Operating Systems Concept

Introduction to Operating Systems.

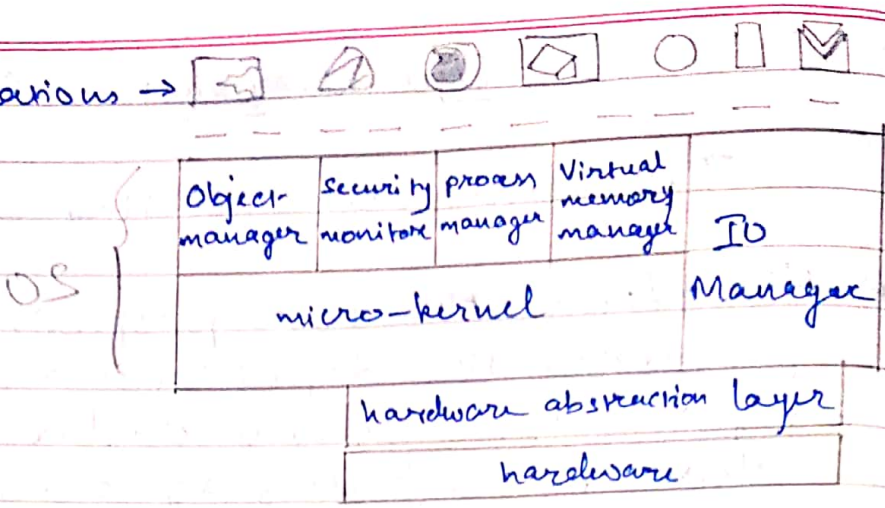
Q1. How from the user perspective and system perspective the definition of an operating system differs? Is there any similar point that there these two definitions agree with?

Ans. The user's perspective defines an operating system to manage the ease of use of computer system resources, such that no attention to be given on working of hardware and software resources. In comparison to this, a system perspective is in knowing the operating as a resource allocator. A computer system build build with resources like CPU time, memory space, file storage, I/O devices and so on which are controlled by the operating system to perform every work of users.

There can be many definition of an operating system with quite varied context from the two views.

We can say the two definitions might indirectly combine to solve solving the problems of creating a usable computing system.

Q2. Draw and discuss the general layered architecture of operating system.



The operating system provides the interface for user to access the hardware & build or use software or any applications.

Q3. "It is better to have distinct layers in an operating system to enhance security" - Justify.

Ans:- Layering provides a distinct advantage in an operating system. All the layers can be defined separately and interacting with each other as required. Also, it is easier to create, maintain and update the system if it is done in the form of layers. Change in one layer specification does not affect the rest of the layers.

Q4. List down the required features that should be incorporated according to you while designing operating system for the following type of devices.

a) Desktop computers b) Handheld devices c) Embedded System.

d) Mainframe computers. e) Hard Realtime System.

f) Soft Realtime System g) Multimedia System.

Ans- a) For desktop computers, the operating system should support complex games, business applications

b) To design the operating system for handheld devices, it must provide an environment in which a user can easily interface with the computer to execute programs.

c) The operating system must supervise the application software and provide mechanism to let the processor run a process as per scheduling, for an embedded system.

d) For a mainframe system, the operating systems are designed primarily to optimize the utilization of hardware.

e) The response time or the time to finish up a process in all realtime systems is very less. In this system the operating system must guarantee that critical tasks complete on time.

f) Soft realtime systems are less restrictive. A critical real-time task gets priority over other tasks and retains the priority over other tasks and retains the priority until it complete.

g) For a multimedia system, its operating system, its operating system must inclined to the factors like timeliness, must manage the disk data to efficiently use limited device capacity, the operating system must ensure that each media gets a sufficient resource share as well as consider tight relations between different data stream arriving

from different files.

Q5. How symmetric and asymmetric multiprocessor system differs?

Ans: In symmetric multiprocessing system the processing of programs is done by multiple processors that share a common operating system and memory. Comparatively processing of programs by multiple processors in an asymmetric system is done by the ~~master-slave~~ master-slave relationship. As well we can say in symmetric system the processors take processes from the ready queue, where each processor can have separate ready queues. In asymmetric system the master processor assigns processes to the slave processors. Lastly, symmetric system processor is comparatively costly to asymmetric system.

Q6. What is the difference b/n multiprocessor system and distributed system?

Ans: The multiprocessor system utilizes multiple CPUs, whereas a single CPU is needed for distributed system.
Multiprocessor system permits parallel processing, whereas context switching takes place in a distributed system.
Multiprocessor takes less time to process the jobs, and a distributed system takes comparatively more time. A multiprocessor system is usually more expensive than distributed system.

Q7) Compare b/n concepts of multiprogramming, multitasking, ~~and~~ Multiprocessing and Time-sharing systems.

Ans In the time-sharing operating system each tasks get an equal priority. Here the CPU idle time is less.

In multiprogramming we find a computer is running more than one program at a time. In multiprocessing a computer uses more than one CPU at a time. In multitasking one CPU is shared for different tasks to perform.