Exercises

1. **Fill in the blanks in each of the following statements:**

a) A thread enters the terminated state when \_\_\_\_\_\_\_\_\_\_\_\_.

b) To pause for a designated number of milliseconds and resume execution, a thread should call method \_\_\_\_\_\_\_\_\_\_ of class \_\_\_\_\_\_\_\_\_\_.

c) Method \_\_\_\_\_\_\_\_\_\_ of class Condition moves a single thread in an object’s waiting state to the runnable state.

d) Method \_\_\_\_\_\_\_\_\_\_ of class Condition moves every thread in an object’s waiting state to the runnable state.

e) A(n) \_\_\_\_\_\_\_\_\_\_ thread enters the \_\_\_\_\_\_\_\_\_\_ state when it completes its task or otherwise terminates.

f) A runnable thread can enter the \_\_\_\_\_\_\_\_\_\_ state for a specified interval of time.

g) At the operating-system level, the runnable state actually encompasses two separate states, \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ .

h) Runnables are executed using a class that implements the \_\_\_\_\_\_\_\_\_\_ interface.

i) ExecutorService method \_\_\_\_\_\_\_\_\_\_ ends each thread in an ExecutorService as soon as it finishes executing its current Runnable, if any.

j) A thread can call method \_\_\_\_\_\_\_\_\_\_ on a Condition object to release the associated Lock and place that thread in the \_\_\_\_\_\_\_\_\_\_ state.

k) In a(n) \_\_\_\_\_\_\_\_\_\_ relationship, the \_\_\_\_\_\_\_\_\_\_ generates data and stores it in a shared object, and the \_\_\_\_\_\_\_\_\_\_ reads data from the shared object.

l) Class \_\_\_\_\_\_\_\_\_\_ implements the BlockingQueue interface using an array.

m) Keyword \_\_\_\_\_\_\_\_\_\_ indicates that only one thread at a time should execute on an object.

2. **State whether each of the following is true or false. If false, explain why.**

a) A thread is not runnable if it has terminated.

b) Some operating systems use timeslicing with threads. Therefore, they can enable threads to preempt threads of the same priority.

c) When the thread’s quantum expires, the thread returns to the running state as the operating system assigns it to a processor.

d) On a single-processor system without timeslicing, each thread in a set of equal-priority threads (with no other threads present) runs to completion before other threads of equal priority get a chance to execute.

3. (True or False) **State whether each of the following is true or false. If false, explain why.**

a) Method sleep does not consume processor time while a thread sleeps.

b) Declaring a method synchronized guarantees that deadlock cannot occur.

c) Once a ReentrantLock has been obtained by a thread, the ReentrantLock object will not allow another thread to obtain the lock until the first thread releases it.

d) Swing components are thread safe.

4. (Multithreading Terms) **Define each of the following terms.**

a) thread

b) multithreading

c) runnable state

d) timed waiting state

e) preemptive scheduling

f) Runnable interface

g) notifyAll method

h) producer/consumer relationship

i) quantum

5. (Multithreading Terms) Define each of the following terms in the context of Java’s threading mechanisms:

a) synchronized

b) producer

c) consumer

d) wait

e) notify

f) Lock

g) Condition