

Section - 4

Q1) Write about monolithic, layered, and microkernel structures of operating systems.

1. monolithic kernel: A monolithic kernel is an operating system architecture where the entire operating system is working in kernel space. The monolithic model differs from the other operating system architectures in that it alone defines a high level virtual interface over computer hardware. A set of primitives or system call implement all operating system services such as process management, concurrency, and memory management. Device drivers can be added to the kernel as modules.

2. layered operating system: The operating system is split into various layers in the layered operating system and each of the layers have different functionalities. The

type of operating system was created as an improvement over the early monolithic system.

⇒ There are six layers in the layered operating system.

⇒ Hardware: This layer interacts with the system hardware with all the peripheral devices used such as printer, mouse, keyboard, scanner etc.

CPU scheduling

This layer deals with scheduling the process of the CPU. There are many scheduling queues that are used to handle process. When the process enters the system, they are put into the job queue.

Process management

This layer is responsible for managing the process i.e. assigning the processor to process at time. This is known as process scheduling.

Memory Management

Memory Management deals with memory and the moving of process from disk to primary memory for execution and back again.

I/O Buffer

I/O device are very important in the computer systems. they provide deals user with the means of interacting with the system.

User Programs.

This is the highest layer in layered in the operating system. This layer deals with the many user programs and applications that run in operating system.

Micro Kernel

Kernel is the core part of an operating system which manages system resources. It also acts like a bridge between application and hardware of the computer.

The CPU can execute certain instructions only when it is in the kernel mode. these instructions are called privilege instructions. They allow implementation of special operations whose execution by the user program could interfere with the functioning of operating system or activity of another user program.