Software Workshop – Exercises

10 November 2015

Submissions must be made using Canvas, in the following format.

SUBMISSIONS NOT COMPLYING WITH THESE GUIDELINES WILL HAVE 2 MARKS DEDUCTED.

Uploaded file must be: studentid.zip
in the zip format. Rar or tar.gz will not be accepted.

Archive must contain: Person.java, Population.java, VirousComponent.java, and VirusViewer.java

All submissions must be made by midnight Sunday. Submissions after this time WILL NOT BE MARKED and will receive ZERO.

This work is based on Population.java and Person.java from week 4. Please download a copy of these classes.

Question 1 [4 marks]

Create a class **`VirusComponent`** which extends the **`JComponent`** class. It should contain an array of **`double`**s which will keep track of the proportion of infected people over time, and an integer giving the size of the frame. Write the fields and the constructor.

Question 2 [6 marks]

Now write a **`paintComponent`** method for your class. It should iterate through the array and plot the proportion of infected people at each time step. To plot correctly, a zero level of infection should appear at the bottom of the frame. Time increases from left to right.

Question 3 [4 marks]

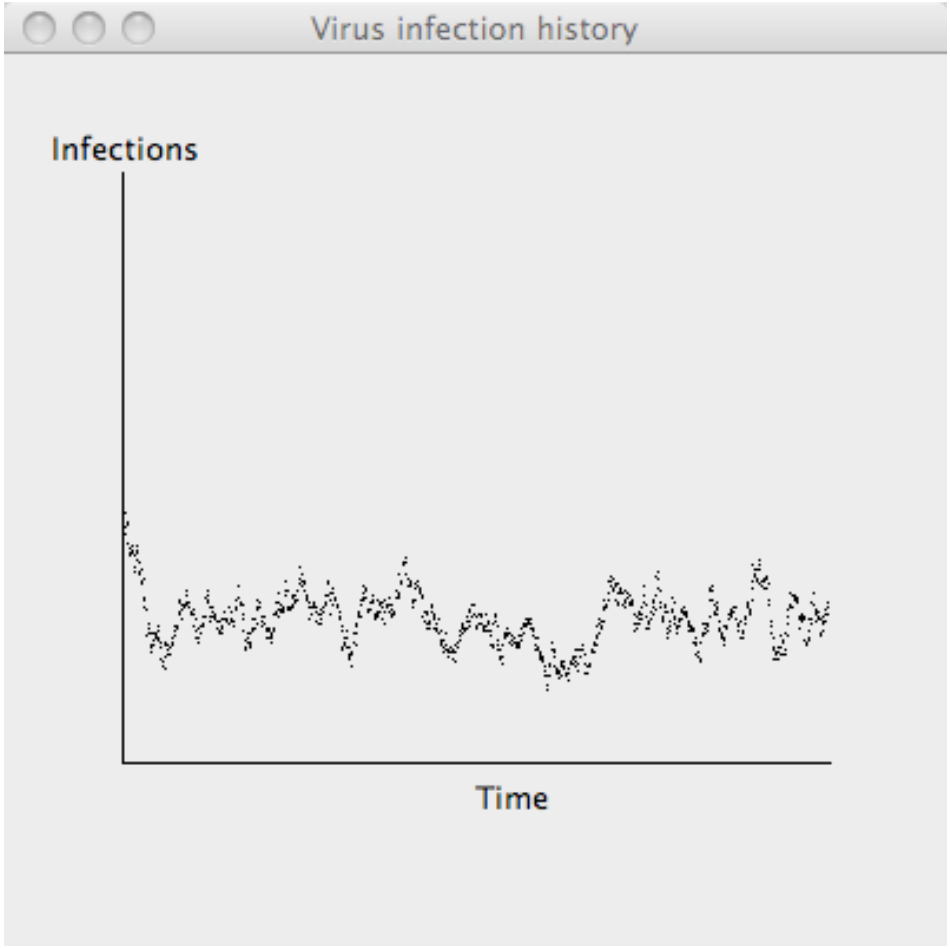
Create a class **`VirusViewer`** which creates a **`Population`**. It should then update the population a number of times (try 1000), storing the proportion of infected people at each time step in an array. The resulting data should then be displayed in a frame.

Question 4 [8 marks]

Now add axes and labels for your data plot (see picture). You will have to adjust where you plot points accordingly, so they fit correctly on the graph.

Question 5 [2 marks]

Make your graph grow and shrink appropriately as the frame is resized by the user. Hint: the `paintComponent` method is called each time this happens. Use the **getHeight** and **getWidth** methods inherited from **JComponent** instead of the fixed frame size attribute.


Virus infection history
Infections
Time