**Operating Systems Laboratory**

**Assignment 4**

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**Scheduling schemes:**

1. Shortest job first (SJF):

SJF is a non-preemptive scheduling method used by CPU to schedule processes based on the time a process requires to completion. At any given point in time, if CPU is free, the process with least execution time is given priority and CPU will become free only after that process has finished execution.

1. Round Robin (RR):

Round Robin is a preemptive scheduling method which gives fixed time slices for each process, then executes the next process. Each process is treated fairly. This decreases the average response time, but may increase the average turnaround time.

**Job characteristics:**

1. SJF:

Predictable run time, Low average turnaround time, low average waiting time, high average response time.

1. RR:

No starvation, fairness irrespective of runtime, low average response time, possibly high turnaround time and high waiting time.

**Test Process data:**

|  |  |  |
| --- | --- | --- |
| **Process** | **Arrival time** | **Burst time** |
| P1 | 0 | 5 |
| P2 | 1 | 3 |
| P3 | 2 | 8 |
| P4 | 3 | 1 |

SJF schedules as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Start time** | **Finish time** | **Turnaround time** |
| P1 | 0 | 5 | 5 |
| P4 | 5 | 6 | 3 |
| P2 | 6 | 9 | 8 |
| P3 | 9 | 17 | 15 |

RR schedules as follows (time slice = 3) :

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Start time** | **Finish time** | **Remaining time** |
| P1 | 0 | 3 | 2 |
| P4 | 3 | 4 | 0 |
| P2 | 4 | 7 | 0 |
| P3 | 7 | 10 | 5 |
| P1 | 10 | 12 | 0 |
| P3 | 12 | 15 | 2 |
| P3 | 15 | 17 | 0 |

**Suitability:**

SJF: Average turnaround time is low.

RR: Average response time is low.

**Shortcomings:**

SJF: The average response time is high, P4 has to wait for 9 time slots to execute.

RR: The average turnaround time is high, P1 takes 5 time slots to complete, but it is completed after 12 time slots.

**Screenshots:**

**Averages:**

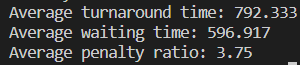
**SJF – process1.dat**

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**SJF – process2.dat**

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**SJF – process3.dat**

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**RR – process1.dat**

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**RR – process2.dat**

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**RR – process3.dat**

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**PLOTS:**

