Test #1 (quantum = 2)

Script started on Thu 15 Apr 2021 12:47:49 AM PDT

[palacim@sp2:21]> a.out

Enter triples: Process id, Time in ms, and Priority. Enter 'end' when done

For example:

1 12 0

3 9 1

2 99 9

end

process 1 needs 12 ms and has priority 0 (highest)

process 3 needs 9 ms and has priority 1

process 2 needs 99 ms and has priority 9

1 2 3

2 1 2

6 9 10

end

Process list in FCFS order entered:

1 2 3

2 1 2

6 9 10

End of List

FCFS Wait of p1 = 0

FCFS Wait of p2 = 2

FCFS Wait of p6 = 3

Average Wait Time for 3 procs = 1.7

FCFS Turn-Around time for p1 = 2

FCFS Turn-Around time for p2 = 3

FCFS Turn-Around time for p6 = 12

Acerage Turn-Around for p3 procs = 5.7

FCFS throughput for 3 procs = 0.250000 proc/ms

<><> end FCFS Schedule <><>

Process list in HPF order:

2 1 2

1 2 3

6 9 10

End of Lsit.

HPF wait of p2 = 0

HPF wait of p1 = 1

HPF wait of p6 = 3

Average Wait Time for 3 procs = 1.333

HPF Turn-Around time for p2 = 1

HPF Turn-Around time for p1 = 3

HPF Turn-Around time for p6 = 12

Average Turn-Around for 3 procs = 5.3

HPF throughput for 3 procs = 0.250000 proc/ms

<><> End HPF Schedule <><>

Process list for Round Robin in order entered:

1 2 3

2 1 2

6 9 10

End of List.

Preemptive RR schedule, quantum = 1 overhead = 0

RR TA for finished p1 = 2, needed: 2 ms, and 1 time slices.

RR TA for finished p2 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p6 = 11, needed: 9 ms, and 1 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 0, is 0.272727 p/ms, or 272.727 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 0, is 5.0

Preemptive RR schedule, quantum = 1 overhead = 1

RR TA for finished p1 = 3, needed: 2 ms, and 2 time slices.

RR TA for finished p2 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p6 = 14, needed: 9 ms, and 2 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 1, is 0.214286 p/ms, or 214.286 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 1, is 11.3

Preemptive RR schedule, quantum = 2 overhead = 0

RR TA for finished p1 = 3, needed: 2 ms, and 2 time slices.

RR TA for finished p2 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p6 = 17, needed: 9 ms, and 3 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 0, is 0.176471 p/ms, or 176.471 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 0, is 18.7

Preemptive RR schedule, quantum = 2 overhead = 1

RR TA for finished p1 = 3, needed: 2 ms, and 2 time slices.

RR TA for finished p2 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p6 = 20, needed: 9 ms, and 4 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 1, is 0.150000 p/ms, or 150.000 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 1, is 27.0

Preemptive RR schedule, quantum = 2 overhead = 2

RR TA for finished p1 = 3, needed: 2 ms, and 2 time slices.

RR TA for finished p2 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p6 = 24, needed: 9 ms, and 5 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 2, is 0.125000 p/ms, or 125.000 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 2, is 36.7

<><> End Preeptive Round Robin Schedule <><>

[palacim@sp2:22]> exit

exit

Script done on Thu 15 Apr 2021 12:48:17 AM PDT

Test #2 (quantum = 1)

Script started on Thu 15 Apr 2021 01:01:30 AM PDT

[palacim@sp2:21]> gcc sched[Kduler.c

[01m[Kscheduler.c:18:16:[m[K [01;35m[Kwarning: [m[Karray ‚Äò[01m[KrawInput[m[K‚Äô assumed to have one element [enabled by default]

struct process rawInput[];

[01;32m[K ^[m[K

[palacim@sp2:22]> a.out

Enter triples: Process id, Time in ms, and Priority. Enter 'end' when done

For example:

1 12 0

3 9 1

2 99 9

end

process 1 needs 12 ms and has priority 0 (highest)

process 3 needs 9 ms and has priority 1

process 2 needs 99 ms and has priority 9

5 9 2

10 1 7

1 2 3

eend nd

Process list in FCFS order entered:

5 9 2

10 1 7

1 2 3

End of List

FCFS Wait of p5 = 0

FCFS Wait of p10 = 9

FCFS Wait of p1 = 10

Average Wait Time for 3 procs = 6.3

FCFS Turn-Around time for p5 = 9

FCFS Turn-Around time for p10 = 10

FCFS Turn-Around time for p1 = 12

Acerage Turn-Around for p3 procs = 10.3

FCFS throughput for 3 procs = 0.250000 proc/ms

<><> end FCFS Schedule <><>

Process list in HPF order:

5 9 2

1 2 3

10 1 7

End of Lsit.

HPF wait of p5 = 0

HPF wait of p1 = 9

HPF wait of p10 = 11

Average Wait Time for 3 procs = 6.667

HPF Turn-Around time for p5 = 9

HPF Turn-Around time for p1 = 11

HPF Turn-Around time for p10 = 12

Average Turn-Around for 3 procs = 10.7

HPF throughput for 3 procs = 0.250000 proc/ms

<><> End HPF Schedule <><>

Process list for Round Robin in order entered:

5 9 2

10 1 7

1 2 3

End of List.

Preemptive RR schedule, quantum = 1 overhead = 0

RR TA for finished p5 = 9, needed: 9 ms, and 1 time slices.

RR TA for finished p10 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p1 = 4, needed: 2 ms, and 1 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 0, is 0.333333 p/ms, or 333.333 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 0, is 5.0

Preemptive RR schedule, quantum = 1 overhead = 1

RR TA for finished p5 = 11, needed: 9 ms, and 2 time slices.

RR TA for finished p10 = 2, needed: 1 ms, and 1 time slices.

RR TA for finished p1 = 8, needed: 2 ms, and 2 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 1, is 0.272727 p/ms, or 272.727 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 1, is 12.0

<><> End Preeptive Round Robin Schedule <><>

[palacim@sp2:23]> exit

exit

Script done on Thu 15 Apr 2021 01:02:10 AM PDT

Test #3 (quantum = 5)

Script started on Thu 15 Apr 2021 12:56:38 AM PDT

[palacim@sp2:21]> gcc scheduler.c

[01m[Kscheduler.c:18:16:[m[K [01;35m[Kwarning: [m[Karray ‚Äò[01m[KrawInput[m[K‚Äô assumed to have one element [enabled by default]

struct process rawInput[];

[01;32m[K ^[m[K

[palacim@sp2:22]> a.out

Enter triples: Process id, Time in ms, and Priority. Enter 'end' when done

For example:

1 12 0

3 9 1

2 99 9

end

process 1 needs 12 ms and has priority 0 (highest)

process 3 needs 9 ms and has priority 1

process 2 needs 99 ms and has priority 9

1 10 5

2 8 1

3 12 7

end

Process list in FCFS order entered:

1 10 5

2 8 1

3 12 7

End of List

FCFS Wait of p1 = 0

FCFS Wait of p2 = 10

FCFS Wait of p3 = 18

Average Wait Time for 3 procs = 9.3

FCFS Turn-Around time for p1 = 10

FCFS Turn-Around time for p2 = 18

FCFS Turn-Around time for p3 = 30

Acerage Turn-Around for p3 procs = 19.3

FCFS throughput for 3 procs = 0.100000 proc/ms

<><> end FCFS Schedule <><>

Process list in HPF order:

2 8 1

1 10 5

3 12 7

End of Lsit.

HPF wait of p2 = 0

HPF wait of p1 = 8

HPF wait of p3 = 18

Average Wait Time for 3 procs = 8.667

HPF Turn-Around time for p2 = 8

HPF Turn-Around time for p1 = 18

HPF Turn-Around time for p3 = 30

Average Turn-Around for 3 procs = 18.7

HPF throughput for 3 procs = 0.100000 proc/ms

<><> End HPF Schedule <><>

Process list for Round Robin in order entered:

1 10 5

2 8 1

3 12 7

End of List.

Preemptive RR schedule, quantum = 1 overhead = 0

RR TA for finished p1 = 10, needed: 10 ms, and 1 time slices.

RR TA for finished p2 = 9, needed: 8 ms, and 1 time slices.

RR TA for finished p3 = 14, needed: 12 ms, and 1 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 0, is 0.214286 p/ms, or 214.286 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 0, is 11.0

Preemptive RR schedule, quantum = 1 overhead = 1

RR TA for finished p1 = 8, needed: 10 ms, and 2 time slices.

RR TA for finished p2 = 9, needed: 8 ms, and 2 time slices.

RR TA for finished p3 = 16, needed: 12 ms, and 2 time slices.

Round Robin throughput, 3 procs, with q: 1, o: 1, is 0.187500 p/ms, or 187.500 p/us

Average Round Robin Turn-Around, 3 procs, with q: 1, o: 1, is 22.0

Preemptive RR schedule, quantum = 2 overhead = 0

RR TA for finished p1 = 7, needed: 10 ms, and 3 time slices.

RR TA for finished p2 = 10, needed: 8 ms, and 3 time slices.

RR TA for finished p3 = 19, needed: 12 ms, and 3 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 0, is 0.157895 p/ms, or 157.895 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 0, is 34.0

Preemptive RR schedule, quantum = 2 overhead = 1

RR TA for finished p1 = 7, needed: 10 ms, and 4 time slices.

RR TA for finished p2 = 13, needed: 8 ms, and 4 time slices.

RR TA for finished p3 = 25, needed: 12 ms, and 4 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 1, is 0.120000 p/ms, or 120.000 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 1, is 49.0

Preemptive RR schedule, quantum = 2 overhead = 2

RR TA for finished p1 = 11, needed: 10 ms, and 5 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 37, needed: 12 ms, and 5 time slices.

Round Robin throughput, 3 procs, with q: 2, o: 2, is 0.081081 p/ms, or 81.081 p/us

Average Round Robin Turn-Around, 3 procs, with q: 2, o: 2, is 72.0

Preemptive RR schedule, quantum = 3 overhead = 0

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 51, needed: 12 ms, and 6 time slices.

Round Robin throughput, 3 procs, with q: 3, o: 0, is 0.058824 p/ms, or 58.824 p/us

Average Round Robin Turn-Around, 3 procs, with q: 3, o: 0, is 103.3

Preemptive RR schedule, quantum = 3 overhead = 1

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 3, o: 1, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 3, o: 1, is 138.7

Preemptive RR schedule, quantum = 3 overhead = 2

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 3, o: 2, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 3, o: 2, is 174.0

Preemptive RR schedule, quantum = 3 overhead = 3

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 3, o: 3, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 3, o: 3, is 209.3

Preemptive RR schedule, quantum = 4 overhead = 0

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 4, o: 0, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 4, o: 0, is 244.7

Preemptive RR schedule, quantum = 4 overhead = 1

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 4, o: 1, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 4, o: 1, is 280.0

Preemptive RR schedule, quantum = 4 overhead = 2

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 4, o: 2, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 4, o: 2, is 315.3

Preemptive RR schedule, quantum = 4 overhead = 3

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 4, o: 3, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 4, o: 3, is 350.7

Preemptive RR schedule, quantum = 4 overhead = 4

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 4, o: 4, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 4, o: 4, is 386.0

Preemptive RR schedule, quantum = 5 overhead = 0

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 0, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 0, is 421.3

Preemptive RR schedule, quantum = 5 overhead = 1

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 1, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 1, is 456.7

Preemptive RR schedule, quantum = 5 overhead = 2

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 2, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 2, is 492.0

Preemptive RR schedule, quantum = 5 overhead = 3

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 3, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 3, is 527.3

Preemptive RR schedule, quantum = 5 overhead = 4

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 4, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 4, is 562.7

Preemptive RR schedule, quantum = 5 overhead = 5

RR TA for finished p1 = 22, needed: 10 ms, and 6 time slices.

RR TA for finished p2 = 21, needed: 8 ms, and 5 time slices.

RR TA for finished p3 = 63, needed: 12 ms, and 7 time slices.

Round Robin throughput, 3 procs, with q: 5, o: 5, is 0.047619 p/ms, or 47.619 p/us

Average Round Robin Turn-Around, 3 procs, with q: 5, o: 5, is 598.0

<><> End Preeptive Round Robin Schedule <><>

[palacim@sp2:23]> exit

exit

Script done on Thu 15 Apr 2021 12:57:04 AM PDT

Discussion:

Output show that with more burst time in the RR the higher the turnaround becomes. Turn around is the time it takes for submission to completion. Also for non-preemptive the average turn around was the same for both hpf and fcfs, but for RR it would increase for higher quantums.