GUI Objects Exercise

1. Getting Started
   - Download and test the `Splat.java` (driver), `SplatPanel.java`, and `Circle.java` classes.
   - Review the code to understand it.
   - Incorporate two more circles in the SplatPanel.
   - Change the background color to gray.
   - Increase the size of SplatPanel to 1200x800 or even larger to accommodate more objects that will be added later.

   *In steps 2-4, we will change this to a program that displays smiley faces instead of circles.*

2. Renaming Classes
   We will be turning the circles into smileys. We begin by renaming all the classes as follows:

   **Splat** → **Happiness**
   **SplatPanel** → **HappinessPanel**
   **Circle** → **Smiley**

   **Note:** It is best to create a separate subfolder for the files in this exercise (and nothing else, not even Splat, SplatPanel, and Circle) to avoid problems going forward.

   You will need to rename the constructors in `SplatPanel` and `Circle`. Go through the code in all three classes to make any other changes necessitated by the change of class names (NOTE: Many changes are needed – eliminate all occurrences of SplatPanel and Circle throughout!). Re-compile all the classes and test to make sure everything still works and that the displayed image looks exactly the same as before.

   *In the following steps, we will be turning the circles into smiley faces, but so far they should still look just like circles.*

3. Simplify the Smiley class by eliminating an instance variable
   Determining the position of the eyes and smile will depend on the size of the circle that represents the face, so we will simplify our work by making all the circles have a fixed diameter, say 50 pixels. (If you would like the challenge of adjusting to different diameters, you may omit this step.)
   - In the `Smiley` class, replace `diameter` with a constant named `DIAMETER` (i.e., capitalize its name and add the modifier `final` in the declaration), and set it to 50. Replace `diameter` with `DIAMETER` in the `draw()` method. Eliminate `diameter` from the parameters of the constructor eliminate the accessor and mutator methods for `diameter` altogether, as these no longer make sense.
   - Simplify also the `HappinessPanel` class – the code should no longer give values for the `diameter` parameter of the `Smiley` objects.
Test your program before proceeding; it should still look about the same, except the circles are now all the same size.

4. Drawing a smiley face
In the Smiley class, modify the draw() method so that it adds black ovals and an arc on the circle, so as to make a smiley face.
Recompile the Smiley class and run Happiness again to test your code. You should see smileys where you had circles. You will probably need to make some adjustments to fix lopsided faces or missing eyes (Note: if you miscalculated, they may have ended up outside the circle, so look around!).

5. UML class diagram
Sketch the UML class diagram for the classes the Happiness, HappinessPanel, and Smiley.