CSC 1051 – Graphical Objects Exercise

We will work with the examples from the textbook, section 4.6 to create a class similar to the Circle class.

Step 1
Download and test the Splat.java (driver), SplatPanel.java, and Circle.java classes. Review the code to understand it.

Step 2
Incorporate two more circles in the SplatPanel.

We will next make a program that displays smiley faces instead of circles.

Step 3
Rename all the classes as follows:
Splat → Happiness
SplatPanel → HappinessPanel
Circle → Smiley
  • Note that you will need to rename the constructors in SplatPanel and Circle
  • Go through the code in all three classes to make any other necessary changes necessitated by the change of class names.
  • Re-compile all the classes and run to make sure everything still works and the displayed image looks the same as before.

Step 4
Modify the Smiley draw() method so that it adds black ovals and an arc on the oval that it paints, so as to make a smiley face. Note that, strictly speaking, the positioning of the eyes and smile would depend on the size of the circle, but you can ignore this detail for now by assuming all circles have a fixed diameter (say, 50). Recompile the Smiley class and run Happiness again to test your code.

Step 5
Once you have all of this working, it is time to modify the Smiley class to address the issue of the changing diameter. You have two options:
Option 1: Adjust the positioning of the eyes and mouth relative to the size of the circle. You will need to use the diameter instance variable in computing the position of the black circles and arc.
Option 2: Eliminate the diameter instance variable altogether and replace it by a constant named DIAMETER that is fixed at 50 (or some other value of your choice). You will need to go through the code and eliminate or replace diameter by this constant DIAMETER. Hint: You can use find/replace for some of these, but be sure to consider every replacement and how to modify the code. For example, the mutator method for diameter no longer makes sense and should be eliminated altogether. The constructor should no longer need or accept a size parameter (and where it is used in HappinessPanel should also be adjusted for this change.