Terms in this set (31)

What is an operating system?	An operating system is an event driven program which: handles resources efficiently, creates an environment for other programs to run, provides a friendly interface between the user and the computer system.	☆
What is the name of the program that assigns the CPU to a process?	dispatcher.	☆
What is the name of the program that decides on which process to run next?	Scheduler.	☆
When the quantum is too large.	Round robin behaves as FIFO.	☆
When the quantum too small.	There is a large overhead because q must be large with respect to context switching.	☆
Process	a program in execution.	☆

Program	an algorithm expressed in a programming language.	☆
Thread	A unit of execution of a process.	☆
Trap	mechanism to catch program errors	☆
Concurrency	Two or more processes doing different activities on different devices at the same time.	☆
System Call	an instruction that allows the user program to ask the operating system to carry out some services.	☆
I/O interrupt	(hardware interrupt) a signal sent by a device to the CPU indicating that the I/O operation has been completed.	☆
Why do we need a PSW in the CPU?	To keep track of the running processes.	☆

Where is the I/O Request Queue?	Device descriptor.	☆
Give the name of the program that consumes the IORBs.	Device handler	☆
When the I/O operation is completed, how does the OS identify the process that initiated the request?	Points to the originating process in the device descriptor.	☆
Using the producer consumer approach, describe using pseudo code how the IORB is produced by the OS and consumed by the device handler.	Producer (DEVICE DESCRIPTOR/DOIO) Identify device Assemble an IORB P(FULL) P(MUTEX) **insert IORB to IORQ** V(MUTEX) V(Request Service Pending) Consumer (Device Handler) P (Request Service Pending) P(MUTEX) *Get IORB from IORQ V(MUTEX) Initiate Physical I/O Operation	☆

Wait for I/O interrupt

P(operation complete)

Move data to process state

V(FULL)

Delete IORB

Give the names of the three fields of I/O R B?	Address. Mode or type. Pointer to the originating process.	☆
For a deadlock to occur, four necessary conditions must hold. Name them.	Mutual Exclusion. Hold and Wait. Non Preemption. Circular Wait.	☆
How can we deny mutual exclusion of non sharable devices?	Mutual exclusion can be denied by virtualizing the resource. An example is virtualizing a printer so that it creates a virtual printing file on a hard disk.	☆
Queue Delay	The time a task waits in line without receiving service.	☆
Service Time	The time it takes to complete a task at a resource	☆

assuming no waiting.

Response time	Queueing delay plus service time. the time for a task to complete, from when it starts until it is done.	☆
Utilization fraction	The fraction of time that a resource (server) is busy.	☆
Throughput	The rate at which a group of tasks are completed.	☆
What is virtual Memory?	Virtual memory is a technique which allows us to handle memory to run programs where the logical address space is larger than the physical address space.	☆
How is virtual memory implemented?	Virtual memory can be implemented by: 1. Dividing the program into pages. 2. Dividing the program into frames. 3. Using a page table as a translation mechanism. 4. Using the TLB to speed up memory access. 5. Using a hard drive to store the program and load them into memory on demand.	☆

Name the five fields of the page table and explain why we need each one of them?	Page number is to find the entry point for that page in the page table. Present bit is To know whether the page is in memory. Dirty or Modified bit is To know if the page has been modified. Disk address To know where the page is in the hard drive. Frame Address is To get the address where the page is.	☆
If there is a miss in the TLB, how many I/O operations are executed? Justify your answer.	zero (0) I/O operations if the page is in memory. one (1) I/O operation if there is a free frame or if there is a free frame and the victim page is not 'dirty' or modified. Two (2) I/O Operations if there is no free frame and the victim page is dirty.	☆
Thrashing.	When the CPU spends more time handling page faults rather than doing useful operations.	☆
Working Set.	Optimum number of frames that are assigned to a process in order to minimize page faults.	☆

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