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Operating Systems
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Example Test: Lesson 4

1. Provide a scenario in which multithreading does not provide better performance than a single-threaded solution. (2 points).
2. Which of the following is correct? Programming code is shared: ____ (1 point)
 - a. Among all threads in a system
 - b. Among all threads and processes in the same address space
 - c. Among all threads in the same address space
 - d. Among all threads in the same process
 - e. None of these.
3. Which of the following is correct? A thread : ____ (1 point)
 - a. Does not have a stack, it uses the process stack
 - b. Does not need a stack, it uses the OS stack
 - c. Has a stack but it shares it with the other threads
 - d. Uses the stack of the other threads in the same process
 - e. None of these
4. Describe briefly the benefits of multithreading. (4 points)
5. Describe briefly the different schemas for mapping user-level threads to kernel threads (4 points).
6. Describe the two scenarios of thread cancellation. (4 points)
7. What is a thread pool? (2 points)
8. Describe what you understand with “thread specific data”. (4 points)
9. Which of the following is correct? Managing threads is: ____ (1 points)
 - a. more expensive than managing process

- b. the same as managing processes in terms of load
- c. less expensive than multiprocessing
- d. less expensive than batch systems
- e. none of these

10. Describe what mutual exclusion is. (5 points)

11. Which of the following is correct? Multithreading leads to gain if: ____ (2 points)

- a. One processor is split among threads dynamically
- b. One processor is dedicated only to threads
- c. One processor executes always the same threads
- d. There are only one processor and an exact number of threads
- e. There are more processors to share the load
- f. None of these

12. Which of the following is correct? The operating system schedules: ____

- a. kernel threads to run on physical processors.
- b. user-level threads to run on physical processors
- c. both kernel and user-level threads to run on physical processors
- d. does not schedule any of kernel or user-level threads
- e. None of these

13. Describe the three models for threaded programs. (5 points)

14. What is a shared memory model? (2 points)

15. What is thread-safeness? (2 points)

16. Describe the semantics of fork() for threads. (2 points)

17. Describe the semantics of exec() for threads.

18. Which of the following is correct? Java threads are managed by: ____ (2 points)

- a. The JVM and the OS
- b. The programmer only
- c. The OS only
- d. The JVM and the kernel-threads
- e. The JVM only
- f. None of these.

19. Which of the following is correct? A Java thread has: ____ (1 point)

- a. a runnable state
- b. no runnable states
- c. two runnable states
- d. at least two runnable states
- e. None of these

20. Which of the following is correct? Thread-pool is faster because: ____ (2 points)
- a. the pool contains many threads
 - b. the pool is in RAM and threads are ready to execute
 - c. the pool is loaded into register and it is faster
 - d. loading an existing thread is faster than creating a new one
 - e. None of these