Tutorial 10

These questions refer to the lectures presented in week 10 of Object Oriented Programming with Java. They will be covered during the tutorial during week 11.

Threads

1. What is the difference between concurrency and multitasking?
2. What is the difference between a process and a thread?
3. What is the difference between preemptive multitasking and cooperative multitasking?
4. What is the minimum number of threads in a process?
5. What does context switching mean?
6. What is thread priority? How is it set?
7. Draw a state diagram that shows the transitions between thread states.
8. List four ways in which a thread may block.
9. List three reason why a scheduler may need to schedule a new thread.
10. Why should you interrupt a thread to stop it?
11. In which package are threads defined?
12. What is the difference between the run() method and the start() method on a thread?
13. How do you find the thread that is currently running? Give a complete call to the method.
14. What does the runnable interface require?
15. What are the two ways of defining a thread?
16. How do you cause a parent thread to wait until its child thread has completed?

Synchronizing Threads

17. What is a race condition?
18. Why are race conditions a problem?
19. How do you avoid race conditions?
20. What do threads use to signal to each other to avoid race conditions?
21. Define a synchronized method.
22. How is a lock used to synchronize threads?
23. Give definitions of synchronizing a static and a non-static method using the intrinsic lock.
24. How do you synchronize statements?

25. Write an example of a method that synchronizes so that two threads may be in the method at the same time, but which are still synchronized with each other?
26. What is deadlock?

Package java.nio

27. Why is polling inefficient?
28. What are the three methods that support inter-thread communication? On which type of object are they defined?
29. What is a guarded block?
30. Define a method with a guarded block.