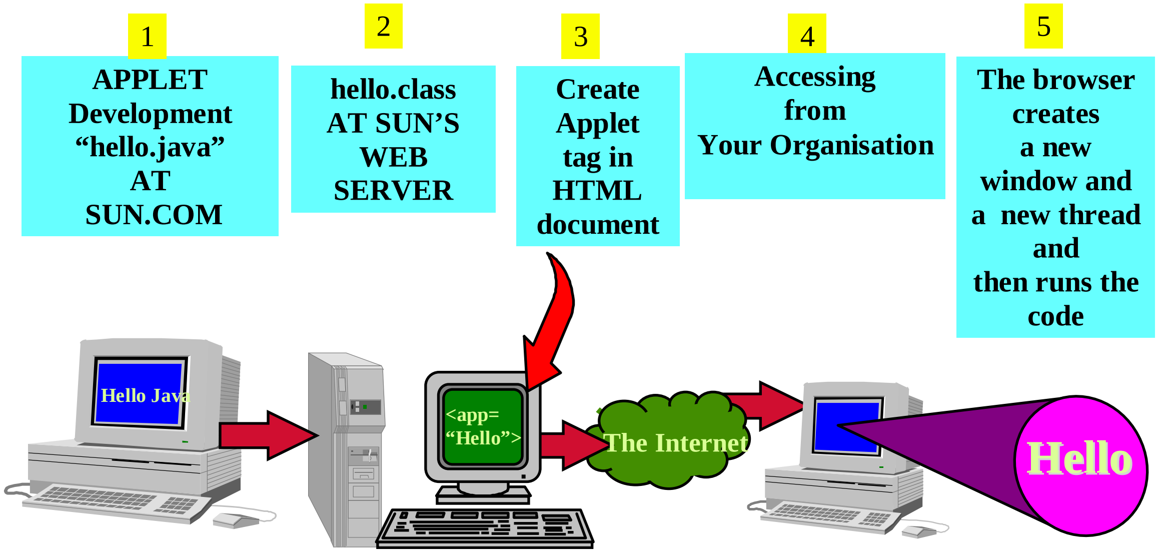
The University of Melbourne
Department of Computer Science and Software Engineering
433-254 Software Design
Semester 2, 2003

Answers for Tutorial 8
Week 9

1. Discuss steps involved in developing and running applets.

   Sample Answer:



1 APPLET Development "hello.java" AT SUN.COM

2 hello.class AT SUN'S WEB SERVER

3 Create Applet tag in HTML document

4 Accessing from Your Organisation

5 The browser creates a new window and a new thread and then runs the code

2. Describe different stages of in the life of an applet. Distinguish between init() and start().

   Sample Answer:

Loading the Applet

As the result of browsing a webpage (an html file) that calls an applet, the applet will be loaded. When an applet is loaded, here's what happens:

- An instance of the applet's controlling class (an `Applet` subclass) is created.
- The applet *initializes* itself.
- The applet *starts* running.

An applet *initializes* once when it is loaded (instantiated or created) for the first time, but it may *start* or *stop* many time, as explained below.

Leaving and Returning to the Applet's Page

When the user leaves the page -- for example, to go to another page -- the applet has the option of *stopping* itself. When the user returns to the page, the applet can *start* itself again. The same sequence occurs when the user iconifies and then reopens the window that contains the applet. (Other terms used instead of *iconify* are *minaturize*, *minimize*, and *close*.)

Reloading the Applet

Some browsers let the user reload applets, which consists of unloading the applet and then loading it again. Before an applet is unloaded, it's given the chance to *stop* itself and then to perform a *final cleanup*, so that the applet can release any resources it holds. After that, the applet is unloaded and then loaded again, as described in Loading the Applet, above.

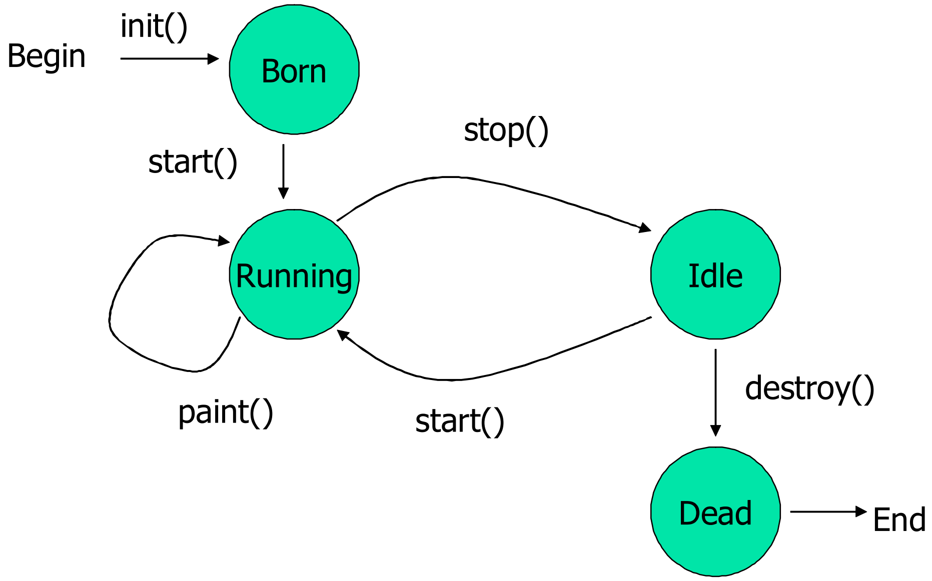
Quitting the Browser

When the user quits the browser (or whatever application is displaying the applet), the applet has the chance to *stop* itself and do *final cleanup* before the browser exits.

Summary

An applet can react to major events in the following ways:

- It can *initialize* itself.
- It can *start* running.
- It can *stop* running.
- It can perform a *final cleanup*, in preparation for being unloaded.



3. Discuss drawing methods of the Graphics class.

   Sample Answer:

   The *graphics context* represents a drawing surface and all of its graphics settings such as the current foreground and background colors, the fonts to be used for strings, etc.. The class is referred to as the graphics context class since it provides the context under which the graphics commands operates for a component.

   The graphics context does not need to represent a visible component but can be an off-screen image.

   Here are some of the drawing methods in the `Graphics` class :

   - `drawLine(int x1, int y1, int x2, int y2):`Draw a line between points (x1,y1) and (x2,y2)

   - `drawArc(int x,int y,int width, int height, int startAngle, int arcAngle):` Draws the outline of a circular or elliptical arc covering the specified rectangle.

   - `setColor(Color c):` Set the current pen color, where c has several standard choices such as `Color.black, Color.blue, Color.red`, etc.

   - `fillRect(int x, int y, int width, int height):` Fills the specified rectangle with the current color.

   - `drawRect(x,y,width,height):` Draws the outline of the specified rectangle. `x and y` are the coordinates of the top left corner and the bottom right corner will be at `(x+width,y+height)`.

   - `drawOval(x,y,width,height):` draws an oval *bounded* by the rectangle specified by these arguments.

4. Discuss how one can draw a Pie Char of Number of Students Registered in the 1st, 2nd, and 3rd year within the department of Computer Science and Software Engineering. Please Access input that are passed through PARAM statements in HTML.

   Hint: Each pie can be drawn using drawArc() or fillArc() method.