Midterm Assignment (Summer-2020)

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Subject	Operating System	Instructor	Sir Daud khan

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1.Explain the main purpose of an operating system?

Answer:

purpose of operating system

it is a collection of software that manages computer hardware resources. Without a computer operating system, a computer would be-useless. The operating system acts as Interface between the user and computer hardware. An operating system performs basic tasks such as, controlling and allocating memory, prioritizing system requests, controlling input and output devices, facilitating networking and managing file systems.

➢ Execute user programs and make solving user problems easier
➢ Make the computer system convenient to use
➢ Use the computer hardware in an efficient manner
➢ Resource management
➢ Data management
➢ Job management
➢ Standard means of communication between User and Computer.

2. What are the advantages of a multiprocessor system?

Answer:

Multiprocessing is the use of two or more central processing units within a single computer system

Advantages

➢ **Reduced Cost:**

Multiple processors share same resources instead of using separate power supply or mother board for each

➢ **Increased reliability**

The failure of one processor does not affect other processors though it will slow down the machine

➢ **Increased throughput**

Increase in number of processors complete the work in less time

➢ **Battery is highly efficient.**

➢ **Two parallel processes**

3 Describe the objective of multiprogramming.

❖ Maximize CPU utilization

❖ Switch the CPU among processes

❖ Achieve multitasking

  ○ Single user cannot keep CPU and I/O devices busy at all times Multiprogramming

  ○ organizes jobs (code and data) so CPU always has one to execute

  ○ A subset of total jobs in system is kept in memory One job selected and run via job scheduling When it has to wait (for I/O for example), OS switches to another job

4. **Give some benefits of multithreaded programming.**

Benefits

➢ **Responsiveness**

May allow continued execution if part of process is blocked, especially important for user interfaces.

➢ **Resource Sharing-**

Threads share resources of process, easier than shared memory or message passing·

Economy

Cheaper than process creation, thread switching lower overhead than context switching.

➢ **Scalability**

Process can take advantage of multiprocessor architectures

5. **What is RR scheduling algorithm?**

➢ CPU is assigned to the process on the basis of FCFS for a fixed amount of time.
➢ This fixed amount of time is called as **time quantum** or **time slice**.
➢ After the time quantum expires, the running process is preempted and sent to the ready queue.
➢ Then, the processor is assigned to the next arrived process.
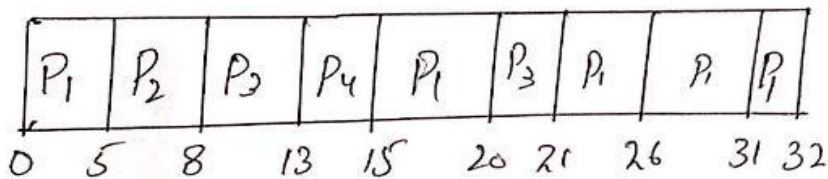➢ It is always preemptive in nature.

Advantages:

➢ It gives the best performance in terms of average response time.
➢ It is best suited for time sharing system, client server architecture and interactive system.

kRR scheduling algorithm example

Process	Burst time
P_1	21
P_2	3
P_3	6
P_4	2

The GANTT chart for round robin Schedu
will be

P_1	P_2	P_3	P_4	P_1	P_3	P_1	P_1	P_1

0   5   8   13   15   20 21   26   31 32

The average waiting time will be, 11 ms

6.**What are the primary differences between Network Operating System and Distributed Operating System?**

Answer

Network Operating System	Distributed Operating System
A special operating system that provides network- based functionalities	An operating system that manages a group of distinct computers and makes them appear to be a single computer
Helps to share resources and collaborate via a shared	Helps to manage data, users, groups, security and other network related functionalities network to accomplish tasks
Example Artisoft's LANtastic,	Example LOCUS and MICROS Novell's NetWare, and Microsoft's LAN Manager

7   **What inconveniences that a user can face while interacting with a computer system, which is without an operating system?**

Answer:

Operating system is a required component of the computer system. Without an operating system computer hardware is only 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. Thus without operating system execution of user program or to solve user problems is extremely difficult.

The inconvenience of having to become an expert computer programmer in order to use the system at all. Without an operating system, there is no means by which to load programs, other than writing a boot loader program yourself, putting it on a disk that you can boot from, and having it load the program you actually want to run. Without an operating system, there are no device drivers, so the user has to learn how to program the machine to control the physical hardware. Without an operating system, there's no standard file system, so the user has to learn how to program the machine to control the physical hardware. Without an operating system, there's no standard file system, so the user has to learn about disk blocks, how to allocate them, and so forth.