

## L5 Scheduling

1. What characterizes a CPU-bound process?

- A) Frequent I/O operations with short CPU bursts
- B) Long CPU bursts with infrequent I/O waits
- C) Equal distribution of CPU and I/O operations
- D) Prioritizes user interaction

Answer: B

2. Only in preemptive scheduling (not in non-preemptive scheduling), a process can transition directly from:

- A) Running → Waiting
- B) Running → Ready
- C) Ready → Terminated
- D) Waiting → Ready

Answer: B

3. Which metric is calculated as CompletionTime - ArrivalTime?

- A) Waiting time
- B) Response time
- C) Throughput
- D) CPU utilization

Answer: B

4. The convoy effect can occur with which scheduling algorithm?

- A) Round Robin (RR)
- B) Shortest Job First (SJF)
- C) First-Come-First-Served (FCFS)
- D) Shortest Remaining Time First (SRTF)

Answer: B, C (since they are both non-preemptive scheduling algorithms)

5. In Round Robin scheduling, if there are 5 jobs in the ready queue and time quantum=20ms, what's the maximum wait time for any job?

- A) 40ms
- B) 80ms
- C) 100ms
- D) 120ms

Answer: B

6. What is the primary advantage of Shortest Remaining Time First (SRTF)?

- A) Maximizes CPU utilization
- B) Minimizes average response time
- C) Ensures fairness among all jobs
- D) Avoids starvation

Answer: B

7. Which scheduling algorithm requires prior knowledge of job execution times?

- A) FCFS
- B) RR

- C) SJF
- D) Multilevel Queue

Answer: C

8. In exponential averaging for burst prediction ( $\tau_n = \alpha t_{n-1} + (1-\alpha)\tau_{n-1}$ ), what does  $\alpha=1$  imply?

- A) Only consider historical average
- B) Only consider most recent burst
- C) Equal weight to all bursts
- D) No prediction capability

Answer: B

9. What is a key disadvantage of priority scheduling?

- A) High context-switch overhead
- B) Difficulty in implementation
- C) Potential for starvation
- D) Poor CPU utilization

Answer: C

10. Which scheduling system uses dynamic priority adjustment based on past behavior?

- A) Multilevel Queue
- B) Round Robin
- C) Multilevel Feedback Queue
- D) FCFS

Answer: C

11. For the job sequence P1(24ms), P2(3ms), P3(3ms) in FCFS order, what's the average waiting time?

- A) 10ms
- B) 17ms
- C) 24ms
- D) 27ms

Answer: B

12. What is the primary purpose of a time quantum in Round Robin?

- A) Prevent CPU monopolization
- B) Prioritize I/O-bound processes
- C) Reduce job completion time
- D) Improve cache locality

Answer: A

13. Which algorithm would be best for minimizing response time in an interactive system?

- A) FCFS
- B) RR with small quantum
- C) SJF
- D) Multilevel Queue

Answer: B

14. What scheduling characteristic does this diagram represent?



**Gantt Chart**

- A) FCFS
- B) SJF
- C) RR
- D) Priority

Answer: C

15. Which statement about SRTF is FALSE?

- A) It minimizes average waiting time
- B) It requires prior knowledge of burst times
- C) It's non-preemptive
- D) Can cause starvation of long jobs

Answer: C

16. In MLFQ scheduling, what typically happens to a CPU-bound job?

- A) Gets promoted to higher queues
- B) Maintains its initial priority
- C) Drops to lower priority queues
- D) Receives larger time quanta

Answer: C

17. What percentage of CPU time is lost to context switching if quantum=25ms and switch cost=0.5ms?

- A) 1%
- B) 2%
- C) 5%
- D) 10%

Answer: B

18. What scheduling method combines multiple queues with different priorities?

- A) SRTF
- B) Multilevel Queue
- C) RR
- D) Exponential Queue

Answer: B

19. Which scenario benefits most from SRTF?

- A) Batch processing system
- B) Real-time system
- C) Interactive system with mixed job lengths
- D) Embedded system with fixed tasks

Answer: C