First-Come First-Served (FCFS) Scheduling Algorithm

CPU Scheduler Simulator

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1 Process Details

FCFS scheduling executes processes in the order of their arrival without preemption.

Table 1: FCFS Process Scheduling Details

Process ID	Arrival Time	Burst Time	Completion Time	Waiting Time	Response Time
3	0	3	3	0	0
4	1	3	6	2	2
2	2	4	10	4	4
7	2	7	17	8	8
6	4	1	18	13	13
9	4	1	19	14	14
5	5	10	29	14	14
1	6	7	36	23	23
8	8	8	44	28	28
10	10	8	52	34	34

2 Performance Metrics

The following metrics provide insights into the efficiency of the FCFS scheduling algorithm:

- **Average Waiting Time**: 14.00 time units
- **Average Response Time**: 14.00 time units
- **Average Turnaround Time**: 19.20 time units
- **CPU Utilization**: 100.00%

Definitions:

- *Waiting Time*: Time spent waiting in the ready queue
- *Response Time*: Time from arrival until first execution
- *Turnaround Time*: Total time from arrival to completion
- *CPU Utilization*: Percentage of time CPU was busy

3 Gantt Chart

The Gantt chart below visualizes the execution sequence of processes in FCFS scheduling:

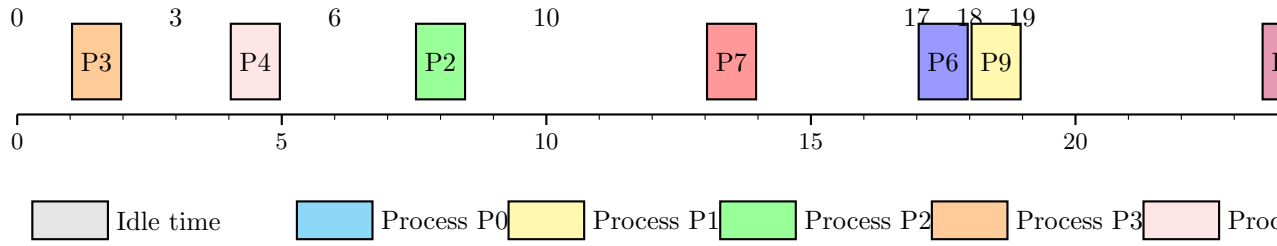

Figure 1: FCFS Scheduling Gantt Chart

4 Conclusion

First-Come First-Served (FCFS) is the simplest CPU scheduling algorithm, where processes are executed in the order they arrive in the ready queue. Key characteristics of FCFS include:

- Non-preemptive scheduling (once a process starts, it runs to completion)
- Simple to implement and understand
- Can suffer from the "convoy effect" where short processes wait behind long ones
- Average waiting time is often not minimal compared to other algorithms