COP 3330 Suggested Exercises for Polymorphism

Polymorphism

1) Edit either of the examples with classes A, B and C to add or delete methods called f or g and see if you can predict what the program (with the same main but different methods) will print out!

2) Classic textbook examples of polymorphism use examples of animals and a speak() method. Create your own example from this idea testing out different combinations of speak methods (more interesting if these methods take in parameters) in a set of classes that has inheritance structure.

3) Come up with an example where removing a method prevents the code from compiling even though there is technically a method left your code that matches the method signature of a method call. See if it's possible to come up with a similar example when adding a method.

4) Imagine adding a ThreeDCC that extended ColorCoordinate, and adding two equals methods to it: one that takes in a Coordinate and another that takes in a ThreeDCC. (You can actually add this fairly easily.)

In this situation, identify the equals methods that get called in the following sequence of code:

```
Coordinate test = new ColorCoordinate(3,'a',"Green");
ColorCoordinate red = new ThreeDCC(3,'a',10,"Red");
ThreeDCC blue = new ThreeDCC(3,'a',79,"Blue");
Coordinate nocolor = new Coordinate(3,'a');

test.equals(red);
red.equals(test);
blue.equals(red);
red.equals(blue);
nocolor.equals(red);
nocolor.equals(test);
blue.equals(test);
```

5) Actually write a small ThreeDCC class and test out your answers. You don't need to write a meaningful equals method, just enough to test the method calls above.

6) Add in yet another method called equals to the ThreeDCC class that takes in a ColorCoordinate. Write a line of code in main that runs differently when you add this method versus when you omit it from your code base.