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CS3100

Assignment 8

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1. Latency
2. Soft real time systems have no guarantee when a critical real-time process will be scheduled, they only guarantee that the process will have priority over less important processes. Hard real-time systems make sure that tasks are done by their deadline.
3. No, the ratio of burst to period when summed for just the first set is greater than 100% which means it isn’t possible to schedule the set to completion.
4. 25/50 = 0.5 = 50% of the CPU, 30/72 = 5/12 = 0.42= 42%, 50 + 42 = 92%. Although, it would take up most of the CPU, it is possible to schedule each process to completion.’
5. P1 -> 25 P2 -> 55 P1 -> 80 P2 -> 110 …. Yes it is possible, P1 has the earlier deadline with increments of 50 and P2 has a deadline in increments of 72 which they will both meet.
6. Mutual exclusion of a resource, Hold and wait with resource, No preemption of resources, Circular wait between processes.
7. No, deadlock can’t occur with these conditions. The processes need at most 2 resources but not at least 2 which means they can have just 1 but if P1 has 2/4 and P2 grabs the other 2/4, then P3 experiences starvation but not deadlock. This isn’t a circular wait, P3 is waiting on P1 or P2 but P1 and P2 aren’t waiting for anyone else, they are just using the resources they have.
8. Deadlock avoidance is strictly preventative measures, the system will be set up so that the four conditions for deadlock to occur can’t occur together. Deadlock detection has the ability to go into deadlock but has algorithms to detect and deal with the deadlock. One method for deadlock avoidance is the banker’s algorithm which deals with 4 main things: Available resources, maximum demand from each process, number of resources allocated to each process, and the remaining resource need of each process. This is similar to a bank setting up it’s resources in order to meet all of the customer’s needs.
9. A) the processes may complete in <P3,P2,P1,P0,P4>

B) Yes, <P3,P2,P1,P0,P4>

C) Yes, <P3,P2,P1,P0,P4>