate and run the above program from any other sub– directory by specifying the path as illustrated below: C:\WINDOWS<PATH C:\GAME >Enter< The above command tells DOS that GAME sub-directory is in the current search path of DOS. DOS will first search the required program file in the currently logged drive and then GAME sub-directory. Thus, the PRINCE.COM file can be executed directly from WINDOWS or any sub-directory as shown below: C:\WINDOWS<PRINCE >Enter< The PATH command is generally used in batch files

the GAME sub-directory of the root directory and you want to execute it from any other sub-directory (say WINDOWS). To execute PRINCE.COM file, first you will have to make GAME as the currently active sub-directory and then issue the following command: C:\GAME<PRINCE >Enter< DOS provides a shortcut way to locate and run the above program from any other sub-directory by specifying the path as illustrated below: C:\ WINDOWS< PATH C:\GAME >Enter< The above command tells DOS that GAME sub-directory is in the current search path of DOS. DOS will first search the required program file in the currently logged drive and then GAME sub- directory. Thus, the PRINCE.COM file can be executed directly from WINDOWS or any sub- directory as shown below: C:\WINDOWS<PRINCE >Enter< The PATH command is generally used in batch files.

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SUBMITTED TEXT 14 WORDS **100%** **MATCHING TEXT** 14 WORDS

All DOS commands can be classified into two categories: Internal Commands and External Commands. 116

All DOS commands can be classified into two categories: Internal Commands and External Commands.

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SUBMITTED TEXT 71 WORDS **100%** **MATCHING TEXT** 71 WORDS

The commands which are a part of the main files of DOS (i.e. COMMAND.COM and two hidden files) are known as Internal Commands. They are loaded in the RAM as soon as the computer is switched on. The important internal commands are DIR, COPY, DEL, REN, MD, CD, RD, TYPE, COPY CON, DATE, TIME, CLS, ECHO, PROMPT and PATH. We have already discussed all these commands quite in detail. These commands are very frequently used.

The commands which are a part of the main files of DOS (i.e., COMMAND. COM and two hidden files) are known as Internal Commands. They are loaded in the RAM as soon as the computer is switched on. The important internal commands are: DIR, COPY, DEL, REN, MD, CD, RD, TYPE, COPY CON, DATE, TIME, CLS, ECHO, PROMPT and PATH. We have already discussed all these commands quite in detail. These commands are very frequently used.

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SUBMITTED TEXT 81 WORDS **100%** **MATCHING TEXT** 81 WORDS

External commands are those commands which are stored on disks as separate program files. These files have the same primary name as the command name. The extension of these files is either COM or EXE. So, at the time of execution of these commands, the corresponding program file should be present in the DOS sub-directory of the harddisk and DOS sub-directory should also be in the path search. The commonly used external commands are– FORMAT, DISKCOPY, CHKDSK, XCOPY and LABEL. Let us learn about these commands.

External commands are those commands which are stored on disks as separate program files. These files have the same primary name as the command name. The extension of these files is either COM or EXE. So, at the time of execution of these commands, the corresponding program file should be present in the DOS sub-directory of the harddisk and DOS sub-directory should also be in the path search. The commonly used external commands are: FORMAT, DISKCOPY, CHKDSK, XCOPY and LABEL. Let us learn about these commands. 54

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SUBMITTED TEXT 141 WORDS **100%** **MATCHING TEXT** 141 WORDS

At this point, insert the diskette whose contents are to be copied and then hit any key. Another message appears on the screen as shown below: Insert TARGET diskette in drive A Press any key to continue So, after this message appears, insert the diskette into which the files are to be copied. Thereafter, press any key to continue the process. Once the process of copying is completed, the following screen appears: Copy Complete Copy Another (Y/N)?_ Press the 'Y' (for Yes) key if you want to copy the contents of some other diskette. DOS will again prompt you to enter the source diskette. However, if you want to stop the DISKCOPY process, press 'N' (for No). DISKCOPY command first formats the target diskette if it is unformatted and then copies files onto it. So, if any contents exist on the target diskette, they are all going to be removed. The DISKCOPY command

At this point, insert the diskette whose contents are to be copied and then hit any key. Another message appears on the screen as shown below: Insert TARGET diskette in drive A Press any key to continue So, after this message appears, insert the diskette into which the files are to be copied. Thereafter, press any key to continue the process. Once the process of copying is completed, the following screen appears: Copy Complete Copy Another (Y/N)?_ Press the 'Y' (for Yes) key if you want to copy the contents of some other diskette. DOS will again prompt you to enter the source diskette. However, if you want to stop the DISKCOPY process, press 'N' (for No). DISKCOPY command first formats the target diskette if it is unformatted and then copies files onto it. So, if any contents exist on the target diskette, they are all going to be removed. The DISKCOPY command

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SUBMITTED TEXT 16 WORDS **93%** **MATCHING TEXT** 16 WORDS

DISKCOPY command needs the program file DISKCOPY.COM for execution. Copying Files and Directories – THE XCOPY

DISKCOPY command needs the program file DISKCOPY.COM for execution. 5. Copying files and directories: XCOPY Command XCOPY

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| 177/291 | SUBMITTED TEXT | 196 WORDS | 100% | MATCHING TEXT | 196 WORDS |

XCOPY Command The XCOPY command is used to copy the files present in sub-directories. The command 'COPY *.*' copies the files of the currently working directory and DISKCOPY command copies the entire contents from one floppy to another. So, they are not helpful in copying files selectively. The XCOPY command offers three special advantages: a. It prompts you to specify the files that you want to copy. b. It can also copy directories and other lower level directories. c. It can be used to copy files from the hard disk to the floppy disk. Now, let us explore the XCOPY command. If you wish that DOS should ask for your confirmation for copying a file, then use the /P option along with the XCOPY command. Consider the following example: C:\<XCOPY C:ACCOUNT A:ACCOUNT /P >Enter< If you want to copy the directories and lower level directories, then use the /S option alongwith the XCOPY command. Look at the following example: C:\<XCOPY C: ACCOUNT A:ACCOUNT /S >Enter< This command will copy the directory and all the sub-directories onto the A disk. However, if the /S option is not specified, then the XCOPY command works within the single directory. You can also use /P and /S option simultaneously with the XCOPY command as shown below: 120

XCOPY Command The XCOPY command is used to copy the files present in sub-directories. The command 'COPY *.*' copies the files of the currently working directory and DISKCOPY command copies the entire contents from one floppy to another. So, they are not helpful in copying files selectively. The XCOPY command offers three special advantages: a) It prompts you to specify the files that you want to copy. b) It can also copy directories and other lower level directories. c) It can be used to copy files from the hard disk to the floppy disk. Now, let us explore the XCOPY command. If you wish that DOS should ask for your confirmation for copying a file, then use the /P option along with the XCOPY command. Consider the following example: C:\<XCOPY C:ACCOUNT A:ACCOUNT /P >Enter< If you want to copy the directories and lower level directories, then use the /S option alongwith the XCOPY command. Look at ,the following example: C:\<XCOPY C: ACCOUNT A:ACCOUNT /S >Enter< This command will copy the directory and all the sub-directories onto the A disk. However, if the /S option is not specified, then the XCOPY command works within the single directory. You can also use /P and /S option simultaneously with the XCOPY command as shown below:

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| 178/291 | SUBMITTED TEXT | 27 WORDS | 100% | MATCHING TEXT | 27 WORDS |

C:\<XCOPY C:ACCOUNT A:ACCOUNT /P/S >Enter< The whole path can be specified with the XCOPY command. This command again needs the program file XCOPY.EXE in order to get executed.

C:\<XCOPY C:ACCOUNT A:ACCOUNT /P/S >Enter< The whole path can be specified with the XCOPY command. This command again needs the program file XCOPY.EXE in order to get executed.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

179/291 | **SUBMITTED TEXT** | 133 WORDS | **97%** | **MATCHING TEXT** | 133 WORDS

SUBMITTED TEXT	MATCHING TEXT
Very often, you keep keying in the same sequence of commands to do a repetitive job. For example, everyday, when you start your work on the computer, you first see the listing of files present on the hard disk. Then, you copy all the files with extension EXE and TXT from the floppy disk to hard disk. Thus, for achieveing your task, you have to issue the following commands everyday. C:\<DIR/P >Enter< C:\<COPY A: *.EXE C: >Enter< C:\<COPY A: *.TXT C: >Enter< DOS can really simplify your task. All the sequence of commands can be put in a file which is called a batch file. This file offers a great advantage. Any number of commands given in a batch file can be executed by just giving a single command at the DOS prompt. DOS executes all these commands one by one.	Very often, you keep keying in the same sequence of commands to do a repetitive job. For example, everyday, when you start your work on the computer, you first see the listing of files present on the hard disk. Then, you copy all the files with extension EXE and TXT from the floppy disk to hard disk. Thus, for achieving your task, you have to issue the following commands everyday. C:\<DIR/P >Enter< C:\<COPY A: *.EXE C: >Enter< C:\<COPY A: *.TXT C: >Enter< 55 PC-Software PackagesDOS can really simplify your task. All the sequence of commands can be put in a file which is called a batch file. This file offers a great advantage. Any number of commands given in a batch file can be executed by just giving a single command at the DOS prompt. DOS executes all these commands one by one.

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180/291 | **SUBMITTED TEXT** | 71 WORDS | **96%** | **MATCHING TEXT** | 71 WORDS

SUBMITTED TEXT	MATCHING TEXT
All the batch files can have any primary name but the extension given to these kinds of files is BAT. The method of creating a batch file is exactly similar to that of creating any other file on DOS. Let us see it through an example. C:\<COPY CON PREETI.BAT >Enter< DIR/P >Enter< COPY A: *.EXE C: >Enter< COPY A: *.TXT C: >Enter< >CTRL+Z< >Enter< In the above example, a batch file by the name PREETI.BAT has been created.	All the batch files can have any primary name but the extension given to these kinds of files is BAT. The method of creating a batch file is exactly similar to that of creating any other file on DOS. Let us see it, through an example: C: \<COPY CON MY. BAT >Enter< DIR/P >Enter< COPY A: *.EXE C: >Enter< COPY A: *.TXT C: >Enter< >CTRL+Z< >Enter< In the above example, a batch file by the name MY.BAT has been created.

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| 184/291 | SUBMITTED TEXT | 12 WORDS | 90% | MATCHING TEXT | 12 WORDS |

All _____ commands can be classified into two categories: Internal and External

All DOS commands can be classified into two categories: Internal Commands and External

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| 185/291 | SUBMITTED TEXT | 13 WORDS | 95% | MATCHING TEXT | 13 WORDS |

The _____ command is used to copy the files present in sub-directories. 123

The XCOPY command is used to copy the files present in sub-directories.

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| 186/291 | SUBMITTED TEXT | 28 WORDS | 88% | MATCHING TEXT | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 187/291 | SUBMITTED TEXT | 28 WORDS | 88% | MATCHING TEXT | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 188/291 | SUBMITTED TEXT | 48 WORDS | 85% | MATCHING TEXT | 48 WORDS |

various components of Microsoft word window: 1. Title Bar: Title bar shows the name of the document and situated in the top of the window application. 9 7 8 1 5 4 3 2 9 147 Microsoft Word 2000 2. Menu Bar: Menu bar contains the various commands under the various topics to perform some special tasks. Menu bar is located

various components of Microsoft Excel are given Title Bar: Title bar shows the name of the document and situated in the top of the window application. 2. Menu Bar: Menu bar contains the various commands under the various topics to perform some special tasks. Menu bar is located

SA   Computer Application.pdf (D166063658)

| 189/291 | SUBMITTED TEXT | 19 WORDS | 63% | MATCHING TEXT | 19 WORDS |

margins and indents in easier way and they also provide measurement for the page formatting. 5. Cursor: Cursor is

margins and indents can be adjusted in the easier way and it also provides measurement for the page formatting. Microsoft Word Window 6. Cursor: Cursor is

SA   Computer Application.pdf (D166063658)

190/291	SUBMITTED TEXT	40 WORDS	90% MATCHING TEXT	40 WORDS

bar displays the position of the cursor; status of some important keys of keyboard; the messages for the toolbar button when a mouse points to it, messages for menu option, when a menu option is selected or pointed out by a user

Bar: It displays the positioning of the cursor, displays the status of some important keys of keyboard, shows the messages for the toolbar button when a mouse 158 points to it, displays messages for menu option when a menu option is selected or pointed out by a user. 9.

SA   Computer Application.pdf (D166063658)

191/291	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS

There are two types of scroll bars: i. Horizontal Scrollbar ii. Vertical Scrollbar

There are two types of scroll bars i. Horizontal Scrollbar ii. Vertical Scrollbar

SA   Computer Application.pdf (D166063658)

192/291	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS

View Buttons: View buttons are shortcuts of various views in the View Menu,

View Buttons: View buttons are shortcuts of various views in the View Menu. 10.

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193/291	SUBMITTED TEXT	40 WORDS	96% MATCHING TEXT	40 WORDS

Document Navigator: Document Navigator allows navigating the document in different types of objects and is activated when clicked on the ball type button on the vertical scroll bar. 10. Office Assistant: Office assistant provides you the online help and real-time tips while working

Document Navigator: Document Navigator allows navigating the document in different types of objects and is activated when clicked on the ball type button on the vertical scroll bar. 12. Office Assistant: Office assistant provides you the online help, real-time tips while working.

SA   Computer Application.pdf (D166063658)

194/291	SUBMITTED TEXT	41 WORDS	70% MATCHING TEXT	41 WORDS

When you open the Word a blank document appears. You can start typing on it directly. But for performing various other activities, you need to learn about the different menus in the menu bar and the options available under these menu bars.

When you open the word a blank document opens. You can start typing on it directly. But for performing various other options you have to learn about the different components in the window and the options under these bars. 157 1.

SA   Computer Application.pdf (D166063658)

195/291

SUBMITTED TEXT	87 WORDS	88% MATCHING TEXT	87 WORDS

Left or Right one character ? Or ? Left or Right one word Ctrl+ ? or Ctrl+? Up or Down one line ? Or ? Up or Down one paragraph Ctrl+ ? or Ctrl + ? Start or end of a line Home or End Up or Down one screen Page up or Page Down Top or bottom of the current screen Ctrl+Page Up or Ctrl+Page Down Start or end of the document Ctrl+Home or Ctrl+End File-Related Operations

Left or Right one character ← Or → Moves Left or Right one word Ctrl + ← or Ctrl + → Moves Up or Down one line ↑ Or ↓ Moves Up or Down one paragraph Ctrl + ↑ or Ctrl + ↓ Moves to the start or end of a line Home or End Moves Up or Down one screen Page up or Page Down Moves to the top or bottom of the current screen Ctrl + Page up or Ctrl + Page Down Moves to the start or end of the document Ctrl + Home or Ctrl + End 8.5 Working with Word Document - File Related Operations

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196/291

SUBMITTED TEXT	19 WORDS	80% MATCHING TEXT	19 WORDS

a New File 1. Click on the File menu. Click on the New option or press Ctrl+N through the keyboard

a new file, Click on the File menu. Then Click on the new option or you can directly press the Ctrl+N from the keyboard.

SA Computer Application.pdf (D166063658)

197/291

SUBMITTED TEXT	18 WORDS	97% MATCHING TEXT	18 WORDS

Select the Blank document from the General Tab from the dialog box and then press OK button.

Select the Blank document from the General Tab from the following dialog box and then press OK button.

SA Computer Application.pdf (D166063658)

198/291

SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS

Save a Document For saving a document: 1. Click on the File-<save option. 150

Save a Document: For saving a document, Click on the File►Save option.

SA Computer Application.pdf (D166063658)

199/291

SUBMITTED TEXT	19 WORDS	92% MATCHING TEXT	19 WORDS

standard toolbar If you are saving the file for the first time, the Save as window will appear on the

standard toolbar. If you are saving the file for the first time, the Save As... window 183 will appear. Choose the

SA Computer Application.pdf (D166063658)

200/291	SUBMITTED TEXT	25 WORDS	98%	MATCHING TEXT	25 WORDS

Choose the appropriate folder from Save in combo box. 3. Write the proper file name in the File name text box. 4. Then press the Save button.

Choose the appropriate folder from Save in combo box. Write the proper file name in the File name text box. And then press the Save button

SA Computer Application.pdf (D166063658)

201/291	SUBMITTED TEXT	25 WORDS	88%	MATCHING TEXT	25 WORDS

Save and Save as options do the same work of saving a document. However, the difference between both option is that the Save as command

Save and Save As options do the same work of saving a document but the difference between both options is that the Save As command

SA Computer Application.pdf (D166063658)

202/291	SUBMITTED TEXT	41 WORDS	92%	MATCHING TEXT	41 WORDS

Opening of an Existing Document To open an existing document: 1. Select the Open option from the File menu. OR press Ctrl+O OR Click on the Open tool icon at the standard toolbar. Then the Open dialog box will appear

Opening of an Existing Document: To open an existing document, Select the Open option from the File menu OR Press Ctrl+O OR Click on the Open tool from the standard toolbar. Then the open dialog box will appear.

SA Computer Application.pdf (D166063658)

203/291	SUBMITTED TEXT	42 WORDS	96%	MATCHING TEXT	42 WORDS

Select the appropriate folder from look-in combo box. 2. Select the required file from the file window. OR Write the required file's name in the file name window. 3. Click on open button on the right hand side OR Press Enter Closing of Document To close an already opened

Select the appropriate folder from Look in combo box. 3. Select the required file from the file window OR write the required file's name in the File name window 4. Click on open button on the right hand side OR Press Enter Closing of Workbook To close an already opened

SA Computer Application.pdf (D166063658)

204/291	SUBMITTED TEXT	16 WORDS	96%	MATCHING TEXT	16 WORDS

just choose the close option from file menu but keep it in your mind that the

just choose the Close option from file menu but keep it in your mind that only the

SA Computer Application.pdf (D166063658)

205/291	SUBMITTED TEXT	17 WORDS	91%	MATCHING TEXT	17 WORDS

Microsoft Word works in MDI (Multi Document Interface) environment unlike notepad which works in SDI (Single Document Interface).

Microsoft Excel works in MDI (Multi document interface) environment unlike notepad which works in SDI(Single document interface).

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 38 WORDS **84%** **MATCHING TEXT** 38 WORDS

Page Setup From the Page setup option one can setup the page layout (margins etc.). To use the Page setup option you have to perform the following steps: 1. Click on the Page setup option from the file menu then

Page Setup From the Page setup option, one can setup the page layout according to his work. For using the Page setup option, you have to perform the following steps: 1. Click on the Page setup option from the file menu. Then

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 58 WORDS **69%** **MATCHING TEXT** 58 WORDS

enter the distance you want between the top of the page and the start line on the page. ii. In Bottom margin, enter the distance you want between the bottom of the page and start last line on the page. iii. In Left option, enter the distance you want between the left edge of the page and the left edge of unindented lines.

SA PGBA (S1) 04-1.pdf (D160977349)

SUBMITTED TEXT 24 WORDS **88%** **MATCHING TEXT** 24 WORDS

Right option, enter the distance you want between the right edge of the page and the right end of a line with no right indent.

SA PGBA (S1) 04-1.pdf (D160977349)

SUBMITTED TEXT 50 WORDS **88%** **MATCHING TEXT** 50 WORDS

Gutter option, enter the amount of extra space you want to add to the margin for binding. Word adds the extra space to the left margin of all pages, if you clear the Mirror margins check box, or to the inside margin of all pages if you select the Mirror margins check box.

SA PGBA (S1) 04-1.pdf (D160977349)

SUBMITTED TEXT   76 WORDS   **83%** **MATCHING TEXT**   76 WORDS

enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii In Footer option, under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer.

SA   PGBA (S1) 04-1.pdf (D160977349)

SUBMITTED TEXT   285 WORDS   **95%** **MATCHING TEXT**   285 WORDS

Adjust the different margins or apply different options from the margin tab. i. In top margin, enter the distance you want between the top of the page and the start line on the page. ii. In Bottom margin, enter the distance you want between the bottom of the page and start last line on the page. iii. In Left option, enter the distance you want between the left edge of the page and the left edge of unindented lines. iv. In Right option, enter the distance you want between the right edge of the page and the right end of a line with no right indent. v. In Gutter option, enter the amount of extra space you want to add to the margin for binding. Word adds the extra space to the left margin of all pages, if you clear the Mirror margins check box, or to the inside margin of all pages if you select the Mirror margins check box. vi. In Header option, under From edge frame, enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii In Footer option, under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer. viii. Check Mirror margin checkbox to adjust left and right margins so that when you print on both sides of the page, the inside margins of facing pages are the same width and the outside margins have the same width. ix. Check the 2 pages per sheet checkbox to print the second page of a document 155

adjust the different margins or apply different options from the margin tab where: i) In top enter the distance you want between the top of the page and the top of the first line on the page. ii) In Bottom margin enter the distance you want between the bottom of the page and the bottom of the last line on the page. iii) In Left option enters the distance you want between the left edge of the page and the left edge of unindented lines. iv) In Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent. v) In Gutter option enter the amount of extra space you want to add to the margin for binding. Word adds the extra space to the left margin of all pages if you 161 clear the Mirror margins check box, or to the inside margin of all pages if you select the Mirror margins check box. vi) In Header option under From edge frame enter distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii) In Footer option under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer. viii) Check Mirror margin check box to left and right margins so that when you print on both sides of the page the inside margins of facing pages are the same width and the outside margins are the same width. ix) Check the 2 pages per sheet checkbox to Print the second page of a document

SA   Computer Application.pdf (D166063658)

212/291   SUBMITTED TEXT   31 WORDS   90%   MATCHING TEXT   31 WORDS

left and right margins so that when you print on both sides of the page, the inside margins of facing pages are the same width and the outside margins have the same width.

SA   PGBA (S1) 04-1.pdf (D160977349)

213/291   SUBMITTED TEXT   21 WORDS   100%   MATCHING TEXT   21 WORDS

on the first page. This check box is used when the printed page is folded in half with the two pages

on the first page. This check box is used when the printed page is folded in half with the two pages

SA   Computer Application.pdf (D166063658)

214/291   SUBMITTED TEXT   18 WORDS   100%   MATCHING TEXT   18 WORDS

on the first page. This check box is used when the printed page is folded in half with

SA   PGBA (S1) 04-1.pdf (D160977349)

215/291   SUBMITTED TEXT   20 WORDS   92%   MATCHING TEXT   20 WORDS

click the portion of the document you want to apply the current settings to in the Page Setup dialog box.

SA   PGBA (S1) 04-1.pdf (D160977349)

216/291   SUBMITTED TEXT   51 WORDS   85%   MATCHING TEXT   51 WORDS

the inner margins (gutter) of the page will have the same width. x. In the Apply to list box, click the portion of the document you want to apply the current settings to in the Page Setup dialog box. And the options of this list box are whole document, this point forward etc.,

The outer margins (gutter) of the page will be the same width, and the inner margins will be the same width. x) In the Apply to list box, Click the portion of the document you want to apply the current settings to in the Page Setup dialog box. And the options of this list box are Whole document, This point forward etc

SA   Computer Application.pdf (D166063658)

| 217/291 | SUBMITTED TEXT | 28 WORDS | 100% | MATCHING TEXT | 28 WORDS |

From the Paper size tab you can set the length or width of the page. When you click on the Paper size tab the following window will appear.

From the Paper size tab you can set the length or width of the page. When you click on the Paper size tab the following window will appear. 162 1.

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| 218/291 | SUBMITTED TEXT | 22 WORDS | 100% | MATCHING TEXT | 22 WORDS |

In the above window you can adjust the following: i. From Paper size list box you can select the predefined Paper sizes. ii.

In the above window you can adjust the following: i) From Paper size list box you can select the predefined Paper sizes. ii)

SA Computer Application.pdf (D166063658)

| 219/291 | SUBMITTED TEXT | 21 WORDS | 100% | MATCHING TEXT | 21 WORDS |

Width and Height text boxes, the custom Paper size can be defined by adjusting the Height and width of the paper,

Width and Height text boxes the custom Paper size can be defined by adjusting the Height and width of the paper.

SA Computer Application.pdf (D166063658)

| 220/291 | SUBMITTED TEXT | 14 WORDS | 78% | MATCHING TEXT | 14 WORDS |

iii. Select the orientation of the paper as Landscape or Portrait from orientation frame.

iii) Select the orientation of the paper from Landscape or Portrait orientation frame.

SA Computer Application.pdf (D166063658)

| 221/291 | SUBMITTED TEXT | 50 WORDS | 97% | MATCHING TEXT | 50 WORDS |

Print Option For taking the printout, you have to select the print option of the file menu. After selecting the print option from file menu, the window given below will appear: Figure 7.13 You can set various options before taking printout. i. From the Name combo box you can select the printer if

Print Option For taking the printout you have to select the print option of the file menu. After selecting the print option from file menu the window given below will appear. 185 You can set various options before taking printout. 1. From the Name combo box, you can select the printer if

SA Computer Application.pdf (D166063658)

| 222/291 | SUBMITTED TEXT | 34 WORDS | 98% | MATCHING TEXT | 34 WORDS |

ii. You can select the range of pages i.e. all pages or current page or number of pages you require from Page range frame. iii From the Print option you can choose which part of

ii) You can select the range of pages i.e. all pages or current page or number of pages you require from Page range frame. iii) From the print what option you can choose which part of

SA Computer Application.pdf (D166063658)

223/291 · SUBMITTED TEXT · 102 WORDS · 83% MATCHING TEXT · 102 WORDS

SUBMITTED TEXT	MATCHING TEXT
document you want to print i.e. the whole document or comments or anything else. iii. From print option the pages can be selected to print i.e. all pages or all even pages or all odd pages. iv. You can choose number of copies from Number of copies option under Copies frame. v. From Pages per sheet option under Zoom frame, you can select the number of pages in the document that you want to print on single sheet of paper. vi. From Scale to paper size option, you can select the paper size on which you want to print the document. For example, you can specify that a B4-size document	document you want to print i.e. the whole document or comments or anything else. iv) From print option the types of pages can be selected to print i.e. all pages or even pages or odd pages. v) You can choose number of copies from Number of copies option under Copies frame. vi) From Pages per sheet option under Zoom frame you can Select the number of pages in the document that you want to print on each sheet of paper. vii) From scale to paper size option you can select the paper size on which you want to print the document. For example, you can specify that a B4-size document

SA   Computer Application.pdf (D166063658)

224/291 · SUBMITTED TEXT · 24 WORDS · 100% MATCHING TEXT · 24 WORDS

SUBMITTED TEXT	MATCHING TEXT
on A4-size paper by decreasing the size of the font and the graphics. This feature is similar to the reduce/enlarge feature on a photocopy machine.	on A4-size paper by decreasing the size of the font and the graphics. This feature is similar to the reduce/enlarge feature on a photocopy machine.

SA   Computer Application.pdf (D166063658)

225/291 · SUBMITTED TEXT · 14 WORDS · 100% MATCHING TEXT · 14 WORDS

SUBMITTED TEXT	MATCHING TEXT
The collate check box can print the copies of the document in proper binding order.	The collate check box can print the copies of the document in proper binding order.

SA   Computer Application.pdf (D166063658)

226/291 · SUBMITTED TEXT · 16 WORDS · 100% MATCHING TEXT · 16 WORDS

SUBMITTED TEXT	MATCHING TEXT
Once the text of a document has been typed, it is required to be formatted.	Once the text of a document has been typed, it is required to be formatted.

SA   Computer Application.pdf (D166063658)

227/291 · SUBMITTED TEXT · 24 WORDS · 98% MATCHING TEXT · 24 WORDS

SUBMITTED TEXT	MATCHING TEXT
MS-Word provides format menu to give a meaningful format your document so that a user can read and understand the document in an easy	MS-Word provides Format menu to give a meaningful format of your document, so that a user can read and understand the document in an easy

SA   Computer Application.pdf (D166063658)

228/291   **SUBMITTED TEXT**   25 WORDS   **90%**   **MATCHING TEXT**   25 WORDS

Format of font i.e. the font type, font size, font style, font color, character spacing etc. can be changed through the option Font of Format menu.

SA   Computer Application.pdf (D166063658)

Format of font i.e. the font type, font size, font style, font Color, character spacing etc. can be changed by going in the option Font of Format menu.

229/291   **SUBMITTED TEXT**   20 WORDS   **100%**   **MATCHING TEXT**   20 WORDS

the font-using Font dialog box gives you the opportunity to see the result within the dialog box before applying it

SA   Computer Application.pdf (D166063658)

the font-using Font dialog box gives you the opportunity to see the result within the dialog box before applying it

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230/291   **SUBMITTED TEXT**   21 WORDS   **92%**   **MATCHING TEXT**   21 WORDS

the text. Other benefit of using the font dialog box is that you can apply several effects within at the same

SA   Computer Application.pdf (D166063658)

the text. Other benefit of using the font dialog box is that you can apply several effects within the same

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231/291   **SUBMITTED TEXT**   39 WORDS   **76%**   **MATCHING TEXT**   39 WORDS

Select the desired text to change the font. 2. Select the Font option from Format menu. 161 Microsoft Word 2000 Figure 7.17 3. Scroll through the Font list and select the font that you want. 4. Select the color; underline style and

SA   Computer Application.pdf (D166063658)

Select the desired text to change the font. Select the Font option from Format menu. window will on the screen. Scroll through the Font list and click the font that you want. Select the font color, underline style and

---

232/291   **SUBMITTED TEXT**   16 WORDS   **100%**   **MATCHING TEXT**   16 WORDS

effects of your choice. 5. Select the font style according to the text. 6. Click on Ok button.

SA   Computer Application.pdf (D166063658)

Effects of your choice. Select the font style according to the text. Click on Ok button

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233/291   **SUBMITTED TEXT**   35 WORDS   **98%**   **MATCHING TEXT**   35 WORDS

Alignment of Paragraph Alignment refers to the way the right and left edges of a paragraph line up along the right and left margins of your document. Word gives you four alignment choices-left, centered, right and justified

SA   Computer Application.pdf (D166063658)

Alignment of the Alignment refers to the way the right and left edges of a paragraph line up along the right and left margins of your document. Word gives you four alignment choices - left, centered, right and justified. 169

SUBMITTED TEXT 18 WORDS **75%** **MATCHING TEXT** 18 WORDS

you have to perform the following steps: 1. Click on the paragraph in which you want to change the

you have to follow the following steps. 1. Click on the cell in which you want to insert the

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 63 WORDS **97%** **MATCHING TEXT** 63 WORDS

Working with Columns You can use columns to create documents such as newsletters or book pages. The column option controls the width and number of columns. Narrower column widths make your text easier to red. Often, creating columns enables you to fit more text on a single page. Columns work particularly well where you have several shorter topics making up a larger document, as a newspaper.

Working with Columns: You can use columns to create documents such as newsletters or book pages. The column option controls the width and number of columns. Narrower column widths make your text easier to read. Often, creating columns enables you to fit more text on a single page. Columns work particularly well where you have several shorter topics making up a larger document, as with a newspaper.

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 52 WORDS **97%** **MATCHING TEXT** 52 WORDS

To Create a Column: 1. Select the text which you want to convert in column . 2. Click on the column button in the Standard toolbar. 3. A drop-down list appears with four columns across it. Click on the first column in the drop-down list and drag across to highlight desired number of columns.

To create a column selects the text which you want to convert in column Click on the column button in the Standard toolbar. A drop-down list appears with four columns across it. Click on the first column in the drop-down list and drag across to highlight desired number of columns.

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 13 WORDS **83%** **MATCHING TEXT** 13 WORDS

To start Excel: 1. Click on the Start button at windows taskbar. 2. Select

To start Excel, follow the following Click on the Start button at windows taskbar. 2. Select

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 28 WORDS **88%** **MATCHING TEXT** 28 WORDS

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 239/291 | **SUBMITTED TEXT** | 16 WORDS | **78%** | **MATCHING TEXT** | 16 WORDS |

Various Components of Microsoft Excel Functions of various components of Microsoft Excel is given below: 1. Title

Various Components of Microsoft Excel from the main screen. Functions of various components of Microsoft Excel are given below: 1. Title

SA   Computer Application.pdf (D166063658)

| 240/291 | **SUBMITTED TEXT** | 84 WORDS | **69%** | **MATCHING TEXT** | 84 WORDS |

Title Bar: Title bar shows the name of the document and is situated in the top of the window application. 2. Menu Bar: Menu bar contains various commands under various topics to perform some special tasks. Menu bar is located below the title bar 3. Standard Toolbar: Toolbar is nothing more than the shortcuts of different Menu options to execute or perform the menu options in the easier and faster way. Standard toolbar contains icons for the Excel's most frequently used commands. 4. Formatting Toolbar: Formatting toolbar contains the various

Title Bar: Title bar shows the name of the document and is situated in the top of the window application. 2. Menu Bar: Menu bar contains the various commands under the various topics to perform some special tasks. Menu bar is located under the title bar. 3. Standard Toolbar: Toolbar is nothing more than the shortcut of the Menu options to execute or perform the menu options in the easiest and fastest way. Standard toolbar contains the commands for the Word's most frequently used commands. 4. Formatting Toolbar: Formatting toolbar contains the various

SA   Computer Application.pdf (D166063658)

| 241/291 | **SUBMITTED TEXT** | 14 WORDS | **82%** | **MATCHING TEXT** | 14 WORDS |

at the tab stop. Right text extends to the left from the tab stop

SA   PGBA (S1) 04-1.pdf (D160977349)

| 242/291 | **SUBMITTED TEXT** | 55 WORDS | **90%** | **MATCHING TEXT** | 55 WORDS |

the commands related to the formatting of the document. 5. Status Bar: It displays the positioning of the cursor, displays the status of some important keys of keyboard, shows the messages for the toolbar button when a mouse points to it, displays messages for menu option when a menu option is selected or pointed out by a user. 6.

the various commands related to the graphics and the drawing options. 8. Status Bar: It displays the positioning of the cursor, displays the status of some important keys of keyboard, shows the messages for the toolbar button when a mouse 158 points to it, displays messages for menu option when a menu option is selected or pointed out by a user. 9.

SA   Computer Application.pdf (D166063658)

| 243/291 | **SUBMITTED TEXT** | 36 WORDS | **98%** | **MATCHING TEXT** | 36 WORDS |

Formula Bar: Formula bar shows you the formula instead of the result whenever you click on a cell in which you have a formula. 7. Rows: Rows are combination of all the cells joined together in

Formula Bar: Formula bar shows you the formula instead of the result whenever you click on a cell in which you have a formula. 7. Rows: Rows are combination of all the horizontal cells joined together in

SA   Computer Application.pdf (D166063658)

SUBMITTED TEXT 28 WORDS **MATCHING TEXT** 28 WORDS

single horizontal line. An Excel workbook has maximum 65,536 rows in a worksheet 188 Basic Computer Skills 8. Columns: Columns are combination of all the cells joined together in

80% single horizontal line. An Excel workbook has maximum 65,536 rows in a worksheet 8. Columns: Columns are combination of all the vertical cells joined together in

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 20 WORDS **97% MATCHING TEXT** 20 WORDS

single vertical line. An Excel workbook has maximum 256 columns in a worksheet 9. Cell: A Cell is an intersection of

single vertical line. An Excel workbook has maximum 256 columns in a worksheet 9. Cell: A Cell is an intersection point of

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 42 WORDS **98% MATCHING TEXT** 42 WORDS

column. It is used to store data. There are 65536 x 256 = 16777216 cells in a single worksheet. 10. Name Box: This box shows the name or the address of the currently active cell. 11. Office Assistant: Office assistant provides you online help

column. It is used to store data. There are 65536 x 256 = 16777216 cells in a single worksheet. 10. Name Box: This box shows the name or the address of the currently active cell. 11. Office Assistant: Office assistant provides you the online help,

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 21 WORDS **64% MATCHING TEXT** 21 WORDS

real-time tips while working. 12. Scroll Bars: There are two scroll bars The scroll bar is used to move the Worksheet in either directions.

real-time tips while working. 12. Scroll Bars: There are two types of scroll bars i. Horizontal Scrollbar ii. Vertical Scrollbar Working of both the scroll bar is to scroll the Worksheet in the either directions 13.

SA Computer Application.pdf (D166063658)

SUBMITTED TEXT 22 WORDS **100% MATCHING TEXT** 22 WORDS

name suggests, it is the working area in which you can work. Each worksheet of a single workbook has its own identity

name suggests it is the working area in which you can work. Each worksheet of a single workbook has its own identity

SA Computer Application.pdf (D166063658)

249/291	SUBMITTED TEXT	14 WORDS	89%	MATCHING TEXT	14 WORDS

separate from other worksheets. The maximum limit of the worksheets in a workbook is 255.

separate from other worksheets. The maximum limit of the worksheet in a workbook is 255.

SA Computer Application.pdf (D166063658)

250/291	SUBMITTED TEXT	16 WORDS	78%	MATCHING TEXT	16 WORDS

To open a new workbook: 1. Click on the File Menu (Figure 8.4) 2. Select option New

To open a new workbook, follow the steps: 1. Click on the File Menu. 2. Select Option New. 3.

SA Computer Application.pdf (D166063658)

251/291	SUBMITTED TEXT	20 WORDS	45%	MATCHING TEXT	20 WORDS

File menu. File Menu To open a new workbook: 1. Click on the File Menu (Figure 8.4) 2. Select option New or press Ctrl+N.

FILE menu. Open a New To open a new file, Click on the File menu. Then Click on the new option or you directly press the Ctrl+N

SA Computer Application.pdf (D166063658)

252/291	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

Click the OK Button. Now you will get a fresh new workbook to work on.

Click the OK Button. Now you will get a fresh new workbook to work on.

SA Computer Application.pdf (D166063658)

253/291	SUBMITTED TEXT	127 WORDS	70%	MATCHING TEXT	127 WORDS

a Workbook 1. Click on the File-<save option. OR Press Ctrl+S OR Click the Save Button on standard toolbar If you are saving the file for the first time the, Save as window will appear. 2. Choose the appropriate folder from Save in combo box. Figure 8.7 3. Write the proper file name in the File name text box 4. Press the Save button Save and Save As options do the same work of saving a document

a document, Click on the File▶Save option. OR Press Ctrl+S OR Press the Save tool from standard toolbar. If you are saving the file for the first time the Save as window will appear. Choose the appropriate folder from Save in combo box. Write the proper file name in the File name text box. And then press the Save button Save and Save As options do the same work of saving a document

SA Computer Application.pdf (D166063658)

254/291 · SUBMITTED TEXT · 63 WORDS · 90% MATCHING TEXT · 63 WORDS

The difference between both options is that the Save as command every time gives you the Save as dialog box and you can save the file with different name also, but the Save option gives you the Save As dialog box when you are saving the document for very first time. Next time it will save the document with the previous name without showing any dialog box.

the difference between both options is that the Save As command every time gives you the Save As dialog box and you can save the file with different names also. But the Save option will gives you the Save As dialog box when you are saving the document for very first time. Other times it will save the document with the previous name without giving any dialog box. 160

SA Computer Application.pdf (D166063658)

255/291 · SUBMITTED TEXT · 36 WORDS · 97% MATCHING TEXT · 36 WORDS

Opening an Existing Workbook To open an existing workbook following steps are required: 1. Select the Open option from the File menu OR Press Ctrl+O OR Click on the Open tool from the standard toolbar Then the open dialog box will appear

Opening of an Existing Workbook To open an existing workbook, the following steps are required: 1. Select the Open option from the File menu OR Press Ctrl+O OR Click on the Open tool from the standard toolbar. Then the open dialog box will appear. 2.

SA Computer Application.pdf (D166063658)

256/291 · SUBMITTED TEXT · 40 WORDS · 90% MATCHING TEXT · 40 WORDS

Select the appropriate folder from Look in combo box. 3. Select the required file from the file window OR Write the required file's name in the File name window 192 Basic Computer Skills 4. Click on open button on the right hand side OR Press Enter Closing

Select the appropriate folder from Look in combo box. 3. Select the required file from the file window OR write the required file's name in the File name window 4. Click on open button on the right hand side OR Press Enter Closing

SA Computer Application.pdf (D166063658)

257/291 · SUBMITTED TEXT · 13 WORDS · 100% MATCHING TEXT · 13 WORDS

To close an already opened workbook just choose the close option from

To close an already opened workbook just choose the Close option from

SA Computer Application.pdf (D166063658)

258/291 · SUBMITTED TEXT · 16 WORDS · 100% MATCHING TEXT · 16 WORDS

Microsoft Excel works in MDI (Multi Document Interface) environment unlike notepad which works in SDI(Single document interface).

Microsoft Excel works in MDI (Multi document interface) environment unlike notepad which works in SDI(Single document interface).

SA Computer Application.pdf (D166063658)

259/291 **SUBMITTED TEXT** 17 WORDS **100%** **MATCHING TEXT** 17 WORDS

Page Setup From the Page setup option, one can setup the page layout according to his work.

Page Setup From the Page setup option, one can setup the page layout according to his work.

SA   Computer Application.pdf (D166063658)

260/291 **SUBMITTED TEXT** 26 WORDS **87%** **MATCHING TEXT** 26 WORDS

the Page setup option you have to perform the following steps: 195 Microsoft Excel 2000 1. Click on the Page setup option from the file menu then

the Page setup option, you have to perform the following steps: 1. Click the Page setup option from the file menu. Then

SA   Computer Application.pdf (D166063658)

261/291 **SUBMITTED TEXT** 46 WORDS **64%** **MATCHING TEXT** 46 WORDS

window will appear: Figure 8.14 2. Select the page Orientation from Portrait or Landscape options. 3. Setting the Adjust to scaling option will reduce or enlarge the printed worksheet. Select the Adjust to check box, and then enter a percentage number in the % normal size box. You can reduce the

window will appear. 2. Select the page Orientation from Portrait or Landscape. 3. Setting the Adjust to setting will Reduces or enlarges the printed worksheet. 4. Select the Adjust to check box, and then enter a percentage number in the % normal size box. You can reduce the

SA   Computer Application.pdf (D166063658)

262/291 **SUBMITTED TEXT** 17 WORDS **62%** **MATCHING TEXT** 17 WORDS

normal size. 4. Change the value in Fit to option to fit the worksheet or selection you

normal size. 184 Give the value to 'Fit to'. Setting to 'Fit To' reduces the worksheet or selection when you

SA   Computer Application.pdf (D166063658)

263/291 **SUBMITTED TEXT** 56 WORDS **100%** **MATCHING TEXT** 56 WORDS

the specified number of pages. Select the Fit to check box; enter a number in the page(s) wide by box; and enter a number in the tall box. To fill the paper width and use as many pages as necessary, type 1 in the pages(s) wide by box and leave the tall box blank. 5. Select the Paper size 6.

the specified number of pages. Select the 'Fit to' check box, enter a number in the page(s) wide by box, and enter a number in the tall box. To fill the paper width and use as many pages as necessary, type 1 in the pages(s) wide by box and leave the tall box blank. Select the Paper size

SA   Computer Application.pdf (D166063658)

264/291 | **SUBMITTED TEXT** | 60 WORDS | **70%** | **MATCHING TEXT** | 60 WORDS

enter the distance you want between the top of the page and the first line on the page. ii. In the Bottom option enter the distance you want between the bottom of the page and the last line on the page. iii. In the Left option enter the distance you want between the left edge of the page and the left edge of unindented lines.

SA PGBA (S1) 04-1.pdf (D160977349)

265/291 | **SUBMITTED TEXT** | 93 WORDS | **85%** | **MATCHING TEXT** | 93 WORDS

top option enter the distance you want between the top of the page and the first line on the page. ii. In the Bottom option enter the distance you want between the bottom of the page and the last line on the page. iii. In the Left option enter the distance you want between the left edge of the page and the left edge of unindented lines. iv. In Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent. v. In Header option enter the

top enter the distance you want between the top of the page and the top of the first line on the page. ii) In Bottom margin enter the distance you want between the bottom of the page and the bottom of the last line on the page. iii) In Left option enters the distance you want between the left edge of the page and the left edge of unindented lines. iv) In Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent. v) In Gutter option enter the

SA Computer Application.pdf (D166063658)

266/291 | **SUBMITTED TEXT** | 73 WORDS | **93%** | **MATCHING TEXT** | 73 WORDS

distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Excel prints the body text below the header. vi. In Footer option enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Excel stops printing the body text above the footer 8.

distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Word prints the body text below the header. vii) In Footer option under From edge frame, enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Word stops printing the body text above the footer.

SA Computer Application.pdf (D166063658)

267/291 | **SUBMITTED TEXT** | 24 WORDS | **88%** | **MATCHING TEXT** | 24 WORDS

Right option enter the distance you want between the right edge of the page and the right end of a line with no right indent.

SA PGBA (S1) 04-1.pdf (D160977349)

| 268/291 | **SUBMITTED TEXT** | 38 WORDS | **100%** | **MATCHING TEXT** | 38 WORDS |

Print Option For taking the printout, you have to select the print option of the file menu. After selecting the print option from file menu the window given below will appear. You can set various options before taking printout. 197

Print Option For taking the printout you have to select the print option of the file menu. After selecting the print option from file menu the window given below will appear. 185 You can set various options before taking printout. 1.

SA Computer Application.pdf (D166063658)

| 269/291 | **SUBMITTED TEXT** | 12 WORDS | **100%** | **MATCHING TEXT** | 12 WORDS |

From the Name combo box you can select the printer if

From the Name combo box you can select the printer if

SA Computer Application.pdf (D166063658)

| 270/291 | **SUBMITTED TEXT** | 55 WORDS | **91%** | **MATCHING TEXT** | 55 WORDS |

You can select the range of pages i.e. all pages or current page or number of pages you require from Print range frame. iii From the print what option you can choose which part of a worksheet you want to print i.e. some selection or Entire workbook or active sheets only. iv. You can choose number of copies

You can select the range of pages i.e. all pages or current page or number of pages you require from Print range frame. 3. From the print what option you can choose that which part of a worksheet you want to print i.e. some selection or Entire workbook or active sheet only. 4. You can choose number of copies

SA Computer Application.pdf (D166063658)

| 271/291 | **SUBMITTED TEXT** | 21 WORDS | **97%** | **MATCHING TEXT** | 21 WORDS |

To reverse changes while editing undo command is used. To undo you can i. Click on the Undo option under Edit menu OR

To reverse changes while editing, undo command is used. To perform undo you can Click on the Undo option under Edit menu Or

SA Computer Application.pdf (D166063658)

| 272/291 | **SUBMITTED TEXT** | 77 WORDS | **85%** | **MATCHING TEXT** | 77 WORDS |

Header option enter the distance you want from the top edge of the paper to the top edge of the header. If the Header setting is larger than the Top setting, Excel prints the body text below the header. vi. In Footer option enter the distance you want from the bottom edge of the paper to the bottom edge of the footer. If the Footer setting is larger than the Bottom setting, Excel stops printing the body text above the footer 8.

SA PGBA (S1) 04-1.pdf (D160977349)

| 273/291 | SUBMITTED TEXT | 16 WORDS | 84% | MATCHING TEXT | 16 WORDS |

Click on the Undo button on Standard toolbar OR iii. Press Ctrl+z. Redo If an undo has to

Click on the Undo button on Standard toolbar Or Press Ctrl+Z. If an undo has to

SA   Computer Application.pdf (D166063658)

| 274/291 | SUBMITTED TEXT | 30 WORDS | 70% | MATCHING TEXT | 30 WORDS |

last reversed action, this is known as Redo. To perform redo you can: i. Click on the Redo option under Edit Menu OR ii. Click on the Redo button on Standard Toolbar OR iii. Press Ctrl+y

last reversed action that is known as Redo . To perform redo you can Click on the Redo option under Edit Menu Or Click on the Undo button on Standard Toolbar Or Press Ctrl+Y

SA   Computer Application.pdf (D166063658)

| 275/291 | SUBMITTED TEXT | 10 WORDS | 76% | MATCHING TEXT | 10 WORDS |

Edit menu OR Click on the cut button of standard toolbar OR Press

Edit menu Or Click on the Undo button on Standard toolbar Or Press

SA   Computer Application.pdf (D166063658)

| 276/291 | SUBMITTED TEXT | 36 WORDS | 98% | MATCHING TEXT | 36 WORDS |

Copying means duplicating the contents of the document at some other desired place. The procedure for copying text is almost the same as that of moving text with a little difference, which is being discussed in following steps:

Copying means duplicating the contents of the document at some other desired place. The procedure for copying text is almost the same as that of moving text with a little difference which is being discussed in the following steps: 1.

W   https://www.docsity.com/en/computer-applications-in-management/2326921/

| 277/291 | SUBMITTED TEXT | 10 WORDS | 76% | MATCHING TEXT | 10 WORDS |

Edit menu OR Click on the copy button of standard toolbar OR Press

Edit menu Or Click on the Undo button on Standard toolbar Or Press

SA   Computer Application.pdf (D166063658)

| 278/291 | SUBMITTED TEXT | 71 WORDS | 74% | MATCHING TEXT | 71 WORDS |

the Edit menu, click Find. Find what dialog box will appear (Figure 8.25). ii. In the Find what box, enter the text that you want to search for. iii. Select the direction of search from Search list box. iv. Select any other options that you want. Match Case: To find the characters that are a word by themselves and are not a part of another word. Find Entire Cell Only: To find the characters that are

the Edit menu, click Find or Ctrl+F. Then you will see the window shown In the Find what box, enter the text that you want to search for. Select the direction of searching from Search list box. Select any other options that you want. 166 Match case: To find the characters that are a word by themselves and are not a part of another word. Find whole words only: To find the characters that are

SA   Computer Application.pdf (D166063658)

279/291   SUBMITTED TEXT   34 WORDS   **100%**   MATCHING TEXT   34 WORDS

find similar word again in the rest of the document click on the Find next button. Replace If you have to replace a word in the document with another word you can use find and replace command

find similar word again in the rest of the document click on the Find next button. Replace: If you have to replace a word in the document with another word you can use find and replace command.

SA   Computer Application.pdf (D166063658)

280/291   SUBMITTED TEXT   14 WORDS   **71%**   MATCHING TEXT   14 WORDS

In the Find what box, enter the text that you want to search for.

SA   Fundamental of PC Software BLOCK 1.pdf (D164969260)

281/291   SUBMITTED TEXT   29 WORDS   **88%**   MATCHING TEXT   29 WORDS

the Find what box, enter the text that you want to search for. iii. In the Replace with box, enter the replacement text. iv. Select other options that you want. 204

The Find what box, enter the text that you want to search for. In the Replace with box, enter the replacement text. Select any other options that you want.

SA   Computer Application.pdf (D166063658)

282/291   SUBMITTED TEXT   31 WORDS   **78%**   MATCHING TEXT   31 WORDS

Click Find Next, Replace, or Replace All. vii To cancel a search in progress, press ESC. Figure 8.26 Goto To go to a particular location or particular item use Goto option under the Edit menu.

Click Find Next, Replace, or Replace All. To cancel a search in progress, press ESC. 167 Go to: To go to on a particular location or particular item use Go to option under the Edit menu

SA   Computer Application.pdf (D166063658)

283/291   SUBMITTED TEXT   17 WORDS   **79%**   MATCHING TEXT   17 WORDS

Click on the Goto option under the Edit menu. Then the following window will appear on the screen.

click on the Go to option under the Edit menu or Ctrl+G. Then the following window will appear on the screen.

SA   Computer Application.pdf (D166063658)

284/291   SUBMITTED TEXT   11 WORDS   **100%**   MATCHING TEXT   11 WORDS

you have to perform the following steps. 1. Click on the

you have to perform the following steps: 1. Click on the

SA   Computer Application.pdf (D166063658)

| 285/291 | **SUBMITTED TEXT** | 13 WORDS | **87%** | **MATCHING TEXT** | 13 WORDS |

you have to follow these steps: 1. Put the cursor on the cell

you have to follow these steps: 1. Move the cursor on the cell

SA Computer Application.pdf (D166063658)

| 286/291 | **SUBMITTED TEXT** | 28 WORDS | **88%** | **MATCHING TEXT** | 28 WORDS |

L E A R N I N G O B J E C T I V E S After completing this unit, you will be able to understand: ?

L E A R N I N G O B J E C T I V E S After studying this unit, you should be able to understand:

W https://www.docsity.com/en/computer-applications-in-management/2326921/

| 287/291 | **SUBMITTED TEXT** | 30 WORDS | **40%** | **MATCHING TEXT** | 30 WORDS |

The largest type of computer commonly used is mainframes. Mainframe computers are used where many people in a large organization need frequent access to the same information, which is usually organized

The largest type of computer in common use is the mainframe. Mainframe computers are used in large organizations like insurance companies and banks many people need frequent access to the same data, which is usually organized

SA Computer Application.pdf (D166063658)

| 288/291 | **SUBMITTED TEXT** | 10 WORDS | **100%** | **MATCHING TEXT** | 10 WORDS |

It used to be common for mainframe computers to occupy

It used to be common for mainframe computers to occupy

SA Computer Application.pdf (D166063658)

| 289/291 | **SUBMITTED TEXT** | 14 WORDS | **71%** | **MATCHING TEXT** | 14 WORDS |

In the Find what box, enter the text that you want to search for.

SA Fundamental of PC Software BLOCK 1.pdf (D164969260)

| 290/291 | **SUBMITTED TEXT** | 48 WORDS | **87%** | **MATCHING TEXT** | 48 WORDS |

entire rooms or even an entire floor of a high rise building. Typically, they were placed inside glass offices with special air conditioning to keep them cool and on raised floors to accommodate all the wiring needed to tie the systems together. This setup is not used anymore. Mainframes today,

entire rooms or even an entire floor of a high-rise building. Typically, they were placed inside glass offices with special air conditioning to keep them cool and on raised floors to accommodate all the wiring needed to connect the system. This setup is not used much anymore. Today,

SA Computer Application.pdf (D166063658)

| 291/291 | **SUBMITTED TEXT** | 22 WORDS | **63%** | **MATCHING TEXT** | 22 WORDS |

of the same price as 90 years ago) has 8 times as much RAM, 150 times more storage capacity and a microprocessor

of the same price today will have about ten times as much RAM, about 100 times more storage capacity, and a microprocessor

SA   Computer Application.pdf (D166063658)