UNIT **-3**

A] SOFTWARE:-

TYPES OF SOFTWARE:-

1. Application software

Application software is important part in software basically application software specially result for user area. When any user creates a new application than application software fully supported user can perform their maximum operation using development of different program with the help of application software.

2. System software

System software handles technical details. System software works with end users, application software & computer hardware to handle the majority of technical detail .system software is not a single program rather it is a collection of a system of program that handles the thousands of the technical details with little or user intervention.

e.g. system software controls where a word processing program is stored in memory, how commands are converted so that the system unit can process them and where a complete document are file is saved.

System software consist of four types of program –

1] Operating system

It co-ordinates computer resources provide an interface between user and the computer & run applications. Most OS store data & program in a system of files & folders.

Categories of OS :

- ***Embedded OS***

This is used for handheld computer & smaller devices like PDA's. The entire os is stored as embedded in the device .popular embedded OS includes windows CE and palm OS.

- ***Network OS***

There are used to control & co-ordinate computers that are networked or linked together or workstations. This is typically located on one of the connected computers hard disk called network server, this computer co-ordinate all communication between the other computers. Popular network OS includes Windows NT server, windows XP server and UNIX.

- ***Standalone OS***

It is also called as "desktop OS" Which control a single desktop or notebook computer. There OS are located on the computer's hard disk. This OS works with the networks NOS to share and co-ordinate resources, in these situation this is also called as client OS.

Popular OS :

DOS :

DOS means disk operating system .It is single user operating system & performs only one i.e. single task at a time.

- ***Windows***

It is a single user OS developed by Microsoft co-operation and perform various task at a time.

Popular several of windows are windows 98, windows XP, windows vista, etc.

- ***Windows 2000***

It is networks related operating system & perform multiple tasks at a time.

- ***Windows NT***

It is network related operating system .It is multiuser and performs various tasks at a time

- ***Linux***

It is multiuser operating system & perform multitask at a time.

- ***UNIX***

It is multiuser multitasking operating system.

2] Utilities

- ***Uninstall***

These are the programs that allow you to safely & completely remove unneeded programs & related files from your hard disk.

- ***Backup***

These are the programs that make copies of files to be used in case the originals are lost or damaged.

- ***File compression***

These are the programs that reduce the size of file so they require the less storage space & can be sent more efficiently over the internet. E.g. zip folder.

3] Device Drivers :

Every device such as a mouse or printer that is connected to a computer system has a special program, associated with it. This program it called a driver or simply driver. It works with the operating system to allow communication between the device & the rest of the computer system. Each time to the computer system is started; the OS loads all of the device drivers into memory.

Whenever a new device is added to a computer system, a new device driver must be installed before the device can be used windows supplies hundreds of different device drivers with its system software for many devices , the appropriate drivers are automatically selected & installed when the device is first connected to the computer system. It a particular device driver is not included with the windows system software, the product manufacture will supply one.

4] Language translators:-

Language translators are used to convert the programming instructions written by programmers into a language that computer understand and process. Language translators are:-

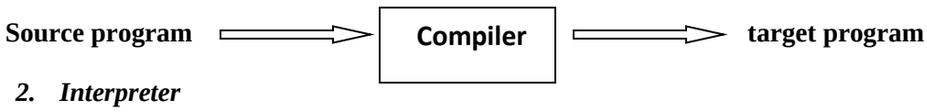
Language translator converts following language:-

- ***High level language***
- ***Assembly level language***
- ***Machine level language or low level language***

TYPES OF LANGUAGE TRANSLATOR

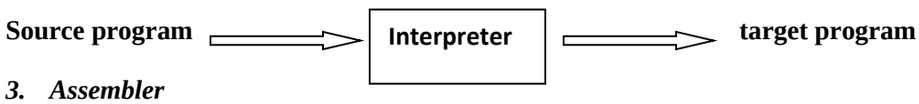
1. ***Compiler***

Compiler is program that can read a program in one language i.e. source code and translate into an equivalent program in another language i.e. target code .An important role of compiler is transport any errors in the source program that it .write during the translation process.



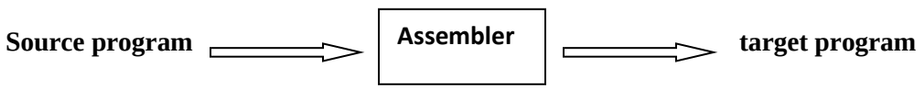
2. ***Interpreter***

Interpreter is program that can read program and translate from high level language to machine level language but it is line by line translation each timer program is executed .Interpreter have checked every line for syntax error and then converted to equivalent machine code.



3. ***Assembler***

Assembler is program that translate assembly level language program into machine level language.



DIFFERENCE BETWEEN COMPILER AND INTERPRETER

Compiler	Interpreter
1. Scan the entire program first & then translates it into machine code.	1. It translates the program line by line.
2. It converts the entire program to machine code; when all the syntax errors are removed execution takes place.	2 .Each times the program executed every line is checked for syntax error & then converted to equivalent machine code.
3. It slows for debugging.	3. It good for fast debugging.
4. It is takes execution time is less.	4. It takes execution time is more.
5. Compiler requires more memory space.	5. Interpreter requires less memory space.

B] OPERATING SYSTEM

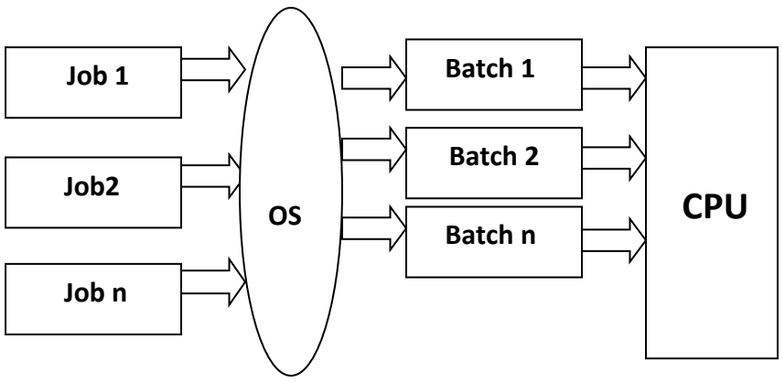
WHAT IS OPERATING SYSTEM?

- **Operating system is a set of program to co-ordinate computer resources and interface user and computer and capable to run any application.**
- **Operating system is a boss in computer environment.**
- **Operating system controls each and every program running in a computer.**

FUNCTION OF OPERATING SYSTEM

- **Operating system in interface between user and computer.**
- **When you switch on computer operating system program automatically generated.**
- **It is schedule processes.**
- **It load processes and manage it.**
- **It creates file and folder and maintains it.**
- **Operating system also provides security to the jobs used by the user.**
- **Operating system used computer resource like software and hardware resource.**
- **Operating system provides priority of processes.**
- **Operating system run application in convenient an efficient manner.**
- **Operating system maintains main memory and secondary memory.**

BATCH OPERATING SYSTEM :



A batch is a sequence of user's job. A computer operator forms a batch by arranging user jobs in a sequence and inserting special marker cards to indicate the start and end of the batch after forming a batch, the operator submits it to the batch processing operating system. The primary function of the BP system is to implement to processing of the jobs in a batch without requiring any intervention of the operator.

Batch processing is implemented by locating a component of BP system called the batch monitor or supervisor, permanently in one part of the computer's memory. The batch monitor is responsible for implementing the various function of the batch, it perform batch processing system .All the end of the batch, it performs batch termination processing and awaits initiation of the next batch by the operator. In a batch processing system, the CPU of the computer system is the server and the user jobs are the service requests.

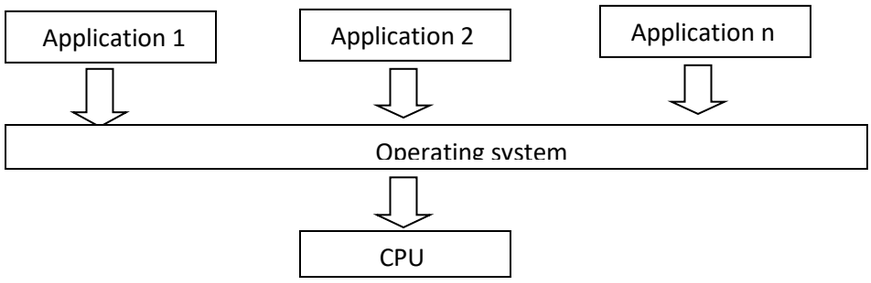
REAL TIME OPERATING SYSTEM :

Real time OS were developed to meet the response requirements of the applications whose requirements were not satisfied by the time sharing system. There are applications in which a computer is expected to control the operation of a physical system. For example, a satellite in orbit may be controlled by a computer. The position, velocity, acceleration and spin information of the satellite may be fed to a computer which may be programmed to computer the orbit and give instructions to its rocket motors to correct the orbit .In such an application the operation is in "real time", that is, the control has to be executed during the actual functioning of the system . These systems have to work within strict time limits for critical jobs. Critical jobs are locked in memory and receive the highest priority. Real time systems are required to be highly reliable. Any failure of a system which control a space vehicle in motion may result in fatal accident.

ONLINE OPERATING SYSTEM :

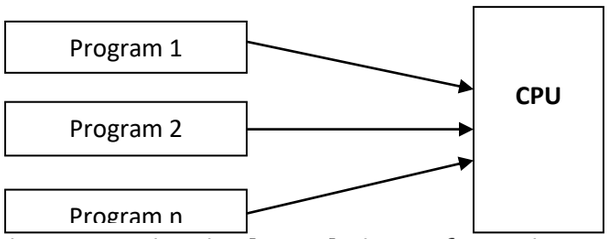
In online system, files of users are available "on-line" in a disk and may be retrieved quickly. The availability of large disk storage in such system makes it feasible to store large volumes of data and to retrieve them fast. This facility is very useful in implementing systems such as an airline reservation system. In such a system, the response time should be short because a customer's reservation is to be done while he waits. A short delay, however, be disastrous. Files should, however be updated immediately after a transaction is completed. As soon as a seat is reserved for a flight, the available seats should be called online transaction processing system.

MULTI-TASKING OPERATING SYSTEM :



Multi-tasking permits the existence of many tasks within an application program, provides the possibility of overlapping the CPU and IO activities of the application with one another. This helps in reducing its elapsed time. The ability to specify priorities for the tasks provides additional controls to the designer while structuring an application to meet its response requirements. Multi-tasking within the application also helps in another vital way. So long as buffer area has some free space, only the first task has to complete before the next sample arrives. The other tasks can be performed later. This possibility is exploited by associating the highest priority with the first task and lower priorities with other tasks.

MULTIPROGRAMING OPERATING SYSTEM



Multiprogramming is the technique of running several program at a time using time sharing OS it allows the computer to do several things at the same time. Multiprogramming creates logical parallelism. The concept of multiprogramming is that the OS keeps several jobs in memory simultaneously. The OS selects the job from the job tool and starts executing a job. When that job needs to wait for any IO operation, the CPU switches to another job IO the main idea. A program called as monitor is also permanently kept in a portion of memory. For example A, B, C, D, E which occupies a portion in the memory. A program is a set of instructions stored in memory as a static text and not yet invoked for execution. As soon as a program is allocated CPU time and allowed to start execution it becomes a process. In contrast to a program, a process is dynamic. It executes instructions, read & write data, change value of data stored in memory need of multiprogramming. The CPU utilization is better in this system than uni programming system. However, it requires additional features as follows:

1] Large memory : For multiprogramming (MP) system to work satisfactorily large main memory is required to accommodate a good no. of jobs along with the OS.

2] Memory protection : Computer design for MP must provide some type of memory protection mechanism. We must protect one job from other.

3] Job status prevention :

In a MP, when a running job is blocked for I/O processing the CPU is taken away from this job & given to another job that is ready for execution, later the former job will be allocated to CPU to execute. This requires programming of the jobs & completes job status information.

4] CPU Scheduling :

When are or more jobs are in ready state, the OS must decide which of ready jobs should be allocated.