CSC207, Fall 2012: Quiz 2
Duration — 25 minutes
Aids allowed: none

Student Number: ⌊_⌋_⌋_⌋_⌋_⌋_⌋_⌋_⌋

Last Name: _____ **First Name:** _____

Lecture Section: L0101   **Instructor: Horton**

Please fill out the identification section above as well as the one on the back page,
and read the instructions below.

Good Luck!

This quiz consists of 2 questions on 6 pages (including this one). When you
receive the signal to start, please make sure that your copy of the quiz is
complete.

If you use any space for rough work or need to scratch out an answer, circle
the part that you want us to mark.

1: _____/ 9

2: _____/ 5

TOTAL: _____/14

Question 1. [9 MARKS]

The following code compiles without errors:

```
public class A {

  int num = 13;

  public A() {
    System.out.println("one");
  }

  public void report() {
    System.out.println("two");
  }
}
```

```
public class B extends A {

  int num = 2;

  public B() {
    System.out.println("here");
  }
}
```

```
public class C extends B {

  public C() {
    System.out.println("some");
  }

  public void report() {
    System.out.println("all");
  }
}
```

Part (a) [5 MARKS]

Suppose we have a main method in another class that says: `A var1 = new C();`
This compiles and runs without error.

- What output will be created by constructing that instance of C? (Line breaks are omitted below to save space.)

  ☐ `some here one`

  ☐ `one here some`

  ☐ `some`

- If the expression `var1.num` is then used, which variable is accessed?

  ☐ The instance variable `num` in class A.

  ☐ The instance variable `num` in class B.

  ☐ The instance variable `num` in class C.

  ☐ None of the above; this expression is illegal.

- If the expression `((C) var1).num` is then used, which variable is accessed?

  ☐ The instance variable `num` in class A.

  ☐ The instance variable `num` in class B.

  ☐ The instance variable `num` in class C.

  ☐ None of the above; this expression is illegal.

- If the the method call `var1.report()` is then used, which method is called?

  ☐ The method `report` in class A.

  ☐ The method `report` in class B.

  ☐ The method `report` in class C.

  ☐ None of the above; this method call is illegal.

- If the the method call `((B) var1).report()` is then used, which method is called?

  ☐ The method `report` in class A.

  ☐ The method `report` in class B.

  ☐ The method `report` in class C.

  ☐ None of the above; this method call is illegal.

Part (b)   [4 marks]

Define a public interface called `Reportable` that imposes just one obligation on those classes that implement it: they must have a method called `report` with the same signature as the one in class `A`.

(*I.e.,* Their `report` method must have the same accessibility, return type, name and parameters.)

Below, modify class `A` so that instances of it could be used anywhere a `Reportable` object is required.

```
The only change required is to say that A "implements Reportable":

public class A  implements Reportable {

  int num = 13;

  public A() {
    System.out.println("one");
  }

  public void report() {
    System.out.println("two");
  }
}
```

Question 2.   [5 marks]

Part (a)   [1 mark]

Suppose we are writing a program that will involve Sneetches and Smurfs. If I tell you that every Sneetch is a Smurf, which design makes the most sense?

☐ Class Sneetch is a parent of class Smurf.

☐ Class Smurf is a parent of class Sneetch.

☐ Classes Sneetch and Smurf are both children of a common parent class.

☐ A common child class has both class Sneetch and class Smurf as parents.

Part (b)   [1 mark]

For any class that doesn't have a no-argument constructor, Java will define one.

☐ True   ☐ False

Part (c)   [1 mark]

If a class has any methods that are not abstract, the class must not be declared to be abstract.

☐ True   ☐ False

Part (d)   [1 mark]

An abstract class can be instantiated as long as it has at least one method that is not abstract.

☐ True   ☐ False

Part (e)   [1 mark]

Suppose class C2 is a child of class C1. The private members of a class C1 can be accessed from within class C2.

☐ True   ☐ False

This page is for rough work and for answers that didn't fit in the space provided.