

CSE 115/503

March 15-19, 2010

Announcements

- Lab 5 due this week
- Exam 3 Review Wednesday 3/17
- Exam 3 Friday 3/19
 - There will be lecture after the exam
- Lab 6 begins week of 3/22

Before/After Exam

- MovingChosenGraphic example in Lecture Code repository
- Pick a graphic on the screen and move the selected graphic.

Notable Points (alphabetical by filename)

- IBoardConstants
 - Use of interface to create constants that can then be used by classes by implementing the interface
 - Note the syntax for creating a constant

Movement.java

- Movement is an enumeration
- An enumeration is a part of Java that we will not be officially covering, so it is an extra for those interested
- An enumeration creates enumerands that can be used a lot like instances of objects

MovingRectangle.java

- Extends `graphics.Rectangle` – means that it uses the inheritance or generalization relationship.

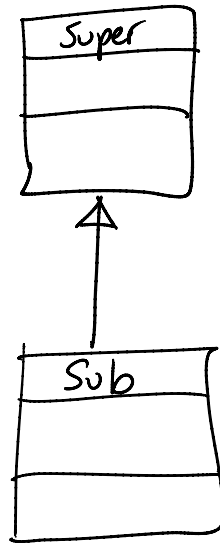
Inheritance

- Superclass/subclass relationship
- The source is the subclass and the target is the superclass.
- Subclass “extends” superclass
 - Java keyword extends appears in the class header to signify this relationship.

Implications of Inheritance

- When a class extends another, the subclass inherits all of the public methods of the superclass and they remain public in the subclass.

Generalization - UML



Generalization - Code

```
public class Sub extends Super {
    public Sub ( ) {
    }
}
```

Generalization - Use

- Used in two ways:
 - Want to create a specialization of a particular class that already exists
 - Want to factor out commonality of many classes into one main superclass

MovingRectangle.java (continued)

- MovingRectangle.java adds a method to the list of already defined graphics.Rectangle methods that allows to set the location by using a Position.

Position.java

- Class that represents a row/column position on a board
- This class is available in the utilities package of book-libs, but is not useful in that form.
- To be useful, it needs to be copied to a current project (so constants can be properly defined)
- Contains methods to convert `java.awt.Point` \leftrightarrow `Position`

SelectionListener.java

- Listener for graphics so that when a graphic is clicked, the holder is notified of the currently selected shape.

ShapeHolder.java

- Another example of a holder.
- This one holds an IColorableGraphic.
- IColorableGraphic is an interface implemented by many of the things we can put on a DrawingCanvas.
- Note that it is used as the type of the instance variable, and parameter, and return type in this class.

TopLevel.java

- The top-level object for this program.
- It coordinates the other parts of the program.
- Note the order of the following lines in the constructor:

```
    _ellipse = new graphics.Ellipse();  
    _holder = new ShapeHolder(_ellipse);
```
- What would happen if those lines were reversed?

Extension to Example

- Take a look at `MovingChosenGraphicWithButtonsUsingEnum` project in lecture code to see how enumerations can be used for moving the shape

Friday's Exam Review

- See other set of posted slides.