
Graphics with ecs100.jar

COMP 102

Victoria University of Wellington

Programs with graphics output

- Write a program to draw a lollipop:

Design

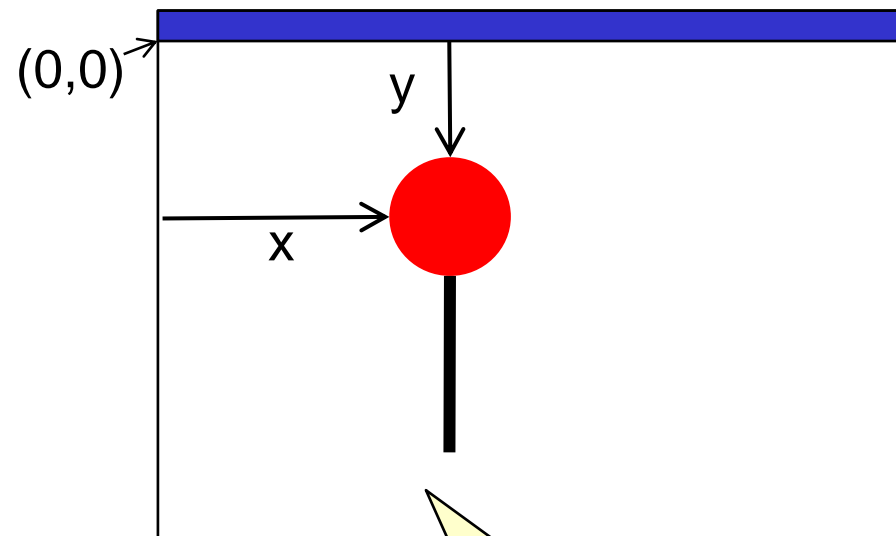
- What shapes can we draw?
 - UI has methods to draw rectangles, ovals, lines, arcs,...

⇒ Draw

one thick black line
one red oval,

Shapes are drawn on top of previous shapes

- How do we draw them?
 - Need to set the color first (initially black) then call the draw/fill methods:
 - must specify the positions and size
 - rectangles/ovals: left, top, width, height
 - lines: x and y of each end.



Coordinates measured from left and top

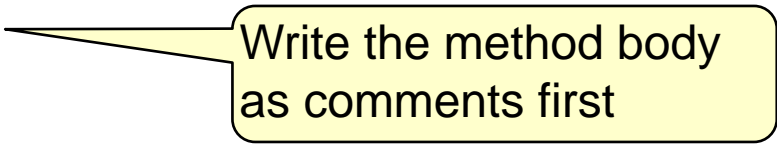
Writing the program

- Need import statements
- Need a class (with a descriptive comment)
- Need a method (with a descriptive comment)

```
import ecs100.*;
import java.awt.Color;

/** Draws little shapes on the graphics pane */
public class Drawer {

    /** Draw an red lollipop with a stick */
    public void drawLollipop() {
        // actions
    }
}
```




Write the method body
as comments first

Writing the program: using comments

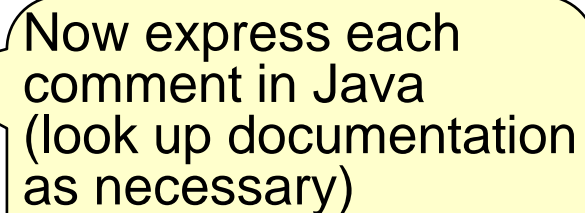
```
import ecs100.*;
import java.awt.Color ;

/** Draws little pictures on the graphics pane */
public class Drawer {

    /** Draw an red lollipop on a stick */
    public void drawLollipop() {
        // set line width to 10
        // draw line      (300,200) to (300, 400)
        // set line width to 1
        // set color to red
        // fill oval      @(260,160) 80x80
    }
}
```



Do it in BlueJ!



Now express each comment in Java (look up documentation as necessary)

Some UI methods

Text:

UI.clearText()

UI.print(*anything*)

UI.askString(*prompt-string*)

UI.askDouble(*prompt-string*)

UI.askBoolean(*prompt-string*)

UI.println(*anything*)

UI.askToken(*prompt-string*)

UI.askInt(*prompt-string*)

UI.printf(*format-string, values...*)

Graphics:

UI.clearGraphics()

UI.drawRect(*left, top, wd, ht*)

UI.drawOval(*left, top, wd, ht*)

UI.drawLine(*x₁, y₁, x₂, y₂*)

UI.drawImage(*file, left, top*)

.....

Eg: Color.red

UI.setColor(*color*)

UI.fillRect(*left, top, wd, ht*)

UI.fillOval(*left, top, wd, ht*)

UI.setLineWidth(*width*)

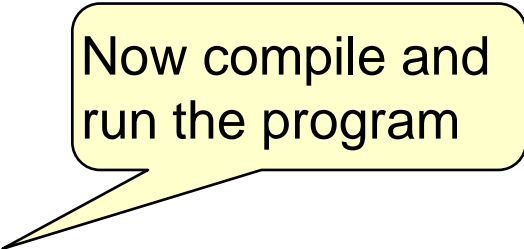
Read the Documentation!

- Full documentation for all the standard Java library code (the "API" : Application Programming Interface)
- Version of Java API documentation on course web site:
 - "Java Documentation" in side bar
 - <http://ecs.victoria.ac.nz/foswiki/pub/Main/JavaResources/javaAPI-102.html>
- Tailored for Comp 102
 - Includes documentation of the ecs100 library: (UI, Trace, etc,)
 - puts most useful classes at the top of the list.
- Use the documentation while you are programming!
 - Control-space in Bluej brings up the options plus documentation.

Writing the program

```
import ecs100.*;
import java.awt.Color ;

/** Draws little pictures on the graphics pane */
public class Drawer {
    /** Draw a lollipop */
    public void drawLollipop() {
        UI.setLineWidth(10);           // set line width to 10
        UI.drawLine(300, 200, 300, 400); // draw line
        UI.setLineWidth(1);           // set line width back to 1
        UI.setColor(Color.red);       // set color to red
        UI.fillOval(260, 160, 80, 80); // draw blob
    }
}
```



Now compile and run the program