1

Write Java code for:

- a method that takes an argument of type Rotateable and sends this object the message rotate(90)
- an interface Rotateable that includes the operation rotate(int i)
- a class Rectangle that implements this interface, has a private attribute of class Point for each of its vertices, and provides the rotate operation.

You may make any reasonable assumption about the Point class.

2

Consider the following code:

```
public class Foo {
  Counter c = new Counter();

  public void wibble() {
    System.out.println(c.toString());
    foo(c);
    System.out.println(c.toString());
  }

  private void foo(Counter d) {
    d = new Counter();
    d.increment();
  }
}
```

Assuming that the class Counter implements a counter that increments from 0 in the obvious way, what will be printed when a newly created Foo is sent message wibble()?

3

Consider the following example from the Java Language Specification. What will it produce, and why?

```
class Point { int x, y; }
class ColoredPoint extends Point { int color; }
class Test {
  public static void main(String[] args) {
    ColoredPoint[] cpa = new ColoredPoint[10];
    Point[] pa = cpa;
    System.out.println(pa[1] == null);
    try {
      pa[0] = new Point();
    } catch (ArrayStoreException e) {
      System.out.println(e);
    }
  }
}
```