Objective

Design and implementation of a multithreaded animation using JAVA threads and 2D graphics. You may develop this application as a Java Application or an Applet. If you choose to develop an Application, then your program must be able to read the content of a file which holds a series of (x,y) coordinates. (the filename must be passed via args[] or via the JFileChooser class).

$ java pacman file_name

Alternatively, you may develop your program as an Applet. In that case simply generate your coordinates using the functions:

\[
\sum_{x=1}^{100} \sin\left(\frac{x}{10}\right) \cdot 10 + 10 \quad \text{and} \quad \sum_{x=1}^{100} \sin\left(\frac{x}{10}\right) \cdot 5 + 30
\]

Regardless of the method, the coordinates must be loaded into a linear structure (static or dynamic is up to you). Once the data is loaded, you are to plot the coordinates on 2 separate graphs (see figure). Once plotting is completed, create two threads. Each representing a pac-man animation object. Each pac-man should navigate a distinct graph.

As each pac-man must randomly sleep (between 0 to 500 milliseconds) in each iteration, as it moves toward its goal (the end of the line). When threads finish, they should print an appropriate message to the screen. (Use System.err)

Hacker's Corner:

1) Get your pac-man to open and close its mouth as it is moving along.
2) The mouth of your pac-man should follow the slope of the line.
3) Randomly place prizes on the graph to be consumed by the pac-man. Perhaps the prizes will increase or decrease the priority of the thread that executes that pacman!!

Extra Credit:

Create a series of Check Boxes which allow you to change the color and size of your pac-man animations. (As it is running) (5 pts)

Create two RadioButtons and place them in a group. Each button should be associated with a given pac-man and should play a distinct, continuous and preferably annoying sound. (5 pts)

Hints:

For information about playing sound point your browser to the following link.
http://java.sun.com/docs/books/tutorial/sound/playing.html

For information about creating 2D graphical objects point your browser to the following link.
http://java.sun.com/docs/books/tutorial/2d/index.html

What to hand in:

* Cover page with your name, course # and name, assignment #, date, etc.
* Source code (fully Documented).
* Sample screen shots, a floppy with the java classes and any other files necessary to run your program. Instruction on how to run your program.

Start Today!