

# 159.272 Programming Paradigms

## Tutorial 1: On The Farm!!

### Objectives

1. get familiar with the Java language
2. instantiate classes
3. work with methods inherited from other classes
4. use procedural programming structures
5. generate random numbers

Note: you will need to use Greenfoot (a teaching interactive environment for Java) for this assignment. To download Greenfoot please go here: <https://www.greenfoot.org/door>

In the lab, please download the portable version of Greenfoot by clicking on the following link:

<http://www.greenfoot.org/download/files/Greenfoot-windows-310.zip> .

### Instructions

1. download farm.zip from stream
2. unzip farm.zip, and open folder in Greenfoot
3. change the source code of classes Sheep.java, Dog.java and Farm.java to achieve the following:

- a. the farm is pre-populated with 100 grass, 10 sheep and 1 dog, they are located at random positions.

Hint: to add objects, you can use

`this.addObject(...)`

- b. sheep browse (move around) – they move slowly, change the direction from time to time (in particular, they don't get stuck at the edges of the screen), and when they meet grass, they eat it
- c. when a sheep has eaten, it takes a break (it does not move for a while)
- d. the dog runs around, when he comes close to sheep, the sheep jump away

### Deliverables

Please start reading and working on the tutorial before the lab!!

You MUST start working on this tutorial at home, but MUST come to your lab

and show your output to the teachers in order to get the marks!

### Hints

1. many OS have support for zip archives on board, a good free package is 7zip (<http://www.7-zip.org/>)
2. check the class [java.util.Random](#) for how to create random numbers in Java