Faculty of Engineering & Technology

Electrical & Computer Engineering Department

ENCS3390

Assignment_1

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The basic organization of a computer system is the processing unit, memory unit, and input-output devices. The processing unit controls all the functions of the computer system. It is the brain of the computer e.g. CPU. The memory unit consists of two units. One is an arithmetic unit and the other is a logic unit. Input devices are those devices through which end-users can send messages to computers e.g. keyboard, mouse, etc. Output devices are those devices through which end-users get output from computers e.g. monitors

Input Unit	Memory Or Storage Unit	Output Unit
	Control Unit	
	Arithmetic Logical Unit	

CPU
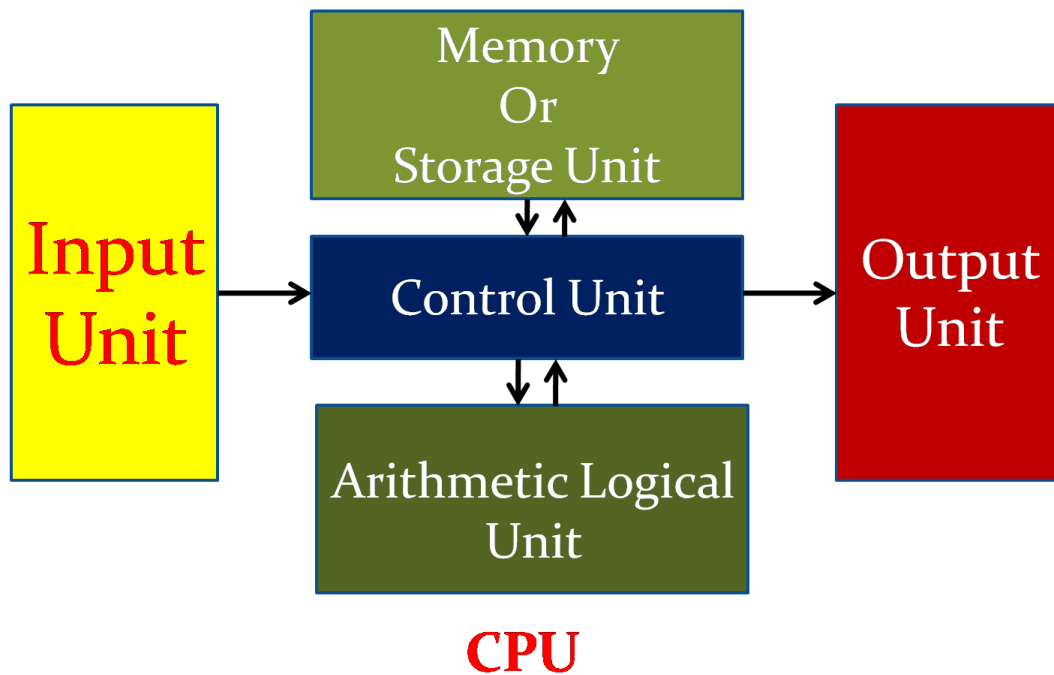
There are various components of an Operating System to perform well defined tasks. Though most of the Operating Systems differ in structure but logically they have similar components. Each component must be a well-defined portion of a system that appropriately describes the functions, inputs, and outputs. There are following 8-components of an Operating System .

Operating System Components
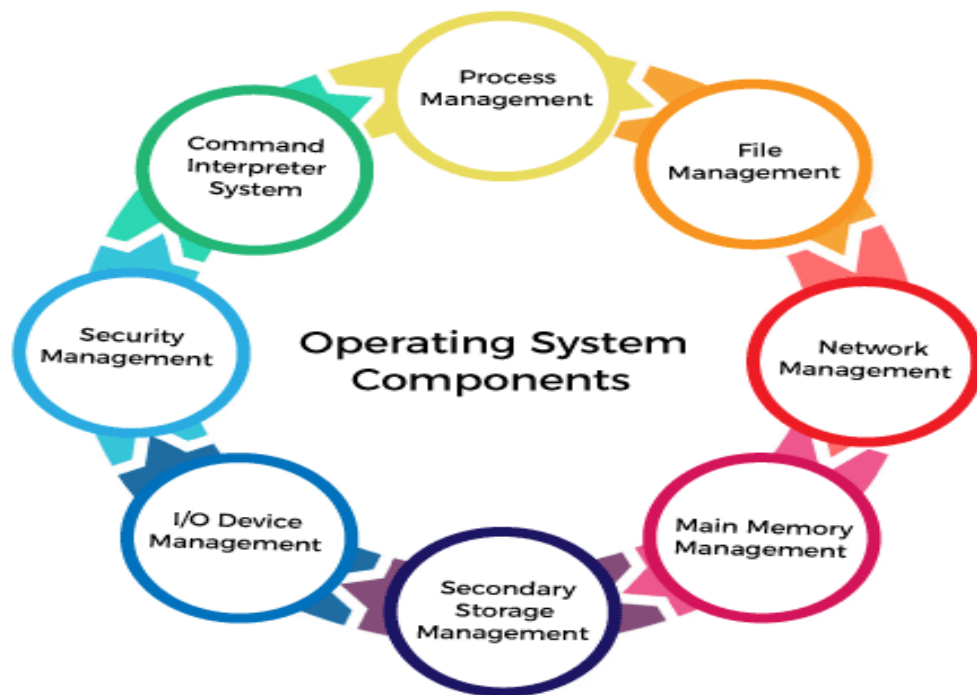
Process Management : A process is program or a fraction of a program that is loaded in main memory. A process needs certain resources including CPU time, Memory, Files, and I/O devices to accomplish its task.

I/O Device Management : One of the purposes of an operating system is to hide the peculiarities of specific hardware devices from the user. I/O Device Management provides an abstract level of H/W devices and keep the details from applications to ensure proper use of devices, to prevent errors, and to provide users with convenient and efficient programming environment

File Management : File management is one of the most visible services of an operating system. Computers can store information in several different physical forms; magnetic tape, disk, and drum are the most common forms.

Network Management : The definition of network management is often broad, as network management involves several different components. Network management is the process of managing and administering a computer network.

The different types of computing environments : A computer system uses many devices, arranged in different ways to solve many problems. This constitutes a computing environment where many computers are used to process and exchange information to handle multiple issues

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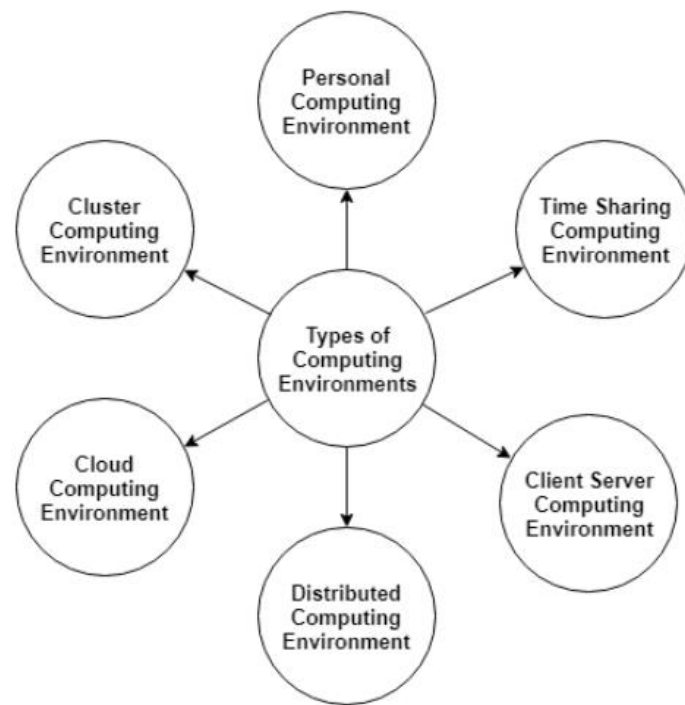
Personal Computing Environment : In the personal computing environment, there is a single computer system. All the system processes are available on the computer and executed there.

Time Sharing Computing Environment : The time sharing computing environment allows multiple users to share the system simultaneously. Each user is provided a time slice and the processor switches rapidly among the us.

Client Server Computing Environment : In client server computing, the client requests a resource and the server provides that resource. A server may serve multiple clients at the same time while a client is in contact with only one server.

A distributed computing environment : contains multiple nodes that are physically separate but linked together using the network. All the nodes in this system communicate with each other and handle processes in tandem.

Cloud Computing Environment : The computing is moved away from individual computer systems to a cloud of computers in cloud computing environment.

Cluster Computing Environment : The clustered computing environment is similar to parallel computing environment as they both have multiple CPUs. However a major difference is that clustered systems are created by two or more individual computer systems merged together which then work parallel to each other.

the services provided by an operating system to users, processes, and other systems we know that an operating system provides multiple services for its users. Some of these services enable interactions between users, the operating system itself, and other software programs. Other services, in turn, tackle internal routines of computer systems lifecycle.

In the following subsections, we'll explore relevant services provided by the operating systems
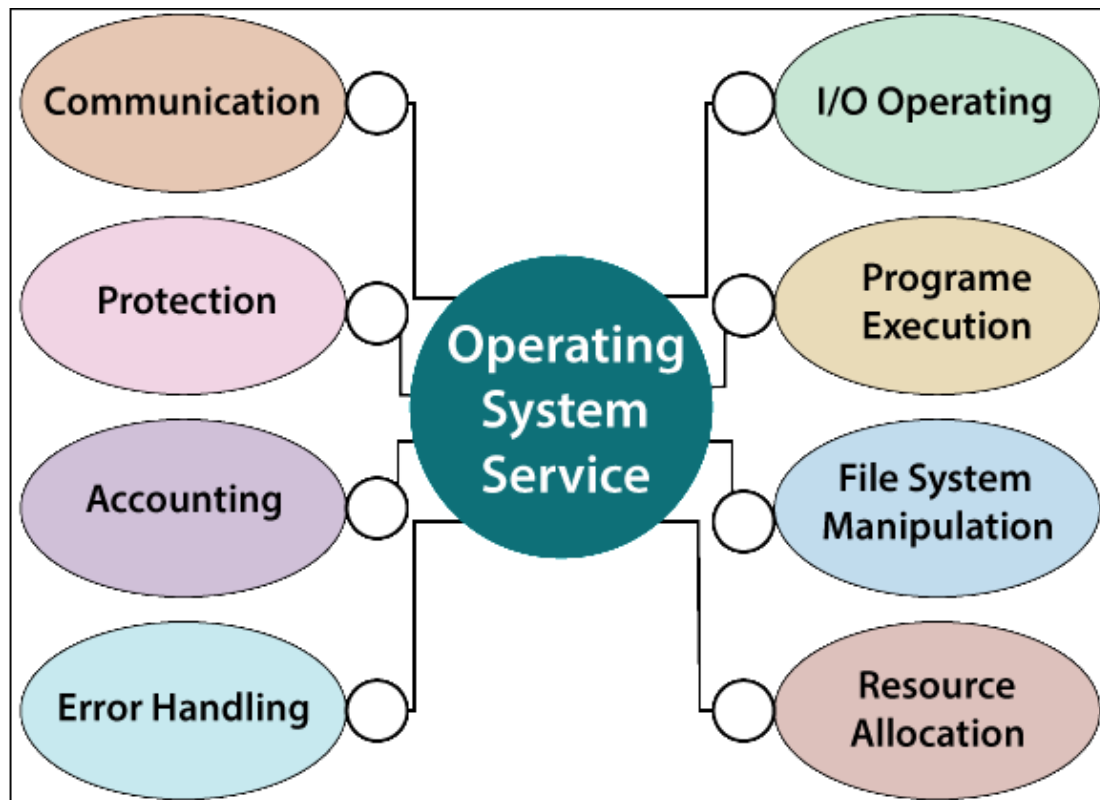
There are several ways to structure an operating system, each with its own advantages and disadvantages. Here are some of the most common ways to structure an operating system:
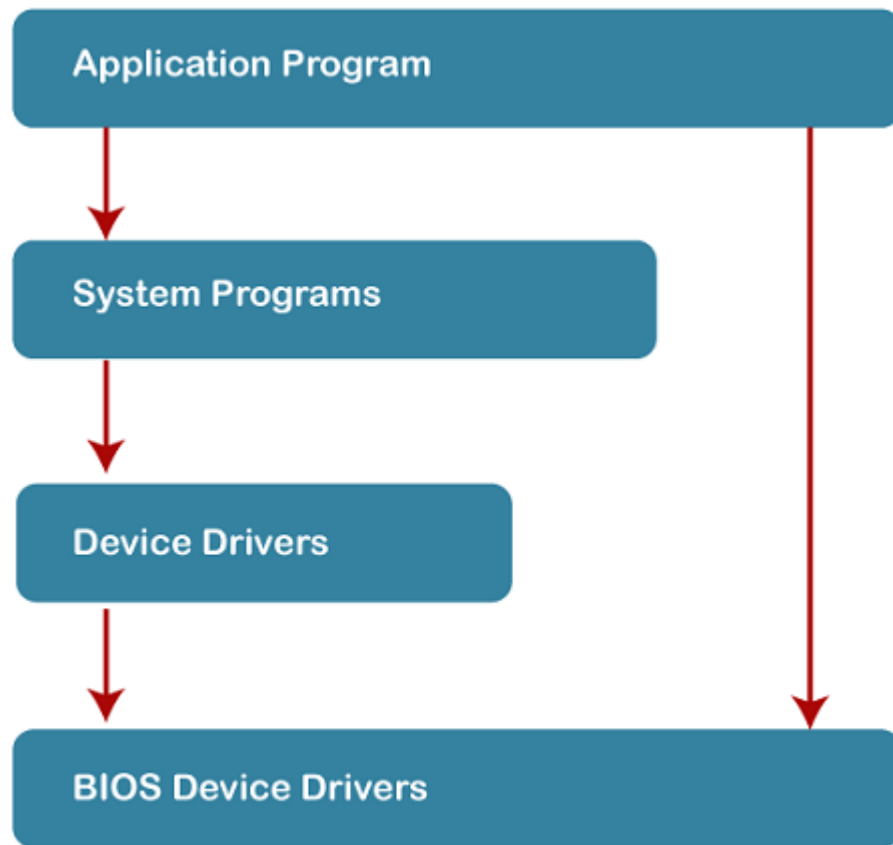
Monolithic kernel: kernel manages all system resources, simple and efficient but hard to modify.

Microkernel: kernel is divided into small, independent modules, providing more flexibility and modularity.

Hybrid kernel: balance between efficiency and flexibility, core system resources are managed by the kernel while other services are run as user-space processes.

Layered architecture: operating system is divided into several layers, providing a clear separation of concerns and easier customization.

Client-server model: operating system is divided into separate components, with some running as servers and others as clients, allowing for more efficient resource utilization and scalability.

Operating systems (OS) are installed and customized through a series of steps that may vary depending on the specific OS and hardware being used. Here are the general steps involved in installing and customizing an OS:

1)The first step is to obtain the installation media for the OS. This could be in the form of a CD, DVD, USB drive.

2)Boot from the installation media: Next, you need to boot your computer from the installation media. To do this, you may need to change the boot order in the computer's BIOS settings so that it boots from the installation media first.

3) Follow the installation wizard: Once the computer has booted from the installation media, you will be presented with an installation wizard. The wizard will guide you through the installation process, which may involve choosing the language and time zone, partitioning the hard drive, and creating user accounts.

4) Customize the OS: After the installation is complete, you can customize the OS to your liking. This may involve installing additional software, changing the desktop wallpaper, and adjusting settings such as the screen resolution, mouse speed, and sound volume.

5) Boot the OS: Once the OS is installed and customized, you can boot it up by restarting your computer. When the computer starts up, it will run through a series of tests to ensure that everything is working properly. If any issues are detected, you may see an error message. Otherwise, the OS will load and you will be presented with the login screen.

References

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