Metropolitan State University, St. Paul, MN
ICS 372 Object-Oriented Design and Implementation
Quiz 1 Solution

1. Which of the following is the correct order of Java types from smallest to largest, in terms of storage requirements? (So the one that requires least storage will be first and the one that needs maximum storage is last.)

   (a) `short, long, int, byte`

   (b) `byte, short, long, int`

   (c) `byte, short, int, long` ✓

   (d) `byte, int, long, short`

2. 1. Which term expresses how well-related is code within a module?

   (a) Modularity

   (b) Cohesion ✓

   (c) Coupling

   (d) ADT

3. The return type of a setter declared in class `C` that implements interface `I` is

   (a) `void` ✓

   (b) `C`

   (c) `I`

   (d) None of the above

4. Suppose a class C has the following constructors. What would you put in the constructor with two parameters, so it calls the constructor with three parameters?

```
public C(int a, int b, int c) {
   // some code
}
public C(int x, int y) {
   // what do you put here to call the other constructor?
}
```

   (a) `this(x, y);`

   (b) `super(x, y, 0);`

   (c) `C(x, y, 1);`

   (d) `this(x, y, 1);` ✓

For the next two questions, assume we have two classes `Employee` and `Project`. An employee can be assigned to multiple projects and a project can have multiple employees. Every project has a name and a budget. For every employee, each project assignment has a fraction assigned to the appointment, which shows the fraction of time the employee works on the project. For example, if Smith works on three projects EdgeMart, BadSale, and Tears, these fractions could be 0.3, 0.25, and 0.45, meaning that Smith works 30% of the time on EdgeMart, 25% of the time on BadSalem and 45% of the time on Tears.

5. The above relationship is

    (a) one-to-one from `Employee` to `Project`.

    (b) one-to-many from `Project` to `Employee`.

    (c) one-to-many from `Employee` to `Project`.

    (d) many-to-many from `Employee` to `Project`. ✓

6. The relationship between from `Employee` and `Project` is best implemented using a third class.

    (a) True ✓

    (b) False

7. Which of the following are true of interfaces? Check all that apply.

    (a) They have abstract methods (for the purposes of this class) ✓

    (b) They can have final static fields ✓

    (c) Implementing classes inherit the type ✓

    (d) They have public members ✓

8. Suppose we have the following declarations, which compile error-free.

```
public interface I1 {
public void m1();
}
public interface I2 {
public void m2(int x);
}
public class C1 implements I1 {
// code
}
C1 obj1 = new C1();
```

Which of the following are valid? Check all that apply.

    (a) `I1 x = obj1;` ✓

    (b) `I2 x = obj1;`

    (c) `C1 x = obj1;` ✓

    (d) `I2 x = (I2) obj1;`