

NAME : UMAIR KHAN

I.D : 14596

SEMESTER : 4th BS(SE)

SECTION : A

SUBJECT : OPERATING SYSTEM

INSTRUCTOR : DAUD KHAN

EXAMINATION : MIDTERM EXAM

Q.1) ANSWER:

OPERATING SYSTEM:

An operating system is the level of programming that lets us do things with our computer. The operating system acts as a platform for all other applications on our machine. Without it, our computer would just be a paperweight.

PURPOSE OF OS:

Operating system is like the manager for a computer. Its job is to monitor what software needs and what the hardware can provide. As you run applications on computer, the operating

allocates the resources necessary to complete the task. That can include processing power, memory allocation and computer storage access, among other things.

The OS also allows programs to run on a computer. Without an OS, a programmer would have to design an application to run on the hardware directly. An operating system act as an application interface to the hardware.

Assuming the programmer has done a good job at building an application, it should run just fine on operating system.

Q) ANSWER:

MULTIPROCESSOR SYSTEM:

Multiprocessor system or parallel system support the use of more than one processor in close communication.

ADVANTAGES:

The advantages of multiprocessor system are

INCREASED THROUGHPUT:

By increasing the number of processors, more work can be completed in a unit time.

COST SAVING:

Multiprocessor system shares the memory, buses, peripherals etc. It thus saves

money as compared to multiple single systems. It is cheaper to store that data on one single disk and shared by all processors instead of using many copies of the same data.

INCREASED RELIABILITY:

In this system, as the workload is distributed among several processors which results in increased reliability. If one processor fails then its failure may slightly slow down the speed of the system but the system work smoothly.

Q.1) MULTIPROGRAMMING:

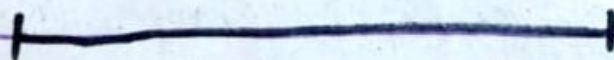
The technique of utilizing several programs concurrently in a single computer system via multiprocessing is called multiprogramming.

OBJECTIVE:

The objective of multiprogramming is to have some process running at all times, to maximize CPU utilization. The objective of time sharing is to switch the CPU among processes so frequently that users can interact with each programme while it is running. To meet these objectives,

the process scheduler selects an available process (possibly from set of several available processes) for program execution on the CPU.

For a single-processor system, there will never be more than one running process. If there are more processes, the rest will have to wait until the CPU is free and can be rescheduled. With this design CPU utilization is said to be maximized.



Q 4) MULTITHREADED PROGRAMMING:

This specifically refers to the concurrent execution of more than one sequential set of instructions. These threads could run on a single processor or there could be multiple threads running on multiple processor cores.

BENEFITS:

- Many concurrent compute operations and I/O request within a single process.
- Threads imposed minimal impact on system resources. Threads require less overhead to create, maintain and manage

- Threads can be used to simplify structures of complex applications.
- Improved throughput
- Simultaneous and fully symmetric use of multiple processors for computations.
- Superior application responsiveness
- Improved server responsiveness.
- Minimized system resource usage.
- Program structure simplification.
- Better communication.
- Resource sharing
- Scalability
- Increase parallelism
- Economically best.



Q) RR SCHEDULING ALGORITHM:

INTRODUCTION:

The name of this algorithm comes from the round-robin principle, where each person gets an equal share of something in turns. It is the oldest, simplest scheduling algorithm, which is mostly used for multi-tasking.

In R-Robin scheduling, each ready task ^{runs} turns by-turn only in a cyclic queue for a limited time slice. The algorithm also prevents starvation free execution of processes.

CHARACTERISTICS:

There are some important characteristics of round-robin scheduling:

- Round robin is a pre-emptive algorithm.
- The CPU is shifted to the next process after fixed interval time, which is called time slice.
- The process that is preempted is added to the end of the queue.
- Round robin is a hybrid model which is clock driven.
- Time-slice should be minimum which is assigned for a specific task that needs to be processed.
- Time slice should be minimum however it may

differs OS to OS.

CONCLUSION:

Round-Robin is one of the oldest, fairest and easiest algorithm. It is widely used scheduling method in traditional operating system.



Q) ANSWER:

MAIN DIFFERENCE:

The main difference between network operating system and distributed operating system is that network OS provides network related functionalities while a distributed OS connects multiple independent computers via a network to perform task similar to a single computer.

NETWORK OPERATING SYSTEM:

Network operating system run on a server and provides networking related functionality. It manages data, users, groups

groups and provides security. These systems allow the users to exchange files, share devices such as printers among multiple devices in a network such as a LAN, a private network and some other network.

DISTRIBUTED OPERATING SYSTEM:

A distributed operating system contains multiple computers. These devices communicate with each other via a shared network. Each device is independent and consists of its own memory and CPU. The data processing task is distributed among the devices.

EXAMPLES:

- Artisoft's LANtastic, Novell's NetWare and Microsoft's LAN Manager are examples of network operating systems.
- LOCUS and MICROS are some examples of distributed operating systems.



Q. 7) ANSWER:

Without an operating system computer hardware is only in an inactive electronic machine, which is inconvenient to user for execution of programs. As the computer hardware or machine understands only the machine language it is difficult to develop each and every program in machine language in order to execute it. Without operating system, computer is just a box of bits that do not know how to communicate.

Thus without OS execution of user program is extremely difficult.