

Homework #1

This work is based on material from Chapter 1 of *Objects First with Java - A Practical Introduction using BlueJ* by David Barnes and Michael Kolling. The goal is to demonstrate some characteristics of objects and classes, plus some experimentation with modifying source code. The lab instructions assume you are using MS Windows. Perform the following tasks in order.

1. Creating a “Shapes” project in BlueJ.

- a. Download the following zip file on your computer: [HW1_code.zip](#), and unzip it by right-clicking on the file and selecting ‘uncompress’.
- b. Open BlueJ.
- c. Select **Project/Open Non Bluej...**, select the `HW1_code` folder, and click **Open** in BlueJ. You should see the files contained in the folder. The arrows between the boxes indicate the dependencies between the classes. `Picture` uses the three “shape” classes, which each use `Canvas` – rearrange the boxes within the work area to make this hierarchy clearer.
- d. Select **Tools/Compile**. BlueJ should then compile the five classes so that we can run them. Successful compilation of a class is indicated by the unshading of its box. Have a look in the `HW1_code` directory. You should see a number of new files that are created by BlueJ during the compilation process – but we won’t worry about those for the moment.
- e. Right-click on `Square`, select `new Square()`, and click **Ok**. This creates an object `square1` of class `Square`.
Right-click on `square1` and select **Inspect**. This shows you the current state of `square1`: note in particular that the field `isVisible` is `false`, hence you cannot see `square1`. Also note the `xPosition` and `yPosition` of `square1`.
- f. Right-click on `square1` and select `makeVisible()`. This should create a canvas and display `square1` on that canvas. Look at the state of `square1` again using **Inspect** – what value does `isVisible` have now?
- g. Right-click on `square1`, select `slowMoveHorizontal()`, enter `-200` into the box, and click **Ok**. What happened? Why do you think `square1` moved to the left (as opposed to the right)? What do you think has happened to the state of `square1`? Have a look!
- h. Try invoking `slowMoveHorizontal()` without entering a number into the box. Try invoking `slowMoveHorizontal()` with the argument `50 * 2`, and with `true`, and with `45.6`. Observe what happens.
- i. Try invoking other methods of `square1`. Think about the way that they work, why some take arguments and others don’t, etc.
- j. Select **View/Show Code Pad** (if the Code Pad isn’t already open). Type in `0.1 * 2`. Type in `0.1 == 0.3 - 0.2`. Type in `0.3 - 0.2 - 0.1`. Wonder at the inadequacies of software.

2. Repeat Step 1 to create two `Square` objects and a `Triangle` object.

When you make them all visible, how many squares can you see? Is this what you expected? If not, why do you think this might be? (Hint: try setting each square to different colours and different positions). Compare the `changeSize` methods of the three classes. Note that the `changeSize` method of the `Triangle` class differs from that of the `Square` and the `Circle` classes. How does it differ? What does it do? Why do you think these methods are different for the three shape classes?

3. Recording method calls and submitting

Click **View / Show Terminal** in BlueJ, and make sure “Show Terminal” is ticked.

In the “Terminal” window, click **Options / Record method calls**, and make sure “Record method calls” is ticked. These options allow you to make a series of method calls, and the Terminal window will record which ones are made. Using method calls you have seen in previous steps: construct a square; make it visible; and move it slowly 100 pixels to the left.

In the Windows start menu, search for “WordPad” and select it. Copy and paste the method calls from your “Terminal” window into the blank document, and save it as “HW1Work.txt”.

Go to [CTL](#), open the menu **Student Activity -> Assignment**, click on the button for submitting the report. Attach your `HW1Work.txt` file and click on **submit**. Now you should see that your submission was completed.

This is the method that will be used to submit other homework for class.