

Programming Fundamentals II Sec. 601

Lab Assignment #5

Circle Gallery

Due date: 9/30/20 at 11:59 pm

Purpose: The lab this week focuses on using a custom class within a JavaFX application. This lab focuses on the concepts related to implementing your own custom class and constructing an object of that class.

Task: Create a project called CircleGallery_FirstName_LastName or Lab5_FirstName_LastName. The program will consist of two files: Circle.java and CircleGallery.java. Remember to include comments summarizing the program in the files that you implement.

1. The Circle class has a single field of type double for the diameter of the circle.
2. The Circle class consists of three methods: a constructor that takes no arguments and initializes the circle's diameter to 1.0, a setter that assigns a passed in value (as a String or a double) to the diameter, and a getter that returns the diameter.
3. In CircleGallery, make sure you have the required imports for building a JavaFX application as well as the imports for a TextField, Label, Button, HBox, and VBox. You will also need the Insets class to set the padding of a control later in this program.
4. In the start method of this program, construct an object of the Circle class.
5. Construct a TextField that will be used to accept the user's input for the diameter of the Circle object. Also, construct a Label indicating that this TextField is used for the circle's diameter. Place both of these controls into an HBox.
6. Construct a Button that is used to create the circle in the GUI application.
7. Construct two Labels. The first of these Labels will display the diameter the user entered and the second of these Labels will provide a visual representation of the Circle object.
8. Next, implement the event handler for the Button (this can be accomplished with any technique you prefer).
 - a. When the Button is clicked, first check that the user has entered a value into the TextField. If the user has entered a value, set the diameter of the Circle to the value provided by the user. You may need to parse the String of user input to get a double.
 - b. Then, get that value and display it in the first Label.

- c. The second Label will use the diameter to create a visual representation. This will require setting the padding and making the border visible on the second Label. Starting from the top side and going clockwise, the padding should be $\text{diameter} / 2$, $\text{diameter} / 2 + 8$, $\text{diameter} / 2$, $\text{diameter} / 2 + 8$. To form a circle with the border, use the following style rules:
 - fx-border-style: solid;
 - fx-border-radius: 50%;
9. Place the controls and containers into a VBox in the following order: the HBox with the Label and TextField, the Button, the first output Label with the diameter, and the second output Label with the visual representation. The VBox is the root node of the scene.

Criteria: The comment summarizing the program is worth 5 points. The Circle class is worth 21 points (3 points for the field and 6 points for each of the three methods). Properly importing the necessary classes and constructing the controls and containers for the scene of the application is worth 23 points. Constructing an object of the Circle class is worth 3 points. Properly implementing the behavior for the Button is worth 48 points.