## 

**DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY**

**Subject Name:** Principles of Operating Systems **Subject Code: CSH206B-T**

**Topic:** Introduction to Operating System

**Tutorial: 1**

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**CSE4B**

**Objective: To gain familiarity with introductory concepts of OS**

**Course Outcome : CO1 : Learn architecture of OS**

**Bloom’s Taxonomy : BT1 : Knowledge**

Q1. Define Operating System?

Ans: An Operating System (OS) is an interface between a computer user and computer hardware. It is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.

Q2. Mention the generation in terms of development of operating system for below mentioned terms:

1. Disks:

2. Batch systems

3. Spooling

4. Time-Sharing

5. Multi-tasking/Multi-threading

Q3 Complete the below mentioned table based on the evolution of different operating systems

|  |  |  |  |
| --- | --- | --- | --- |
| Generation | Period | Computer Architecture | Problems and development of OSs |

Q4. The major drawback of Multiprogrammed batch systems was the lack of user/programmer interaction with their jobs. How can you overcome this?

Q5. What is SPOOL? What is the benefit of spooling?

Ans: The spooling operation uses a disk as a very large buffer. Spooling is capable of overlapping I/O operation for one job with processor operations for another job.

Q6. What are the functions of operating system from user’s and system’s viewpoint?

Ans:

## **User View**

The user view depends on the system interface that is used by the users. The different types of user view experiences can be explained as follows −

* If the user is using a personal computer, the operating system is largely designed to make the interaction easy. Some attention is also paid to the performance of the system, but there is no need for the operating system to worry about resource utilization. This is because the personal computer uses all the resources available and there is no sharing.
* If the user is using a system connected to a mainframe or a minicomputer, the operating system is largely concerned with resource utilization. This is because there may be multiple terminals connected to the mainframe and the operating system makes sure that all the resources such as CPU,memory, I/O devices etc. are divided uniformly between them.
* If the user is sitting on a workstation connected to other workstations through networks, then the operating system needs to focus on both individual usage of resources and sharing though the network. This happens because the workstation exclusively uses its own resources but it also needs to share files etc. with other workstations across the network.
* If the user is using a handheld computer such as a mobile, then the operating system handles the usability of the device including a few remote operations. The battery level of the device is also taken into account.

There are some devices that contain very less or no user view because there is no interaction with the users. Examples are embedded computers in home devices, automobiles etc.

## **System View**

According to the computer system, the operating system is the bridge between applications and hardware. It is most intimate with the hardware and is used to control it as required.

The different types of system view for operating system can be explained as follows:

* The system views the operating system as a resource allocator. There are many resources such as CPU time, memory space, file storage space, I/O devices etc. that are required by processes for execution. It is the duty of the operating system to allocate these resources judiciously to the processes so that the computer system can run as smoothly as possible.
* The operating system can also work as a control program. It manages all the processes and I/O devices so that the computer system works smoothly and there are no errors. It makes sure that the I/O devices work in a proper manner without creating problems.
* Operating systems can also be viewed as a way to make using hardware easier.
* Computers were required to easily solve user problems. However it is not easy to work directly with the computer hardware. So, operating systems were developed to easily communicate with the hardware.
* An operating system can also be considered as a program running at all times in the background of a computer system (known as the kernel) and handling all the application programs. This is the definition of the operating system that is generally followed.