1. Inheritance :: *Rectangle* Class

Suppose we have a class named *Rectangle* that represents a rectangle shape to be drawn on a graphical window. A *Rectangle* has four attributes (data members, instance variables) specifying the (x, y) coordinate of the upper left corner of the *Rectangle* on the window, the *width*, and the *height* of the *Rectangle*.

```
Rectangle
- mHeight : int
- mWidth : int
- mX : int
- mY : int
+ Rectangle () :
+ Rectangle (pX : int, pY : int, pWidth : int, pHeight : int) :
+ getHeight () : int
+ getWidth () : int
+ getX () : int
+ getY () : int
+ move (pNewX : int, pNewY : int) : void
+ resize (pNewWidth : int, pNewHeight : int) : void
+ setHeight (pNewHeight : int) : void
+ setWidth (pNewWidth : int) : void
+ setX (pNewX : int) : void
+ setY (pNewY : int) : void
```

1. Inheritance :: *Rectangle* Class Implementation

And the *Rectangle* class implementation:

```java
//*******************************************************************************
// CLASS: Rectangle (Rectangle.java)
//*******************************************************************************

/**
 * Represents a Rectangle that can be drawn on a graphical window.
 */
public class Rectangle {
    private int mHeight;
    private int mWidth;
    private int mX;
    private int mY;

    /**
     * Default ctor. Initializes all instance variables to 0 by calling the second
     * ctor.
     */
    public Rectangle() {
        this(0, 0, 0, 0);
    }
```

1. Inheritance :: *Rectangle* Class Implementation (continued)

```java
/**
 * Second ctor.
 */
public Rectangle(int pX, int pY, int pWidth, int pHeight) {
    setX(pX);
    setY(pY);
    setWidth(pWidth);
    setHeight(pHeight);
}

/**
 * Accessor method for the mHeight data member.
 */
public int getHeight() {
    return mHeight;
}

/**
 * Accessor method for the mWidth data member.
 */
public int getWidth() {
    return mWidth;
}
```

1. Inheritance :: *Rectangle* Class Implementation (continued)

```
/**
 * Accessor method for the mX data member.
 */
public int getX() {
    return mX;
}

/**
 * Accessor method for the mY data member.
 */
public int getY() {
    return mY;
}

/**
 * Moves this Rectangle to a new location.
 */
public void move(int pNewX, int pNewY) {
    setX(pNewX);
    setY(pNewY);
}
```

1. Inheritance :: *Rectangle* Class Implementation (continued)

```java
/**
 * Change the size of this Rectangle.
 */
public void resize(int pNewWidth, int pNewHeight) {
    setWidth(pNewWidth);
    setHeight(pNewHeight);
}

/**
 * Mutator method for the mHeight data member.
 */
public void setHeight(int pNewHeight) {
    mHeight = pNewHeight;
}

/**
 * Mutator method for the mWidth data member.
 */
public void setWidth(int pNewWidth) {
    mWidth = pNewWidth;
}
```

1. Inheritance :: *Rectangle* Class Implementation (continued)

```java
    /**
     * Mutator method for the mX data member.
     */
    public void setX(int pNewX) {
        mX = pNewX;
    }

    /**
     * Mutator method for the mY data member.
     */
    public void setY(int pNewY) {
        mY = pNewY;
    }
}
```