

## Introduction

In this lab you will use the Java you have learned in lecture to write a small program. In particular you will:

- declare variables
- create objects
- assign values to variables
- call methods

If you are unsure how to do these things you should review your lecture notes, the slides posted on the course website, and the readings posted on the course website.

---

## Preparatory tasks

1. Log in
  2. Start Eclipse
  3. Switch to the CVS Repository Exploring perspective
  4. Check out the SP15-CSE115-Lab2 project from the Labs repository
  5. Switch to the DrJava perspective
- 

## Lab Tasks

An important technique in developing software is to write and test it incrementally. In this lab we explain how this can be done by writing out the steps explicitly. As the semester progresses we expect that you will apply incremental development principles on your own.

In this lab you will write a small program which, when run, will draw a number of critters on the screen and make some of them move around. In particular, you will create an example1.Terrarium object, **two** example1.Pig objects (one of which will be moving), **three** example1.Butterfly objects (two of which will be moving), and **four** example1.Chicken objects (three of which will be moving).

### Step 1

Edit the constructor definition of the BarnYard class to do the following:

create **one** example1.Terrarium object

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane.

You are expecting that a window will open on the screen, displaying a terrarium inside it, like this:



If you see this, continue on to step 2.

If you don't see this, check your work and try to track down the problem on your own. If you cannot spot the problem, ask your TA for help. Do not continue on with the lab until you have achieved the expected result.

## Step 2

Edit the code so that it creates one example1.Pig object and adds it to the terrarium.

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane.

You are expecting that a window will open on the screen, displaying a terrarium with a pig inside it. It should look something like this:



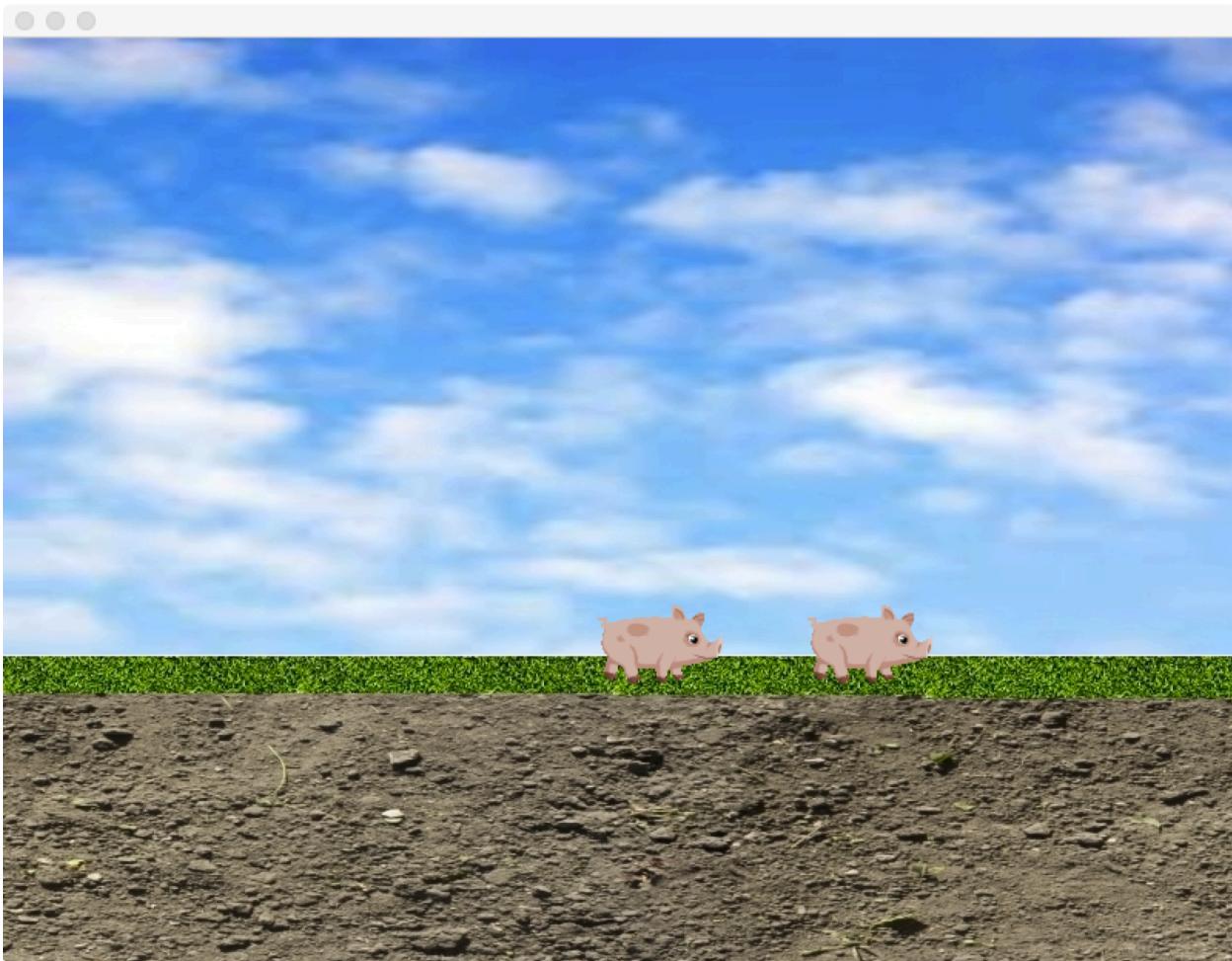
Because the code for the example1.Pig class is written to position the pig at a randomly selection location your picture may not look **exactly** like the screenshot, but you should see one pig somewhere in the grassy area.

### Step 3

Next, edit the code so that it creates a two example1.Pig objects and adds them both to the terrarium.

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane.

You are expecting that a window will open on the screen, displaying a terrarium with two pigs inside it. It should look something like this:



#### Step 4

Edit the code so that one of the pigs move (but not both).

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane. What do you expect to see? Did running the program meet your expectations?

#### Step 5

Add three example1.Butterfly objects. Make two of them move.

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane. What do you expect to see? Did running the program meet your expectations?

## Step 6

Add four example1.Chicken objects. Make three of them move.

Test the functionality of your program by creating an instance of BarnYard from the Dr.Java interactions pane. What do you expect to see? Did running the program meet your expectations?

---

### Submitting your project to Web-CAT

In the DrJava perspective you should see the PackageExplorer view on the left of your screen. Right-click on the project name “SP15-CSE115-Lab2” and drag down to “Submit...”. Submit based on your official lab section, using your UBIT password rather than your CSE password.

If your submission was *successfully sent* to the Web-CAT server, you will see a window which says, “Your submission was successful.” Click “Finish” in this window. If your submission was *successfully received* by the Web-CAT server you will see a confirmation page from the Web-CAT server. Otherwise you will see a failure message, in which case you must try submitting again. Be sure you are using your UBIT password, not your CSE password, when submitting to Web-CAT.

---

### NOT FOR CREDIT: Object diagram check

We encourage you to draw an object diagram showing the variables declared, the objects created, and the references which connect them. Draw one diagram for each step in the lab instructions.

Be sure to label each variable with its name, and each object with its type. Write next to each Pig, Chicken, and Butterfly object whether it is started or stopped at the end of the constructor.

Draw your diagram so that the boxes representing variables appear on the left of the diagram, and all the ovals representing objects appear on the right of the diagram.

Once you have your diagram drawn ask your TA to review it for correctness.

---