
Use variables and user input

COMP 102

Victoria University of Wellington

Improving the program: more names

```
public static final double X = 300.0;    // horizontal center of lollipop
public static final double Y = 180.0;    // vertical center of lollipop
public static final double SIZE = 80.0;  // diameter of lollipop
public static final double STICK = 200.0; // length of lollipop stick
```

```
public class Drawer {
```

```
    /** Draw a lollipop */
```

```
    public void drawLollipop() {
```

```
        UI.setLineWidth(SIZE/8.0);
```

```
        UI.drawLine(X, Y, X, Y+STICK);
```

```
        UI.setLineWidth(1);
```

```
        UI.setColor(Color.red);
```

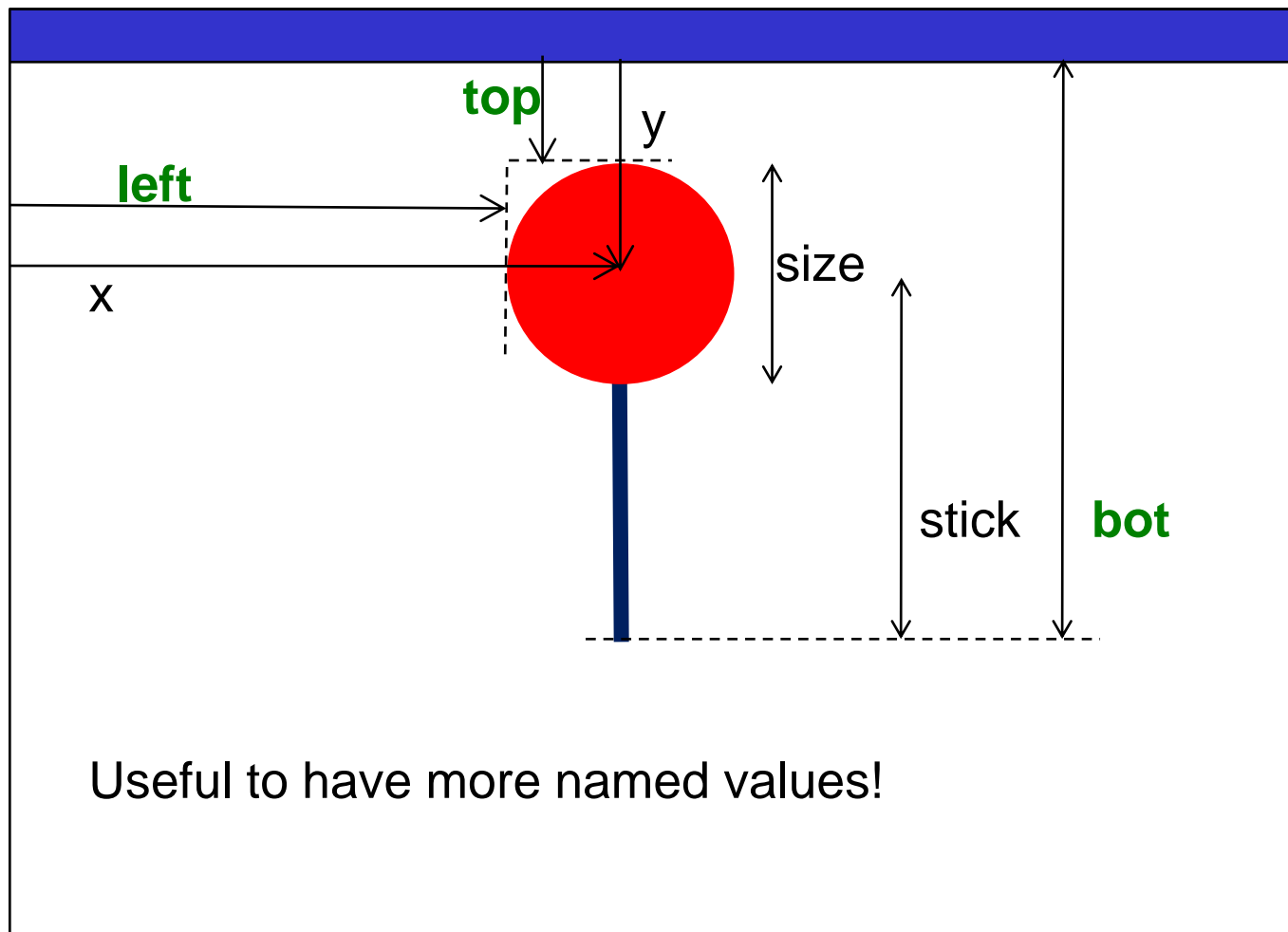
```
        UI.fillOval(X-SIZE/2.0, Y-SIZE/2.0, SIZE, SIZE);
```

```
    }
```

```
}
```

Still have a problem:
What do these expressions mean?

Values to specify lollipop & stick



Improving the program: variables

```
public static final double X = 300.0;    // horizontal center of lollipop
public static final double Y = 180.0;    // vertical center of lollipop
public static final double SIZE = 80.0;  // diameter of lollipop
public static final double STICK = 200.0; // length of lollipop stick
```

```
/** Draw a lollipop */
```

```
public void drawLollipop() {
    double left = X - SIZE/2.0;           // left of lollipop
    double top = Y - SIZE/2.0;           // top of lollipop
    double bot = Y + STICK;              // bottom of stick
    UI.setLineWidth(SIZE/8.0);
    UI.drawLine(X, Y, X, bot);
    UI.setLineWidth(1);
    UI.setColor(Color.red);
    UI.fillOval(left, top, SIZE, SIZE);
}
```

Improving the program: user input

```

public static final double X = 300.0;      // horizontal center of lollipop
public static final double Y = 180.0;      // vertical center of lollipop
public static final double SIZE = 80.0;    // diameter of lollipop
public static final double STICK = 200.0; // length of lollipop stick
public class Drawer {
    /** Draw a lollipop */
    public void drawLollipop() {
        double size = UI.askDouble("Diameter of lollipop:");
        double left = X - size/2.0;         // left of lollipop
        double top = Y - size/2.0;         // top of lollipop
        double bot = Y + STICK;            // bottom of stick
        UI.setLineWidth(size/8.0);
        UI.drawLine(X, Y, X, bot);
        UI.setLineWidth(1);
        UI.setColor(Color.red);
        UI.fillOval(left, top, size, size);
    }
}

```

Principle of good design

- Use well named constants or variables wherever possible, rather than literal values
 - ⇒ easier to understand
 - ⇒ easier to get right
 - ⇒ much easier to modify
- Choosing the *right* constants or variables is an engineering art!!
 - why did I choose “x” instead of “left” ?
 - why did I choose “y” instead of stick bottom?
- We have effectively *parameterised* the drawing
 - Four values (X, Y, SIZE, STICK) control the whole thing.