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CSCE 451 HW3

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1.

FCFS:

Finish Time: A = 3, B = 8, C = 10, D = 15, E = 20

Turnaround Time: A = 3, B = 7, C = 7, D = 6, E = 8

RR:

Finish Time: A = 3, B = 10, C = 9, D = 19, E = 20

Turnaround Time: A = 3, B = 9, C = 6, D = 10, E = 8

SPN:

Finish Time: A = 3, B = 10, C = 5, D = 15, E = 20

Turnaround Time: A = 3, B = 9, C = 2, D = 6, E = 8

SRT:

Finish Time: A = 3, B = 10, C = 5, D = 15, E = 20

Turnaround Time: A = 3, B = 9, C = 2, D = 6, E = 8

2.

If round-robin is used we will NOT encounter the same problem.

Explain: The round-robin takes the two processes in the ready queue and sets a quantum for the execution time for each piece of small running process chunk. If the L process is not finished within its critical section, preemption is initiated for the current L process chunk and gives CPU to the H process chunk of equal quantum, and this running mode alternates itself until both H and L finish their burst time.

3.

Given the information,

Useful CPU time = X, Wasted CPU time = Y(X/Q);

Total CPU time = X + Y(X/Q);

CPU Efficiency: **E = X / (X + Y(X/Q))**;

Q = ∞:

Switching takes no time —>

E = X / (X + 0) = 1

Q > X:

Quantum covers each and every process running time, so CPU is very efficient —> No switching —>

E = 1

Y < Q < X:

Since a quantum cannot cover a single process running time, and switching time is not given, so the efficiency depends on the formula —>

E = X / (X + Y(X/Q))

Q = Y:

E = X / (X + Y(X/Q)) = X / (X + Q(X/Q)) = X / (X + X)

—> E = 0.5

Q —> 0, Q =/ 0:

E = X / (X + Y(X/Q)) —> X / (X + ∞) = 0.