1. Explain the main purpose of operating system.

ANSWER 1: [The main purpose of an operating system is to provide a platform on which a user can execute programs in a convenient and efficient manner**1**](https://eng.libretexts.org/Courses/Delta_College/Operating_System%3A_The_Basics/02%3A_Operating_System_Overview/2.01%3A_Function_of_the_Operating_System). [An operating system is a piece of software that manages the allocation of computer hardware**1**](https://eng.libretexts.org/Courses/Delta_College/Operating_System%3A_The_Basics/02%3A_Operating_System_Overview/2.01%3A_Function_of_the_Operating_System). [It controls all the computer resources, provides valuable services to user programs, coordinates the execution of user programs, provides resources for user programs, provides an interface (virtual machine) to the user, and hides the complexity of hardware from the user](https://www.geeksforgeeks.org/functions-of-operating-system/).

1. Discuss in detail about the two architectures of the Operating system.

ANSWER 2: [There are four types of architectures of operating systems: monolithic architecture, layered architecture, microkernel architecture, and hybrid architecture**1**](https://www.scaler.com/topics/architectures-of-operating-system/).

[In monolithic architecture, each component of the operating system is contained within the kernel**2**](https://padakuu.com/architectures-of-operating-system-37-article). [In layered architecture, components with similar functionalities are grouped to form a layer**2**](https://padakuu.com/architectures-of-operating-system-37-article). [In microkernel architecture, the kernel is broken down into separate processes, known as servers**1**](https://www.scaler.com/topics/architectures-of-operating-system/). Hybrid architecture is the combination of all architectures[**1**](https://www.scaler.com/topics/architectures-of-operating-system/).

In monolithic architecture, each component of the operating system is contained within the kernel. In layered architecture, components with similar functionalities are grouped to form a layer. In microkernel architecture, the kernel is broken down into separate processes, known as servers. Hybrid architecture is the combination of all architectures.

1. Differentiate Multitasking Operating systems from Time sharing Operating system.

ANSWER 3: Time-sharing and multitasking operating systems are similar concepts, and today all operating systems adopt both concepts, making it hard to differentiate them. [The main difference between time sharing and multitasking is that time sharing allows multiple users to share a computer resource simultaneously using multiprogramming and multitasking, while multitasking allows a system to execute multiple tasks or processes simultaneously**1**](https://networkinterview.com/time-sharing-and-multi-tasking/)[**2**](https://pediaa.com/what-is-the-difference-between-time-sharing-and-multitasking/).

1. Define an Operating system. Explain few roles of an OS.

ANSWER 4: An operating system (OS) is software that controls the computer’s hardware and software resources. It allows applications to interact with the hardware on a computer. The responsibilities of the OS include:

* Hiding the complexities of hardware from the user.
* Managing memory and storage.
* Managing input/output (I/O) operations.
* Managing processes and threads.
* Providing security and protection.
* Providing a user interface.