1. Consider the following set of processes with arrival times and CPU burst times.

|  |  |  |
| --- | --- | --- |
| **Process** | **Arrival time** | **Burst time** |
| P1 | 0 | 9 |
| P2 | 3 | 4 |
| P3 | 4 | 2 |
| P4 | 5 | 9 |
| P5 | 6 | 7 |

Draw a Gantt chart for the CPU schedule for each of the following process scheduling algorithms, and calculate the wait time for each process for each algorithm. Show your work.

* Round-robin (quantum of 4)
* Shortest job first pre-emptive
* Shortest job first non-pre-emptive
* First come first served

1. Consider the following process arrival, CPU, and I/O burst times given. Assume that there is a single I/O device which operates in FCFS manner.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Process** | **Arrival time** | **CPU Burst 1** | **I/O Burst 1** | **CPU Burst 2** | **I/O Burst 2** |
| P1 | 0 | 5 | 8 | 6 | 8 |
| P2 | 5 | 5 | 10 | 3 | 9 |
| P3 | 6 | 5 | 12 | 3 | 10 |

Draw the Gantt charts for both the CPU and the I/O device schedule, imagining a FCFS CPU scheduling algorithm. Try it again with a round-robin CPU scheduling algorithm instead (quantum = 4).