Graphics with ecs100.jar
COMP 102

Victoria University of Wellington

Programs with graphics output
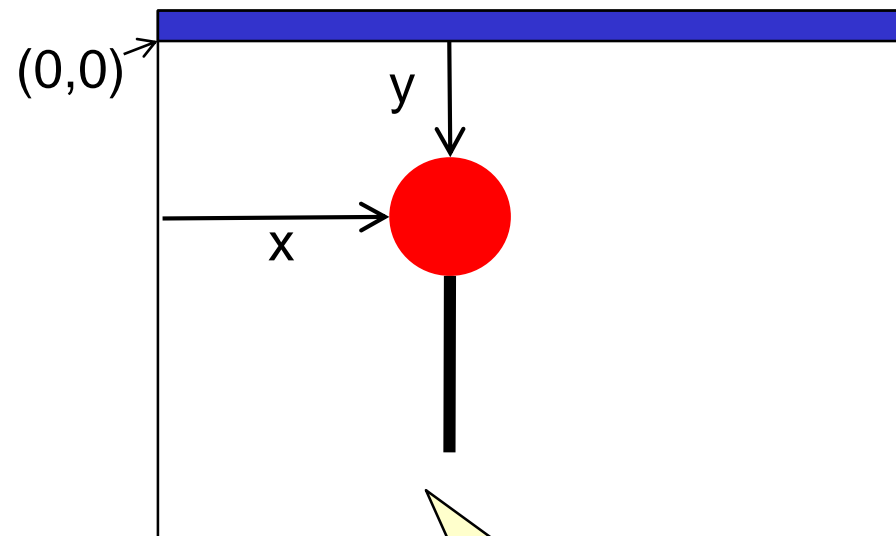
- Write a program to draw a lollipop:

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.

(0,0)

y

x

Coordinates measured from left and top

Writing the program
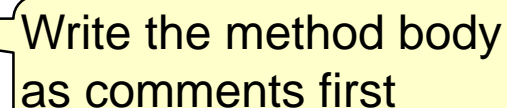
- Need import statements

- 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)

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Some UI methods

Text:

UI.clearText()

UI.print(*anything*)   UI.println(*anything*)   UI.printf(*format-string*, *values*…)

UI.askString(*prompt-string*)   UI.askToken(*prompt-string*)

UI.askDouble(*prompt-string*)   UI.askInt(*prompt-string*)

UI.askBoolean(*prompt-string*)

Graphics:

Eg: Color.red

UI.clearGraphics()   UI.setColor(*color*)   UI.setLineWidth(*width*)

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

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

UI.drawLine(x_1, y_1, x_2, y_2)

UI.drawImage(*file, left, top*)
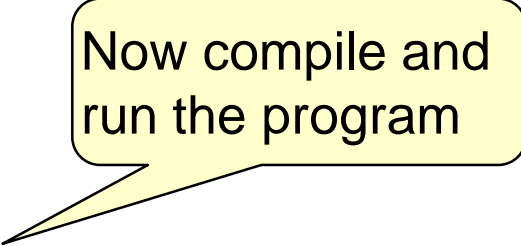
……

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

- 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

```java
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