Part 1. Syntax of Inheritance

1. Declare that Student is a subclass of Person. Write your answer in the code.

2. Complete the Student constructor. Write your answer in the code.

```
public class Person {
    private String name;
    public Person(String name) {
          this.name = name;
    }
    public String getName() { return name; }
    public void setName(String newname) { this.name = newname; }
    public String toString() { return "Person named "+name; }
}
public class Student
{
    private Long studentId;
    /**
     * Constructor for a student with a name and id number.
     */
    public Student(String name, Long id) {



    }
    public String toString() {
        return String.format("Student %s (%d)", getName(), studentId);
    }
}
```

3. What is printed by this code:

```
Person p = new Student("Hacker", 5412345678L);
System.out.println( p.toString() );
```

a) `"Person named Hacker"`

b) `"Student Hacker (5412345678)"`

c) (a) is printed first, then (b)

d) Syntax error: can't assign Student to Person reference (p).

4. We want Student to *inherit* the getName() method of Person (Student is a subclass of Person). What should we write in the Student class? Circle the correct answer.

a) Don't write anything.

b)
```
@Override
 public String getName() {  super(); }
```

c)
```
@Inherit
 public String getName() { return super.getValue(); }
```

d)
```
@Override
public double getValue();
```

5. In the Person class, suppose we want to *ensure* that no subclass overrides the getName() method. What should we write in Person?

a) Don't write anything.

b)
```
@Final
   public String getName() { return this.name; }
```

c) `public abstract String getName() { return this.name; }`

d) `public final String getName() { return this.name; }`

e) None of these. A subclass can always override a superclass method.

6. Suppose Coin is a subclass of Money, and Money a subclass of Object. We write

Coin coin = new Coin(10);

(a) Using code inside the Coin class, which methods can we call?

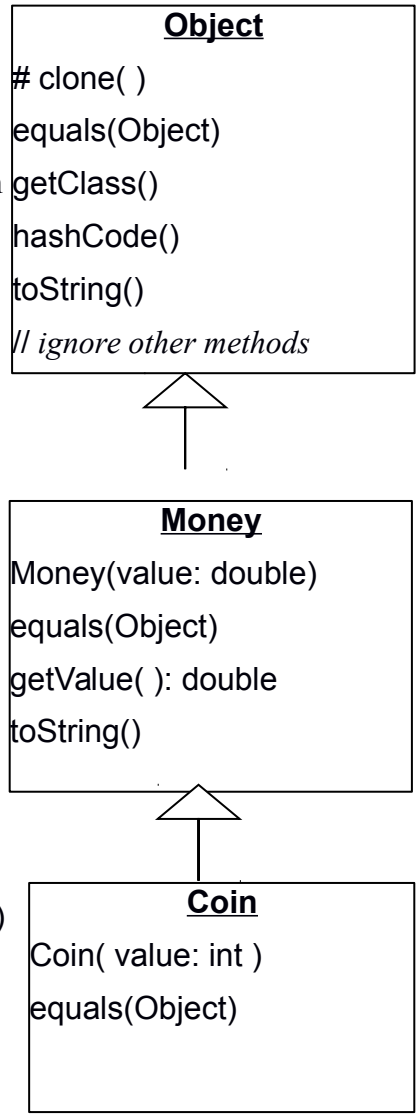
Put a check mark ( ) next to all the methods from every class that coin can call using `this` or `super`, and X next to the methods that Coin cannot call.

(b) The Money class implements *Comparable* with parameter type Money. Show this relationship on the UML diagram.

(c) the `value` attribute of Money is double but the `value` of a Coin is an int.

Can Coin define its own getValue( ) method that returns int? Wny?

(d) Suppose that money.getValue( ) returns double and coin.getValue() returns int. Give example code to show how this might violate the *Liskov Substitution Principle*.



Part 2: Design with Inheritance

These exercises are described in "Inhteritance-Practice" document (not PDF) on class web.