Quiz Submissions - Midterm Exam

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Attempt 1

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Submission View

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Multiple Choice Questions

Question 1 **1 / 1 point**

Which of the following state transitions is not possible in the lifetime of a process?

- Waiting → Running
- New → Ready
- Running → Terminated
- Running → Waiting

Question 2 **1 / 1 point**

The transition Running → Ready happens when _____:

- The process is in the busy-waiting state
- The process is completed
- An interruption has been caused by an event independent of the process
- The process is waiting for an I/O event to happen

Question 3 **1 / 1 point**

Which of the following statements is correct about short term and long term scheduler?

- Long-term scheduler is invoked very frequently
- Long-term scheduler is invoked as frequent as the short-term scheduler
- Short-term scheduler is invoked very frequently
- Short-term scheduler is invoked very infrequently

Question 4 **1 / 1 point**

The fork() system call in Unix _____:

- all of the above
- creates new process with the duplicate address space of the parent
- creates new process with a shared memory with the parent process
- creates new process with the duplicate process_id of the parent process

Question 5 **1 / 1 point**

How many processes are created at the end of the following for loop?

```
for(i=0; i<5; i++) fork();.
```

- 31
- 24
- 5
- 32

Question 6 **0 / 1 point**

What is the motivation for threads, which does not apply to processes?

- Many threads can execute in parallel on multiple CPUs
- One thread handles user interaction while the other thread does the background work
- All of the above
- Low overhead in switching between the threads

Question 7 **1 / 1 point**

Response time refers to the amount of time _____.

- needed to execute a particular process
- it takes from when a request was submitted until the first action is produced
- that CPU utilization is minimized
- a process has been waiting in the ready queue

Question 8 **1 / 1 point**

An I/O-bound process _____.

- infrequently requests I/O operations and spends more of its time performing computational work
- frequently requests I/O operations and spends less of its time performing computational work
- infrequently requests I/O operations and spends less of its time performing computational work
- frequently requests I/O operations and spends most of its time performing computational work

Question 9 **1 / 1 point**

Throughput is_____

- the number of processes that complete their execution per time unit
- the number of processes that are pushed into the ready queue per time unit
- the number of processes that transit from ready state to running state
- the number of I/O-bound processes that utilize the CPU per time unit

Question 10 **1 / 1 point**

Which of the following statement defines Preemptive Shortest Job First (SJF)?

- If a new process arrives with higher priority than the current executing process and a smaller CPU burst length, preempt the current executing process
- If a new process arrives with CPU burst length less than the CPU burst length of the current executing process, preempt the current executing process
- If a new process arrives with higher priority than the current executing process, preempt the current executing process
- If a new process arrives with CPU burst length less than the remaining time of the current executing process, preempt the current executing process

Question 11 **0 / 1 point**

In Round-Robin scheduling, the quantum length _____

- Must be equal or larger than the typical CPU burst length
- Must be shorter than the typical CPU burst length
- Must be at least half of the typical burst length
- None of the above

Question 12 **1 / 1 point**

Which of the following statements about multilevel queue scheduling is not true?

- Interactive processes have higher priority than system processes
- System processes have higher priority than interactive processes
- Batch processes have lower priority than system processes
- Interactive processes have higher priority than batch processes

Question 13 **1 / 1 point**

Which of the following parameters are not used to define a multilevel feedback queue scheduler?

- Scheduling algorithms for each queue
- Number of queues
- None of the above
- Method used to determine when to upgrade or demote a process

Question 14 **1 / 1 point**

In a CPU scheduling algorithm, three queues are used (Q2, Q1, and Q0). Q0 has the highest priority whereas Q2 has the lowest priority. If the scheduling algorithm is multi-level feedback queue, which of the following statements is correct?

- If Q2 is empty, the processes from Q1 are selected.
- If Q0 is empty, the processes from Q1 are selected.
- If Q2 is empty, the processes from Q0 are selected.
- If Q1 is empty, the processes from Q0 are selected.

Question 15 **1 / 1 point**

In multi-processor scheduling, processor affinity can be guaranteed by _____

- have processes run on the physical CPU with lowest throughput
- keep processes running on the same physical CPU
- have processes run on the physical CPU with highest throughput
- keep processes alternating on the multiple physical CPUs

Question 16 **1 / 1 point**

In priority scheduling, _____.

- All of the above
- The processes at the same priority level can be handled via Round Robin scheduling
- support for real time processing is allowed
- The processes at the same priority level can be handled via First-Come-First Serve scheduling

Question 17 **1 / 1 point**

In scheduling, the term “aging” involves _____.

- processes being stuck in ready queues so long that they die
- processes that are ready to run but stuck waiting indefinitely for the CPU
- higher priority processes preventing low-priority processes from ever getting the CPU
- gradually increasing the priority of a process so that a process will eventually execute

Question 18 **1 / 1 point**

In CPU scheduling, the term waiting time denotes the amount of time _____

- a process has been waiting in the wait state
- it takes from when a request was submitted until the first response is produced
- a process has been waiting in the ready queue
- from job submission to its completion

Question 19 **1 / 1 point**

In RR scheduling, the time quantum should not be _____ the context-switch time.

- the same size as
- irrelevant to
- small with respect to
- large with respect to

Question 20 **1 / 1 point**

Context switching between processes is carried out by the

- interrupt handler
- short term scheduler
- dispatcher
- thread manager

Problem Solving Questions

Consider the following set of processes, with the length of the CPU burst given in milliseconds. In the last column, 0 denotes the highest priority whereas 2 denotes the lowest priority level.

Process	Arrival Time (ms)	Burst Time (ms)	Priority
P1	0	10	2
P2	3	3	1
P3	4	2	0
P4	5	3	0
P5	6	5	1

Draw three Gantt charts that illustrate the execution of these processes using FCFS, preemptive Shortest Job First (SJF), and priority scheduling with round robin (quantum = 2) scheduling algorithms.

The preemptive SJF does not use the priority to make its decision.

****To avoid confusion here**: If a process of highest priority is currently scheduled, and another process of the highest priority class arrives, newly arriving process **MUST WAIT UNTIL THE END OF THE QUANTUM OF THE ACTIVE PROCESS**. If a process of a lower priority class is currently scheduled, and a process of higher priority class has arrived, the newly arriving process **CAN PREEMPT THE ACTIVE PROCESS WITHOUT WAITING UNTIL THE END OF THE QUANTUM**.****

Question 21 **2 / 2 points**

In the FCFS algorithm, find the time when each process ends.

__15__ P3

__18__ P4

__23__ P5

__13__ P2

__10__ P1

1. 1
2. 2
3. 3
4. 4
5. 5
6.

6

7. 7

8. 8

9. 9

10. 10

11. 11

12. 12

13. 13

14. 14

15. 15

16. 16

17. 17

18. 18

19. 19

20. 20

21. 21

22. 22

23. 23

Question 22 **2 / 2 points**

In the Preemptive SJF algorithm, find the time when each process ends.

__16__ P5

__6__ P2

__23__ P1

__11__ P4

__8__ P3

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13
14. 14
15. 15
16. 16
17. 17

18. 18

19. 19

20. 20

21. 21

22. 22

23. 23

Question 23 **2 / 2 points**

In the RR algorithm with priority, find the time when each process ends.

__9__ P4

__16__ P5

__23__ P1

__6__ P3

__11__ P2

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10

11. 11

12. 12

13. 13

14. 14

15. 15

16. 16

17. 17

18. 18

19. 19

20. 20

21. 21

22. 22

23. 23

Question 24 **2 / 2 points**

What is the turnaround time of P4 for each of the scheduling algorithms:

__4__ Priority with RR

__6__ Preemptive SJF

__13__ FCFS

1. 1
2. 2
3. 3
4.

4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10

11. 11

12. 12

13. 13

14. 14

15. 15

Question 25 **2 / 2 points**

What is the waiting time of P2 for each of the scheduling algorithms:

* Note that the choices start at 1 = 0ms wait

__6__ Priority with RR

__8__ FCFS

__1__ Preemptive SJF

1. 0

2. 1

3. 2

4. 3

5. 4

6. 5

7. 6

8. 7

9. 8

10. None of the above

Attempt Score:28 / 30 - A+

Overall Grade (highest attempt)**:**28 / 30 - A+

Done