

UNIT - 2

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Components of Computer System

- 1.) Hardware :- The physical and tangible parts / components of the computer that can be seen and touched , eg:- (CPU, floppy disk etc.
- 2.) Software :- represents the set of programs that govern the operation of a computer system and make the hardware run .
- 3.) Firmware :- These are prewritten programs permanently stored in computer's read-only memory, used by computer for its functioning.
- 4.) Liveware :- It is the term generally used for the people associated with and benefitted from the computer system.

HARDWARE

- (i) Input devices \Rightarrow accept data or commands in a form that the computer can use ; they send the data or commands to the processing units. eg:- Keyboard, mouse, scanner, microphone etc.
- (ii) Output devices \Rightarrow show the processed data-information in understandable and useful form.
- (iii) Processing devices \Rightarrow are the computer electronic circuitry housed in the system unit . The circuitry in the system unit is a part of a circuit board (called the motherboard) \Rightarrow are two parts called processor and memory.
- (iv) Storage devices \Rightarrow means we condarey storage that can store data and programs outside the computer itself . It can hold data, info, and programs permanently . eg:- CD-Rom, CD-RW etc.
- (v) Communications devices \Rightarrow provide connections b/w the computer and communications networks

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and enable computer users to communicate and to exchange data, info, and programs with other computers. eg \Rightarrow cables, satellites, telephone lines, etc.

SOFTWARE

Software is the set of programs that govern the operation of computer system and make hardware run.

Types of Software

1.) System Software

The software that controls internal computer operations is called system Software. The system software can further be classified into two categories:-

(i) operating System (ii) Language Processor.

(i) operating System \Rightarrow an operating system is a program which acts as an interface b/w a user and the hardware.

Role of Operating System

(a) Allocation and Assignment \Rightarrow The OS allocates computer resources to the application jobs in the execution queue. It assigns location in memory for data and instructions. It monitors carefully the contents of these items in memory and clears these items from memory when they no longer required by the CPU.

- (b) Scheduling :- The OS determines the order in which jobs are processed. A job is an operation on the processor managed. Job include receiving data from an input device, processing instructions, sending information to an output devices and transferring items from storage to memory and from memory to storage e.g.
- (c) Configuring :- To communicate with each device in the computer, the OS relies on device drivers. A device driver is a small program that accepts commands from another program and then converts these commands into commands that the device understands. Each device on a computer such as the keyboard, mouse and monitor has its own device driver.
- (d) Monitoring :- The OS monitors the activities of the computer system. It keeps track of each computer job. It reports info. about various system resources and devices, such as the processor usage, the amount of unused physical memory and network usage.
- (e) Accessing the web :- Operating systems typically provide a means to establish Web connections.

Types of OS

- (i) Single Program OS \Rightarrow This OS is single user operating system, so only one user program can be supported and executed by it at any point of time.
- (ii) Multiprogram OS \Rightarrow It supports multiprogramming i.e more than one user can be supported by it, therefore more than one user programs are loaded and active in

the main store at the same time.

- (iii) Multiprocessing OS \Rightarrow is capable of handling more than one processors as the jobs have to be executed on more than one processor. It should be capable of load sharing in case of identical processors so that system efficiency improves.
- (iv) Time sharing OS \Rightarrow use time sharing technique. Each active user program is given fair share of CPU time, if the time elapses, CPU shifts over to the next job waiting and the previous program is put to wait.
- (v) Real Time \Rightarrow In this the job have fixed deadlines and that has to be completed within the deadlines. System performance is measured by its ability to complete its jobs within the deadlines.

(ii) Language Processors

- (a) Assembler \Rightarrow It converts the program written in assembly language into machine language.
- (b) Interpreter \Rightarrow The language processor converts HLL program into machine language by converting and executing it line by line. If there is any error in any line, it report it at same time and program execution cannot resume until error is rectified. For error debugging, interpreter is very much useful as it report error at same time. But once errors are removed, unnecessary usage of memory takes place as it has to be present in the memory always.

(i) Compiler \Rightarrow It also converts the HLL program into machine language. but the conversion is done in one go i.e. the entire HLL program in one go. and also its all errors of program along with the line numbers.

APPLICATION SOFTWARE

An application software is the set of programs necessary to carry out operations for a specified application.

There are three categories :-

(i) Utilities (ii) Packages (iii) Customised software.

1) Utilities

are those application programs that assist the computer by performing housekeeping functions like backing up disk or scanning / cleaning viruses or arranging information etc.

(i) Text Editor \Rightarrow This utility program is used for creating, editing text files. Text editor software supports special commands for text editing i.e. you can insert, find, delete, replace characters, lines and paragraphs etc.

(ii) Backup Utility \Rightarrow This utility program facilitates the backing-up of disk. Backup means duplicating the disk information so that in case of any damage or data-loss, this backup data may be used.

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(iii) Compression Utility:- It facilitates compression of file. Large files can be compressed so that they take less storage area. When needed, these compressed files can be exploded back to their original form.

(iv) Disk Defragmenter ⇒ This utility programs attempts to minimise the fragmentation on your disk. A file is fragmented when it becomes too large for your computer to store in a single location on a disk. In this, your computer splits file up and stores it in pieces. You can use fragmented files, but it takes your computer longer to access them. Disk Defragmenter speeds up disk access by rearranging the files and free space of computer.

(iv) Antivirus Software :- This ensures virus-free environment. A computer virus is a computer program that can inject other computer programs by modifying them in such away as to include a copy of itself. A virus is not only copies itself but also makes the computer system behave abnormally. An anti-virus software scans your disk for viruses and remove them, if any virus found.

Packaged

The application software are required to make the computer useful for people. These has been written to do almost every task imaginable. As applications maybe numerous so it is not feasible to design software for

each one of them. Rather some general software are designed that can be used according to the needs and requirements of an individual called as packages. These The major and common categories are:-

- (i) Word Processing Software
- (ii) Spreadsheets.
- (iii) Database Management Systems
- (iv) Desktop Publishing Software.
- (v) Graphics, multimedia and presentation applications.

(i) Word Processing Package :- is a package that processes textual matter and creates organized and flawless documents. You can use a word processor to create almost any kind of document ~~in time~~ be it a term paper, business letter, legal document, news letter, thesis work etc.

(ii) Spreadsheet :- It is a program that accepts data values in tabular form and allows user to manipulate/calculate/analyze data in the desired manner and also can generate graphs and charts to show the relationships among numbers more vividly.

(iii) Database Management System :- It extends your ability to organize collections of data stored in your computer and provide tools for listing subsets of the data that meet specific criteria. for eg:- when you organize information

then you generally arrange it some logical order such as alphabetically names or citywise or department wise. and you want to view the records of only those employees who are in 'Sales' department, All this and much more is possible through database management system package.

(iv) Desktop Publishing Packages :- The software that handles page layout by combining the functions of a traditional typesetter and a lay-out artist is known as Desktop Publishing.

(v) Graphics, Multimedia and Presentation Application
 :- The most spectacular tasks performed by computer involve graphics and animation packages. Apart from the capability of drawing various types of charts, graphs, headlines etc these packages are capable of producing like-life drawings with or without animation.

The application software that manipulates images is known as Graphics software and the software that incorporates images, text, sound, computer animation, and video sequences is known as multimedia software. The application software that can create professional looking visual aids is called Presentation Graphics Software.

3.) Customised Software

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Business Software :- It is a tailor made software according to a business requires.
Ex:- A company wants to computerize its 'Acc. accounts' department and gets a software that can serve its need. There are many readymade software for business eg :- inventory Management System, Payroll system, etc. The customized software cannot be directly installed at any other user's workplace as the requirement of the second user may differ and the software may not fit in the requirement of new user.