OPERATING SYSTEM

Abstract

Operating System are used in computers. Computers are useful for saving time, Users can describe an operating system as a system that runs their application programs and provides a user interface through which they can connect with computer harders.

Keywords: Computer, ,hardware, operating system, software.

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The assembly computers can do nothing when the new brand computers comes to market. Both the hardware and software are needed to make the computer functioning well. So, the application softwares such as word processing or spreadsheet software are required to do tasks.

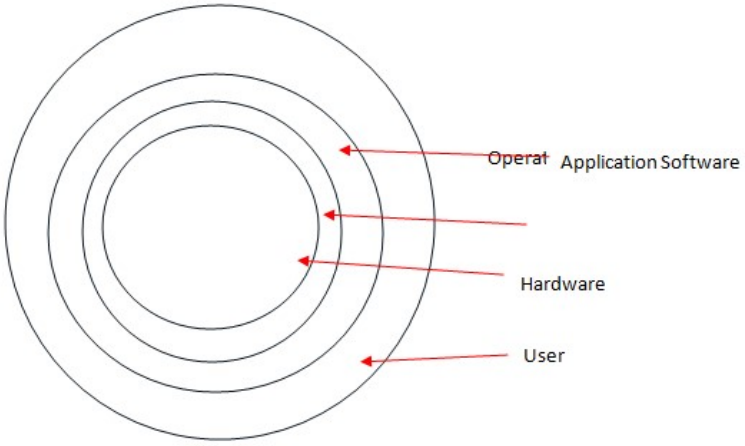


Figure 1: The Operating System in a Hierarchy

Operating system is the interface between the hardware and the application software. An operating system is a set of programs that lies between applications software and the hardware. System software means all programs related to coordinating computer operations. System software does include the operating system, but it also includes the BIOS software, drivers, and service programs as shown in the figure.

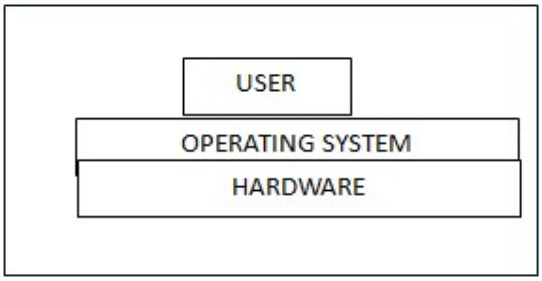


Figure 2: System Software

So an operating system is a set of programs. The operating system, is known as the supervisor program. The supervisor controls the entire operating system and loads into memory, other operating system programs from disk storage whenever needed.

The main functions of operating system are:

1. Manage the computer's resources, such as the central processing unit, memory, disk drives, and printers.
2. Establish a user interface.
3. Execute and provide services for applications software.

4. Some operating system provides security and maintenance of data.

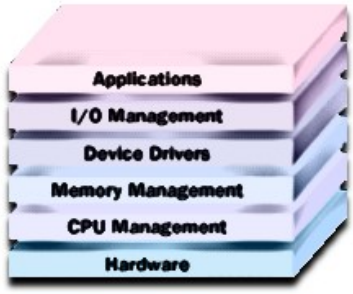
As most of the work of an operating system is hidden from the user, we both establish a user interface and execute software.

Operating systems for mainframe and other large computers, that they must keep track of several programs from several users, are running in the same time. Although some personal computer operating systems found in business or learning environments, can support multiple programs.

I. OPERATING SYSTEM FUNCTIONS

At the simplest level, an operating system does two things:

- It manages the hardware and software resources of the system. In computers, tablets and smart phones these resources include the processors, memory, disk space and more.
- It provides a stable, consistent way for applications to deal with the hardware without having to know all the details of the hardware.



The operating system controls every task the computer carries out and manages system resources to optimize performance.

The first task is managing the hardware and software resources, is very important

The second task is providing a consistent user interface, is especially important if there is more than one of a particular type of computer using the operating system, or if the hardware making up the computer is ever open to change.

Even when a particular computer is unique, an operating system ensures that applications continue to run when hardware upgrades and updates occur. This is because the operating system — not the application — is charged with managing the hardware and the distribution of its resources.

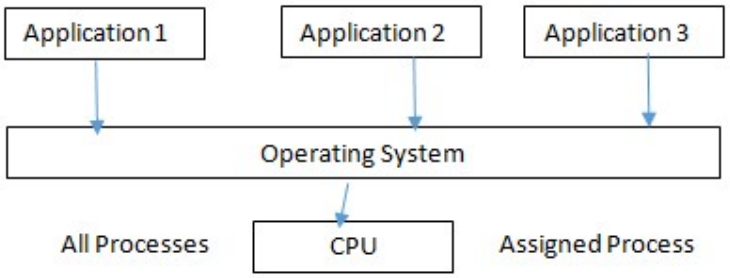
Types of Operating System

Operating system are the following types

- Single user operating system.
- Multi-tasking operating system.
- Time sharing operating system.
- Multi programming operating system.
- Multi-processing operating system.
- Multi user operating system.
- Real time operating system.
- Network operating system.
- Client-Server operating system.

1. **Single User Operating System:** In single user operating system, the computers are used by individuals at a time.This type operating system is very easy to use and understand. Since there is only one user, there is no conflict of resource allocation. The CPU has to execute only one program in a given time.

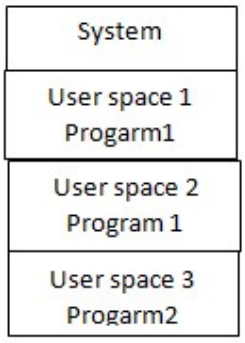
2. **Multi-tasking Operating System:** The multi-tasking operating system has the ability to run more than one program at a time. They appear to be running simultaneously, but they are actually switching between themselves. The OS schedule all the programs running under it in such a way that each program gets a slice of the total time.



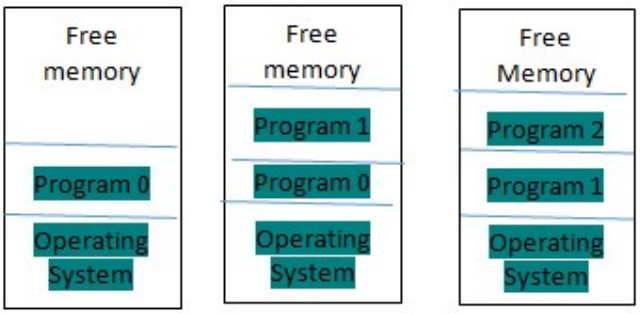
In the above figure, there are 3 programs are running:-

"Application 1" has been scheduled in the first slot, it will relinquish it's time slice is over. The processor will note of whichever situation the program "Application 1" was in end and then give the control to program "Application 2". Same situation will happen with the programs "Application 2" and "Application 3". After "Application 3", program "Application 1" get control and the processor will start of from where the program "Application 1" had left off in the previous time slice.

3. **Time Sharing Operating System:** In time sharing operating system, the number of terminals are attached to a computer and each computer has direct access to the main computer. The main computer allocates for a fixed time slice to each program. Each program is executed for a fixed time period. As soon as the time allocated to this program is finished, the CPU starts executing another program.



4. **Multi Programming Operating System:** The technique of this OS is reduce the idle time of CPU and increase the utilization of CPU. A number of programs are available in the main memory of the computer. The OS selects one of the program and instructs the CPU to execute. While this program is being executed, another program becomes available from the main memory simultaneously.



5. **Multi-Processing Operating System:** The operating system which is capable of using and manging more than one CPU is called multi-processing operating system. Inthis case each CPU is allocated for definite job. The controlling CPU uses the power of other CPUs as if they were peripheral devices of the computer.

6. **Multi User Operating System:** This operating system allows more than one user to access the computer at the same time. In this technique a network of computers is established. Multi terminals are connected with the host computer and more than one user can operate the terminals.

7. **Real Time Operating System:** The real time operating system provides random enquires from remote locations with instantaneous response. The OS instructs the computer to analyse the data and send appropriate response back to the sender. It is dynamic in nature.

8. **Network Operating System:** A single operating system is assigned to all the computer on the network that is referred as distributed operating system. This is common on the LAN. A network operating system makes all the resources available even if attached to remote hosts. Shared files may be available on the central computer. Network operating system supports communication between user and between users and the system.

9. **Client/Server System:** In client/ server system, each computer in the network is either a client or a server. Clients are those computers that make certain requests send to the server. Server is that computer which completes clients' requests. A LAN can be considered as client/server system.

