Smile: a first Java program

Learn the basic structure of a Java program, while writing code to draw a smiley face.

WE'LL COVER THE FOLLOWING

Here is a Java program to draw a circle. We'll dissect it in a minute. First, run it by clicking on the *Run* button below the code.

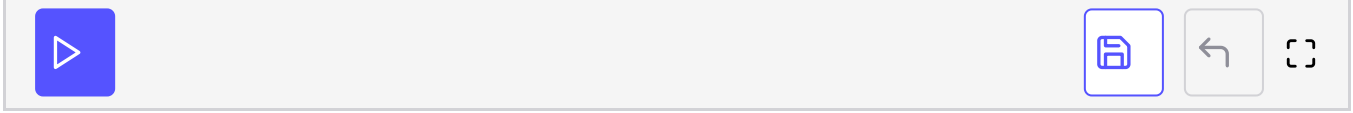
```
// include educative's simple graphics library:
import com.educative.graphics.*;

class DrawCircle {
  public static void main(String[] args) {
    // set up a canvas for drawing:
    Canvas c;
    c = new Canvas(200, 200);

    // call some graphics commands:
    c.fill("yellow");
    c.stroke("black");
    c.circle(100, 100, 50);

    // nothing is actually drawn on the screen until
    // the `draw` method is called:
    c.draw();

  }
}
```



First things to note:

1. Single-line comments begin with `//`.
2. All functions in Java are called *methods*. `c.circle()` calls the method `circle` with the parameters `100`, `50`, `50`, specifying x and y coordinates for the center, and the radius.

3. Some method calls need an object. `circle` needs a Canvas object to draw with. The first few lines set up a reference to a Canvas object in the variable `c`. Then the `c.circle()` method call acts on that canvas object.
4. The method `main` is *defined* using the keywords `public static void`. The method named `main` is special: Java starts running the code at the first line of the method named `main`.
5. Method definitions are grouped into *classes*.
6. Most lines of code end in a semi-colon. Method and class definitions do not.

A first program: smiley

As a warmup, write a program in the next code box that causes a yellow smiley face to be drawn on the screen. You have a 200 by 200 window available.

1. Draw the outline of the face after the comment `// draw the outline of the face`. Don't forget the semi-colons.

2. Draw the eyes. Put your code for drawing the eyes after the line `// draw the eyes`.

3. Bonus challenge: draw the mouth. Hint – draw a circle, and then erase the top part of it by drawing a yellow rectangle that covers the top of the mouth but fits within the face. (Experiment with `c.rect`, which takes four parameters.)

You can test your code with the *Run* button, and click on the second tab to compare to a sample solution when you are done.

Smiley | Sample solution

```
import com.educative.graphics.*;

class Smiley {
  public static void main(String[] args) {
    Canvas c;
    c = new Canvas(200, 200);

    // Draw the outline of the face
```

```
    c.fill("yellow");
    c.stroke("black");
    c.circle(100, 100, 50);


    // draw the mouth

    // draw the eyes

    c.draw();
  }
}
```