13.01 Virtual Lecture Notes

Let's take a look at the **superclass** Rectangle.

- Download the Rectangle.java file to your module 13 Lessons folder and open it up.

In order to extend the Rectangle class and create the Box class, we modify the first line of our Box class definition to include the word **extends** followed by the name of the Rectangle class. It looks like this:

```
public class Box extends Rectangle
{
  ...
 }
```

Now, Box will automatically **inherit** both **`getLength()`** and **`getWidth()`** from Rectangle, since they are public. Length and width are private; therefore they are not inherited. Box cannot reference them directly. Box must use a call to the constructor of Rectangle, by making a special function call to the superclass. This is a call to the **`super()`** method.

Box's constructor will look like this:

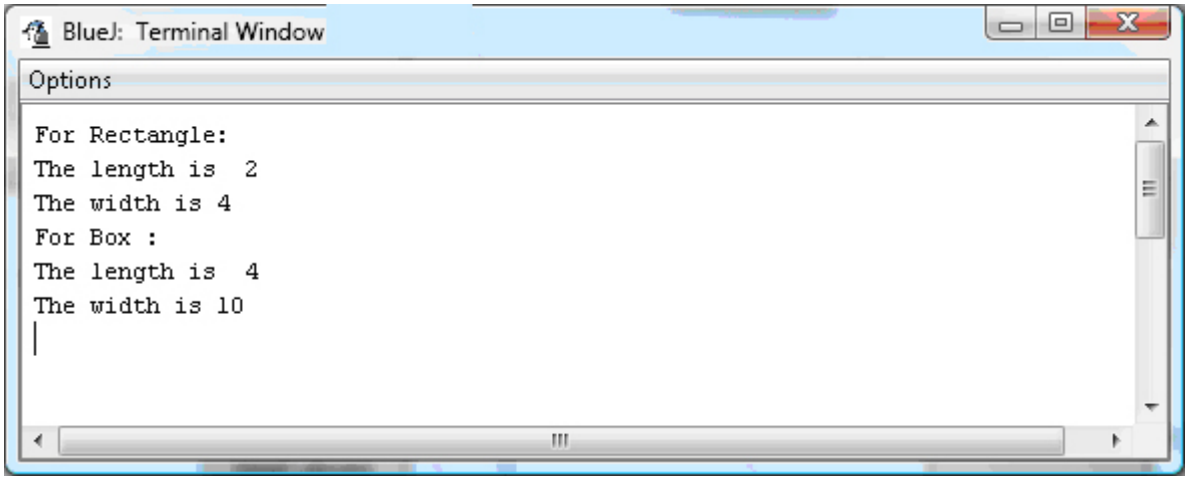
```
public Box(int l, int w, int h)
{
     // call super class
     super(l, w);
     // initialize instance variables
     height = h;
}
```

A call to super must first occur in the constructor and should be passed any variables it will need. In the case of Box, its call to super includes variables l and w, which are needed by the Rectangle constructor to set the value of length and width.

The rest of Box will be just as you would expect; we simply add a height instance variable and a **`getHeight()`** method.

- Download the Box.java file to your module 13 Lessons folder and open it up to verify this.
- Download the Test.java file to your module 13 Lessons folder and run it, to test the Box and Rectangle classes.

Test's output will look like this:



Make sure you understand how the demo programs work before you proceed.