2004 Operating System Final (CLD)

1. Simply describe the following page replacing algorithms(20%)

(a) FIFO algorithm

(b) Optimal algorithm

(c) LRU algorithm

(d) Counting algorithm

1. What is a critical section? Simply describe the solution to Critical-Section Problem.(10%)
2. Describe the four conditions of a deadlock.(10%)
3. When do page faults occur? Describe the actions taken by the operating system when a page fault occur.(10%)
4. Given memory partitions of 100K, 500K, 200K, 300K, and 600K(in order), how would each of the first-fit, best-fit, and worst-fit algorithms place processes of 212K, 417K, 112K, and 426K(in order)? Which algorithm makes the most efficient use of memory?(20%)
5. Suppose that the following processes arrive for execution at the times indicated. Each process will run the listed amount of time. In answering the questions, use nonpreemptive scheduling and base all decisions on the information that you have at the time the decision must be made.

Process Arrival Time Burst Time

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P1 0.0 8

P2 0.4 4

P3 1.0 1

a.What is the average turnaround time for these processes with the FCFS

scheduling algorithm?(10%)

b.What is the average turnaround time for these processes with the SJF

scheduling algorithm?(10%)

c.The SJF algorithm is supposed to improve performance, but notice that we

chose to run process P1 at time 0 because we did not know that two shorter

processes would arrive soon. Compute what the average turnaround time will

be if the CPU is left idle for the first 1 unit, and the SJF scheduling is

used. Remember that process P1 and P2 are waiting during this idle time,

so their waiting time may increase. This algorithm could be know as future

-knowledge.

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# Answers