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CSCI 340 - Operating Systems

HW 3 & 4

Questions

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2. Simple Scheduling

a) FIFO (First in, first out)

Job	Exec. time	Start time	End time	Turn. time	Resp. time
1	10s	0s	10s	10s	0s
2	15s	10s	25s	25s	10s
3	5s	25s	30s	30s	25s
4	22s	30s	52s	52s	30s

Average turnaround = (T1 + T2 + T3 + T4)/4 = (10 + 25 + 30 + 52)/4 = 29.25s

b) SJF (Shortest Job First)

Job	Exec. time	Start time	End time	Turn. time	Resp. time
1	25s	30s	55s	55s	30s
2	15s	15s	30s	30s	15s
3	5s	0s	5s	5s	0s
4	10s	5s	15s	15s	5s

Average turnaround = (5 + 15 + 30 + 55)/4 = 26.25s

c) STCF (Shortest Time to Completion)

Job	Arrival time	Exec. time	Start time	End time	Turn. time	Resp. time
1	0s	25s	30s	55s	55s	30s
2	0s	15s	0s	20s	20s	0s
3	5s	5s	5s	10s	5s	0s
4	10s	10s	20s	30s	20s	10s

Average turnaround = (5 + 20 + 20 + 55)/4 = 25s

d) RR (Round Robin)

Assuming a time slice of 5s...

Job	Arrival time	Exec. time	Start time	End time	Turn. time	Resp. time
1	0s	20s	0s	50s	50s	0s
2	0s	10s	5s	30s	30s	5s
3	5s	5s	10s	15s	10s	5s
4	10s	15s	15s	45s	35s	5s

Average turnaround = (50 + 30 + 10 + 35)/4 = 31.25s

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3. Complex Scheduling

a) MLFQ

i) Turnaround & Response times

Job	Turnaround Time	Response Time
0	84	0
1	153	7
2	81	15
3	70	18

ii) -B values between 1 and 16 all seem to change program response times in a predictable manner. A value of 1 gives the best average response time(2.25), while 17 and up all give the worst (10). Average turnaround seems to be worse with better response times, but the relationship isn't very clear.

b) Lottery Scheduling

i) Turnaround & Response Times

Job	Turnaround Time	Response Time
0	13	2
1	23	0
2	18	1
3	27	4

ii) The default time slice seems to be 1 cycle. As the number increases, the number of cycles given drastically decreases until it hits a maximum size of 9 (which is of equal size to the longest job in the list). Time seems to get wasted more and more as the slice increases, especially since there is no reason to increase the slices any further.