1. We can calculate the CPU utilization using this formula. CPU Utilization = 1 - pn, where p is the fraction of time the process is waiting on I/O and n is the number of processes. Thus, if we are running 3 programs that spend 80% of the time doing I/O then the CPU utilization is 1 – 0.83 = 0.488 = 48.8%
2. SRTN Gantt Chart

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Process | Arrival Time | Burst Time | Start | Finish | Turnaround | Waiting |
| P1 | 0 | 10 | 0 | 14 | 14 | 4 |
| P2 | 1 | 1 | 1 | 2 | 1 | 0 |
| P3 | 3 | 2 | 3 | 5 | 2 | 0 |
| P4 | 5 | 1 | 5 | 6 | 5 | 0 |
| P5 | 9 | 5 | 14 | 19 | 10 | 5 |

The average wait time is 1.8

1. RR Gantt Chart

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Process | Arrival Time | Burst Time | Start | Finish | Turnaround | Waiting |
| P1 | 0 | 10 | 0 | 19 | 19 | 9 |
| P2 | 1 | 1 | 1 | 2 | 1 | 0 |
| P3 | 3 | 2 | 3 | 6 | 3 | 1 |
| P4 | 5 | 1 | 7 | 8 | 3 | 2 |
| P5 | 9 | 5 | 9 | 18 | 9 | 4 |

There are 18 context switches.

1. asd