

CSE 451, Winter 2008
Homework #2: Threads

1. Are these statements true or false? BRIEFLY explain your answer.

- A. Threads are useful for decreasing software complexity
- B. Threads decrease resource utilization
- C. Threads potentially yield better performance

2. Are these statements true or false? BRIEFLY explain your answer.

```
class MyClass {
    String bar = "A string named bar";

    public void foo () {
        synchronized (bar) {
            synchronized (bar) {
                System.out.println(bar.toString());
            }
        }
    }
}
```

- A. The program might deadlock at the first synchronized call
- B. The program will always deadlock at the second synchronized call
- C. The program might block at the first synchronized call
- D. The program might block at the second synchronized call

Explain your answer.

3. Which classes/interfaces can be used to create a thread in Java?

4. Explain whether the following statements are true or false.

```
1. public class Foo {
2.     private int x = 0;
3.
4.     public synchronized bar () {
5.         x += 17;
6.     }
7.
8.     public synchronized baz () {
9.         x -= 5;
10.    }
11.
12.    public void addtoX(int arg) {
13.        return x += arg;
14.    }
15.}
```

- A. At most one thread can execute inside `bar`
- B. At most one thread can execute inside `bar` or `baz`
- C. At most one thread can run in any method of `Foo`
- D. At most one thread can be modifying `x`.

5. What is problematic about the following use of condition variable waiting? Identify the problem and propose a solution.

```
synchronized (this) {
    if (x < 100) {
        try {
            this.wait();
        }
        catch (InterruptedException iex) {} // ignored
    }
}

// do something useful with x...
```