USES OF COMPUTER

1. Introduction to Computer Fundamentals 1.1 Introduction to Computer Computer is an advanced electronic device that takes raw data as input from the user and processes it under the control of set of instructions (called program), gives the result (output), and saves it for the future use. This Computer Fundamentals tutorial covers a foundational understanding of computer hardware, software, operating systems, peripherals etc. These notes provide a general introduction to computers systems. A computer system is made up of both hardware and software. Software is another term for computer program. Software controls the computer and makes it do useful work. Without software a computer is useless. Hardware refers to the physical components that make up a computer system. These include the computer's processor, memory, monitor, keyboard, mouse, disk drive, printer and so on. In these notes we take a brief look at the functions of the different hardware components. In addition we describe the some of the essential software required for the operation of a computer system. 1.1.1Functionalities of a computer Any digital computer carries out five functions in gross terms: • Takes data as input. • Stores the data/instructions in its memory and use them when required. • Processes the data and converts it into useful information. • Generates the output • Controls all the above four steps. Definition Computer is an electronic data processing device which • accepts and stores data input, • processes the data input, and • generates the output in a required format. 7 1.1.3Advantages Following list demonstrates the advantages of computers in

today's arena. 1) High Speed • Computer is a very fast device. • It is capable of performing calculation of very large amount of data. • The computer has units of speed in microsecond, nanosecond, and even the picosecond. • It can perform millions of calculations in a few seconds as compared to man who will spend many months for doing the same task. 2)Accuracy • In addition to being very fast, computers are very accurate. • The calculations are 100% error free. • Computers perform all jobs with 100% accuracy provided that correct input has been given. 3)Storage Capability • Memory is a very important characteristic of computers. • A computer has much more storage capacity than human beings. • It can store large amount of data. • It can store any type of data such as images, videos, text, audio and many others. 4)Diligence • Unlike human beings, a computer is free from monotony, tiredness and lack of concentration. • It can work continuously without any error and boredom. • It can do repeated work with same speed and accuracy. 5)Versatility • A computer is a very versatile machine. • A computer is very flexible in performing the jobs to be done. • This machine can be used to solve the problems related to various fields. • At one instance, it may be solving a complex scientific problem and the very next moment it may be playing a card game. 6)Reliability • A computer is a reliable machine. • Modern electronic components have long lives. • Computers are designed to make maintenance easy. 7)Automation 8 • Computer is an automatic machine. • Automation means ability to perform the given task automatically. • Once a program is given to

computer i.e., stored in computer memory, the program and instruction can control the program execution without human interaction. 8)Reduction in Paper Work • The use of computers for data processing in an organization leads to reduction in paper work and results in speeding up a process. • As data in electronic files can be retrieved as and when required, the problem of maintenance of large number of paper files gets reduced. 9)Reduction in Cost • Though the initial investment for installing a computer is high but it substantially reduces the cost of each of its transaction. 1.1.4Disadvantages Following list demonstrates the disadvantages of computers in today's arena 1)No I.Q • A computer is a machine that has no intelligence to perform any task. • Each instruction has to be given to computer. • A computer cannot take any decision on its own. 2)Dependency • It functions as per a user's instruction, so it is fully dependent on human being 3)Environment • The operating environment of computer should be dust free and suitable. 4)No Feeling • Computers have no feelings or emotions. • It cannot make judgement based on feeling, taste, experience, and knowledge unlike a human being. 1.1.5 Components of computer All types of computers follow a same basic logical structure and perform the following five basic operations for converting raw input data into information useful to their users. Sr.No. Operation Description 1 Take Input The process of entering data and instructions into the computer system 9 2 Store Data Saving data and instructions so that they are available for processing as and when required. 3 Processing Data Performing arithmetic, and logical

operations on data in order to convert them into useful information. 4 Output Information The process of producing useful information or results for the user, such as a printed report or visual display. 5 Control the workflow Directs the manner and sequence in which all of the above operations are performed. Input Unit This unit contains devices with the help of which we enter data into computer. This unit makes link between user and computer. The input devices translate the information into the form understandable by computer. CPU (Central Processing Unit) CPU is considered as the brain of the computer. CPU performs all types of data processing operations. It stores data, intermediate results and instructions(program). It controls the operation of all parts of computer. CPU itself has following three components • ALU(Arithmetic Logic Unit) • Memory Unit • Control Unit Output Unit Output unit consists of devices with the help of which we get the information from computer. This unit is a link between computer and users. Output devices translate the computer's output into the form understandable by users. 10 1.1.6 Types of Computer Computers can be broadly classified by their speed and computing power. Sr.No. Type Specifications 1 PC (Personal Computer) It is a single user computer system having moderately powerful microprocessor 2 WorkStation It is also a single user computer system which is similar to personal computer but have more powerful microprocessor. 3 Mini Computer It is a multi-user computer system which is capable of supporting hundreds of users simultaneously. 4 Main Frame It is a multi-user computer system which is capable of supporting

hundreds of users simultaneously. Software technology is different from minicomputer. 5 Supercomputer It is an extremely fast computer which can execute hundreds of millions of instructions per second. 1)PC (Personal Computer) A PC can be defined as a small, relatively inexpensive computer designed for an individual user. PCs are based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip. Businesses use personal computers for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. At home, the most popular use for personal computers is playing games and surfing Internet. Although personal computers are designed as single-user systems, these systems are normally linked together to form a network. In terms of power, now-a-days High-end models of the Macintosh and PC offer the same computing power and graphics capability as low-end workstations by Sun Microsystems, Hewlett-Packard, and Dell. 11 2)Workstation Workstation is a computer used for engineering applications (CAD/CAM), desktop publishing, software development, and other such types of applications which require a moderate amount of computing power and relatively high quality graphics capabilities. Workstations generally come with a large, high-resolution graphics screen, large amount of RAM, inbuilt network support, and a graphical user interface. Most workstations also have a mass storage device such as a disk drive, but a special type of workstation, called a diskless workstation, comes without a disk drive. Common operating systems for workstations are UNIX and Windows

NT. Like PC, Workstations are also single-user computers like PC but are typically linked together to form a local-area network, although they can also be used as stand-alone systems. 3)Minicomputer It is a midsize multi-processing system capable of supporting up to 250 users simultaneously. 12 4)Mainframe Mainframe is very large in size and is an expensive computer capable of supporting hundreds or even thousands of users simultaneously. Mainframe executes many programs concurrently and supports many simultaneous execution of programs 5)Supercomputer Supercomputers are one of the fastest computers currently available. Supercomputers are very expensive and are employed for specialized applications that require immense amount of mathematical calculations (number crunching). For example, weather forecasting, scientific simulations, (animated) graphics, fluid dynamic calculations, nuclear energy research, electronic design, and analysis of geological data (e.g. in petrochemical prospecting). 13 1.2 Computer System Hardware Hardware represents the physical and tangible components of a computer i.e. the components that can be seen and touched. Examples of Hardware are following: Input devices -- keyboard, mouse etc. Output devices -- printer, monitor etc. Secondary storage devices -- Hard disk, CD, DVD etc. Internal components -- CPU, motherboard, RAM etc.