Understanding Operating Systems Chapter 4 Key Terms

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aging	a policy used to ensure that jobs that have been in the system for a long time in the lower-level queues will eventually complete their execution
context switching	the act of saving a job's processing information in its PCB so that the job can be swapped out of memory, and of loading the processing information from the PCB of another job into the appropriate registers so that the CPU can process it; context switching occurs in all preemptive policies
CPU-bound	a job that will perform a great deal of nonstop computation before issuing an I/O request; it contrasts with I/O-bound
earliest deadline first (EDF)	a preemptive, process scheduling policy (or algorithm) that selects processes based on the proximity of their deadlines (appropriate for real-time environments)
first-come, first-served (FCFS)	a nonpreemptive, process scheduling policy (or algo-rithm) that handles jobs according to their arrival time
high-level scheduler	a synonym for the Job Scheduler
indefinite postponement	signifies that a job's execution is delayed indefinitely
interrupt	a hardware signal that suspends execution of a program, and activates the execution of a special program known as the interrupt handler
interrupt handler	the program that controls what action should be taken by the operat-ing system when a certain sequence of events is interrupted
I/O-bound	a job that requires a large number of input/output operations, resulting in substantial free time for the CPU; it contrasts with CPU-bound
Job Scheduler	the high-level scheduler of the Processor Manager that selects jobs from a queue of incoming jobs based on each job's characteristics
job status	the state of a job as it moves through the system from the beginning to the end of its execution
low-level scheduler	a synonym for the Process Scheduler
middle-level scheduler	a scheduler used by the Processor Manager when the system that removes active processes from memory becomes overloaded; the middle-level scheduler swaps these processes back into memory when the system overload has cleared
multiple-level queues	a process scheduling scheme (used with other scheduling algo-rithms) that groups jobs according to a common characteristic
multiprogramming	a technique that allows a single processor to process several pro-grams residing simultaneously in main memory, and interleaving their execution by overlapping I/O requests with CPU requests
natural wait	an I/O request from a program in a multiprogramming environment that would cause a process to wait "naturally" before resuming execution
nonpreemptive scheduling policy	a job scheduling strategy that functions without exter-nal interrupts so that once a job captures the processor and begins execution, it remains in the running state uninterrupted until it issues an I/O request or it's finished
preemptive scheduling policy	any process scheduling strategy that, based on predeter-mined policies, interrupts the processing of a job and transfers the CPU to another job; it is widely used in time-sharing environments
priority scheduling	a nonpreemptive process scheduling policy (or algorithm) that allows for the execution of high-priority jobs before low-priority jobs
process	an instance of an execution of a program that is identifiable and controllable by the operating system
process control block (PCB)	a data structure that contains information about the current status and characteristics of a process
processor	(1) a synonym for the CPU, or (2) any component in a computing system capable of performing a sequence of activities
Process Scheduler	a low-level scheduler that establishes the order in which processes in the READY queue will be served by the CPU

25.	**process status**	information stored in the job's PCB that indicates the current location in memory of the job, and the resources responsible for that status
26.	**program**	a unit of instructions
27.	**queue**	a linked list of PCBs that indicates the order in which jobs or processes will be serviced
28.	**response time**	a measure of the efficiency of an interactive system that tracks the time required for the system to respond to a user's command
29.	**round robin**	a preemptive, process scheduling policy (or algorithm) that allocates to each job one unit of processing time per turn to ensure that the CPU is equally shared among all active processes and isn't monopolized by any one job
30.	**scheduling algorithm**	an algorithm used by the Job or Process Scheduler to allocate the CPU, and move jobs or processes through the system
31.	**scheduling policy**	any policy used by the Processor Manager to select the order in which incoming jobs, processes, and threads will be executed
32.	**shortest job next (SJN)**	a nonpreemptive, process scheduling policy (or algorithm) that selects the waiting job with the shortest CPU cycle time
33.	**shortest remaining time (SRT)**	a preemptive, process scheduling policy (or algorithm), similar to the SJN algorithm, that allocates the processor to the job closest to completion
34.	**task**	(1) the term used to describe a process, or (2) the basic unit of concurrent program-ming languages that defines a sequence of instructions that may be executed in parallel with other similar units
35.	**thread**	a portion of a process that can run independently; multithreaded systems can have several threads running at one time with the same or different priorities
36.	**thread control block (TCB)**	a data structure that contains information about the cur-rent status and characteristics of a thread
37.	**thread status**	information stored in the thread control block that indicates the current position of the thread and the resources responsible for this status
38.	**time quantum**	a period of time assigned to a process for execution before it is preempted