Scheduling
Lab #6

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No :54

Shortest Job First (SJF) VS Shortest Remaining Time Next (PSJF)

First experiment:

1.1

  numprocs 15
  firstarrival 0.0
  interarrival constant 0.0
  duration uniform 10.0 15.0
  cpuburst constant 10.0
  ioburst uniform 10 20
  basepriority 1.0

  numprocs 15
  firstarrival 0.0
  nterarrival constant 0.0
  duration uniform 10.0 15.0
  cpuburst constant 10.0
  ioburst uniform 10 20
  basepriority 1.0

Prediction :average time of PSJF is better than SJF
          cpu utilization in SJF is better than PSJF

Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	CPU	I/O	CPU	I/O
									Entries		Average Time	
myrun_1	PSJF	400.48	30	30	.952794	.074910	0.00	13.51	82	30	4.65	14.86
myrun_2	SJF	399.49	30	30	.955164	.075096	0.00	13.73	60	30	6.36	14.86

Name	Key	Turnaround Time				Waiting Time			
		Average	Minimum	Maximum	SD	Average	Minimum	Maximum	SD
myrun_1	PSJF	207.95	34.60	400.48	110.84	180.38	3.82	368.62	3.67
myrun_2	SJF	210.41	34.60	399.49	110.31	182.84	3.82	367.62	3.65

Done

results : Prediction is right average time of PSJF is better than SJF
          cpu utilization in SJF is better than PSJF because number of switching between processes in PSJF is more than SJF.

1.2

numprocs 20 firstarrival 0.0 interarrival constant 0.0 duration uniform 10.0 15.0 cpuburst constant 1.0 ioburst uniform 100 200 basepriority 1.0	numprocs 20 firstarrival 0.0 interarrival constant 0.0 duration uniform 10.0 15.0 cpuburst constant 1.0 ioburst uniform 100 200 basepriority 1.0

Prediction: **ioburst is large so PSJF will be better than SJF in average time and**
and CPU utilization .

Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	Entries CPU	I/O	Average Time CPU	I/O
myrun_1	PSJF	2298.67	40	40	.219282	.017401	0.00	.36	526	484	.96	151.91
myrun_2	SJF	2298.67	40	40	.219282	.017401	0.00	.37	524	484	.96	151.91

Name	Key	Turnaround Time Average	Minimum	Maximum	SD	Waiting Time Average	Minimum	Maximum	SD
myrun_1	PSJF	1871.72	1509.32	2298.67	215.91	20.95	1.99	40.37	.29
myrun_2	SJF	1871.74	1509.32	2298.67	215.88	20.98	1.99	40.37	.29

Done

results :

it will be the same for cpu utilization and different in average time
SJF have average time less than PSJF   because Io **io burst** is large process will be block a lot and
short processes will finish in this time , in PSJF will overhead preemption when i/o process work
so it will be take more time.

1.3

numprocs 20 **firstarrival 0.0** **interarrival constant 1.0** **duration uniform 10.0 15.0** **cpuburst constant 100.0** **ioburst uniform 10 20** **basepriority 1.0**	**numprocs 20** **firstarrival 0.0** **interarrival constant 1.0** **duration uniform 10.0 15.0** **cpuburst constant 100.0** **ioburst uniform 10 20** **basepriority 1.0**

Prediction: average time of PSJF less than SJF

Cpu utilization of SJF is better

									Entries		Average Time	
Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	CPU	I/O	CPU	I/O
myrun_1	PSJF	504.06	40	40	1.000000	.079356	0.00	17.62	41	0	12.29	0.00
myrun_2	SJF	504.06	40	40	1.000000	.079356	0.00	17.70	40	0	12.60	0.00

		Turnaround Time				Waiting Time			
Name	Key	Average	Minimum	Maximum	SD	Average	Minimum	Maximum	SD
myrun_1	PSJF	234.70	11.42	489.06	145.15	222.10	0.00	474.15	3.60
myrun_2	SJF	235.61	12.91	489.06	144.25	223.01	0.00	474.15	3.58

results :

average time of PSJF less than SJF   because short processes will finish fast as cpu burst is large
cpu utilization is the same because cpu burst is large little processes will be block for i/o
and it didn't overhead switching .

FCFS vs RR

2.1

numprocs 15 **firstarrival 0.0** **interarrival constant 1.0** **duration uniform 10.0 15.0** **cpuburst constant 10.0** **ioburst uniform 10 20** **basepriority 1.0**	**numprocs 15** **firstarrival 0.0** **interarrival constant 1.0** **duration uniform 10.0 15.0** **cpuburst constant 10.0** **ioburst uniform 10 20** **basepriority 1.0**

Prediction: in normal case (cpu burst processes) th average time of FCFS is less than RR with small quantum time until quantum be fair it will be RR less than FCFS in average time

Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	Entries CPU	Entries I/O	Average Time CPU	Average Time I/O
myrun_1	FCFS	381.58	30	30	1.000000	.078621	0.00	24.21	60	30	6.36	14.86
myrun_2	RR 1	381.58	30	30	1.000000	.078621	0.00	25.21	398	30	.96	14.86
myrun_3	RR 2	381.58	30	30	1.000000	.078621	0.00	24.98	208	30	1.83	14.86
myrun_4	RR 3	381.58	30	30	1.000000	.078621	0.00	24.88	164	30	2.33	14.86
myrun_5	RR 4	381.58	30	30	1.000000	.078621	0.00	24.57	127	30	3.00	14.86
myrun_6	RR 5	381.58	30	30	1.000000	.078621	0.00	23.88	90	30	4.24	14.86
myrun_7	RR 6	381.58	30	30	1.000000	.078621	0.00	23.98	90	30	4.24	14.86
myrun_8	RR 20	381.58	30	30	1.000000	.078621	0.00	24.21	60	30	6.36	14.86

Name	Key	Turnaround Time Average	Turnaround Time Minimum	Turnaround Time Maximum	Turnaround Time SD	Waiting Time Average	Waiting Time Minimum	Waiting Time Maximum	Waiting Time SD
myrun_1	FCFS	335.48	304.60	367.58	19.39	307.91	273.82	341.60	.65
myrun_2	RR 1	348.24	297.23	374.51	22.38	320.67	272.07	346.17	.68
myrun_3	RR 2	345.32	269.23	375.83	25.51	317.75	244.07	346.33	.80
myrun_4	RR 3	344.09	290.23	370.49	24.24	316.52	265.07	341.52	.76
myrun_5	RR 4	340.14	283.23	375.00	24.76	312.57	258.07	347.40	.79
myrun_6	RR 5	331.34	219.60	367.58	30.13	303.77	188.82	341.60	1.01
myrun_7	RR 6	332.55	240.60	367.58	25.99	304.97	209.82	337.54	.87
myrun_8	RR 20	335.48	304.60	367.58	19.39	307.91	273.82	341.60	.65

Results : average time decrease in RR when quantum increase because little quantum period is large overhead switching ,when quantum is so large it will increase average because it will poor response to short interactive requests.

Round Robin (RR): tuning q

3.1

numprocs 15	numprocs 15
firstarrival 0.0	firstarrival 0.0
interarrival constant 0.0	interarrival constant 0.0
duration constant 100.0	duration constant 100.0
cpuburst constant 10.0	cpuburst constant 3.0
ioburst constant 3.0	ioburst constant 10.0
basepriority 1.0	basepriority 1.0

Prediction :

Average time will be reduce when increase the quantum constant of RR

Cpu utlization will be increase .

Table Data

Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	Entries CPU	Entries I/O	Average Time CPU	Average Time I/O
myrun_1	RR 1	3002.00	30	30	.999334	.009993	0.00	26.31	3000	630	1.00	8.50
myrun_2	RR 2	3001.00	30	30	.999667	.009997	0.00	24.68	1755	630	1.71	8.50
myrun_3	RR 3	3000.00	30	30	1.000000	.010000	0.00	26.87	1110	630	2.70	8.50
myrun_4	RR 4	3000.00	30	30	1.000000	.010000	0.00	25.69	960	630	3.12	8.50
myrun_5	RR 5	3000.00	30	30	1.000000	.010000	0.00	23.58	810	630	3.70	8.50
myrun_6	RR 6	3000.00	30	30	1.000000	.010000	0.00	23.64	810	630	3.70	8.50
myrun_7	RR 7	3000.00	30	30	1.000000	.010000	0.00	23.61	810	630	3.70	8.50

Name	Key	Turnaround Time Average	Turnaround Time Minimum	Turnaround Time Maximum	Turnaround Time SD	Waiting Time Average	Waiting Time Minimum	Waiting Time Maximum	Waiting Time SD
myrun_1	RR 1	2911.33	2814.00	3002.00	80.25	2632.83	2546.00	2722.00	2.41
myrun_2	RR 2	2747.27	2475.00	3001.00	245.00	2468.77	2348.00	2571.00	3.13
myrun_3	RR 3	2965.40	2908.00	3000.00	30.93	2686.90	2478.00	2873.00	5.99
myrun_4	RR 4	2847.20	2666.00	3000.00	146.60	2568.70	2539.00	2609.00	.54
myrun_5	RR 5	2636.50	2225.00	3000.00	357.44	2358.00	2098.00	2570.00	6.89
myrun_6	RR 6	2642.80	2248.00	3000.00	350.87	2364.30	2121.00	2570.00	6.66
myrun_7	RR 7	2639.50	2250.00	3000.00	353.90	2361.00	2123.00	2570.00	6.76

Results : average time decrease and cpu utilization increase because of increasing quantum constant so overhead switching decrease .

3.2

numprocs 15 firstarrival 0.0 interarrival constant 0.0 duration constant 100.0 cpuburst uniform 10.0 30.0 ioburst uniform 2.0 8.0 basepriority 1.0	numprocs 15 firstarrival 0.0 interarrival constant 0.0 duration constant 100.0 cpuburst uniform 2.0 8.0 ioburst uniform 10.0 20.0 basepriority 1.0

Prediction: Average time will be reduce when increase the quantum constant of RR

Cpu utlization will be increase .

Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	CPU	I/O	CPU	I/O
									Entries		Average Time	
myrun_1	RR 1	3007.65	30	30	.997456	.009975	0.00	26.00	3211	370	.93	13.26
myrun_2	RR 3	3007.17	30	30	.997615	.009976	0.00	25.25	1212	370	2.48	13.26
myrun_3	RR 5	3017.75	30	30	.994118	.009941	0.00	24.50	807	370	3.72	13.26
myrun_4	RR 7	3024.02	30	30	.992057	.009921	0.00	24.19	617	370	4.86	13.26
myrun_5	RR 9	3008.74	30	30	.997094	.009971	0.00	23.96	532	370	5.64	13.26

Name	Key	Turnaround Time				Waiting Time			
		Average	Minimum	Maximum	SD	Average	Minimum	Maximum	SD
myrun_1	RR 1	2870.29	2726.47	3007.65	115.20	2606.74	2543.15	2655.87	1.07
myrun_2	RR 3	2794.96	2515.14	3007.17	184.37	2531.41	2389.85	2646.29	1.83
myrun_3	RR 5	2728.49	2378.38	3017.75	253.94	2464.93	2253.09	2634.89	4.06
myrun_4	RR 7	2701.49	2302.67	3024.02	257.79	2437.94	2181.60	2611.99	4.17
myrun_5	RR 9	2666.36	2181.77	3008.74	293.01	2402.81	2056.63	2592.52	5.38

Results : average time decrease and cpu utilization increase because of increasing quantum constant so overhead switching decrease .

3.3

numprocs 15 firstarrival 0.0 interarrival constant 0.0 duration constant 100.0 cpuburst exponential 10.0 ioburst exponential 6.0 basepriority 1.0	numprocs 15 firstarrival 0.0 interarrival constant 0.0 duration constant 100.0 cpuburst exponential 5.0 ioburst exponential 12.0 basepriority 1.0

Prediction:

Average time will be reduce when increase the quantum constant of RR

Cpu utlization will be increase .

									Entries		Average Time	
Name	Key	Time	Processes	Finished	CPU Utilization	Throughput	CST	LA	CPU	I/O	CPU	I/O
myrun_1	RR 1	3050.69	30	30	.983383	.009834	0.00	25.82	3248	456	.92	10.34
myrun_2	RR 3	3048.53	30	30	.984081	.009841	0.00	24.99	1265	456	2.37	10.34
myrun_3	RR 5	3001.58	30	30	.999475	.009995	0.00	24.56	874	456	3.43	10.34
myrun_4	RR 7	3013.42	30	30	.995547	.009955	0.00	23.85	728	456	4.12	10.34
myrun_5	RR 9	3007.41	30	30	.997537	.009975	0.00	23.44	638	456	4.70	10.34

		Turnaround Time				Waiting Time			
Name	Key	Average	Minimum	Maximum	SD	Average	Minimum	Maximum	SD
myrun_1	RR 1	2882.70	2729.75	3050.69	88.92	2625.55	2503.52	2689.67	1.54
myrun_2	RR 3	2796.71	2485.36	3048.53	156.12	2539.56	2358.20	2656.77	2.38
myrun_3	RR 5	2714.62	2170.58	3001.58	233.97	2457.47	2031.41	2663.38	5.13
myrun_4	RR 7	2652.58	1898.55	3013.42	289.71	2395.44	1771.38	2655.92	6.58
myrun_5	RR 9	2606.56	1977.60	3007.41	315.67	2349.42	1850.44	2669.21	7.37

Results: average time decrease and cpu utilization increase because of increasing quantum constant so overhead switching decrease .