Computer Science 60-212 - Fall 2017

Lab 2 Activities

Activity 1.

Write a Java program to the following tasks. Use Java API Documentation to find suitable String methods to complete the tasks when needed.

- Declare a String variable str.
- Set the value of str to your complete name, one word for your first name (without space) and one word for your last name (without space), having one space between them, and all in lowercase. (Therefore, the format of the String str is something like "xxxxxx xxxxxxxxxx".)
- Display the value of str.
- Display the length of str.
- Extract your first name from str and put it into another String variable, called firstName.
- Do the same for your last name and put it into a String variable, called lastName.
- Declare another String variable, str2, and initialize it with lastName, a comma, a space and then firstName.
- Display str2.
- Display the position (index) of the first occurrence of the last character of your lastname in your firstname.
- Display the position (index) of the last occurrence of the first character of your lastname in your firstname.
- Replace the first character of firstName variable with its uppercase and put it back into firstName variable.
- Do the same for lastName.
- Display firstName and lastName.

***Note that you are not allowed to use fixed numbers to apply the requested tasks. This means that when you do the tasks, assume that you don't exactly know the exact contents of the variables.**

Activity 2.

Copy the following Java program into an IDE of your choice, and save it as `RectangleViewer.java`. Then, try to compile it by fixing all the existing compile-time errors. Then run the program and check the outputs. Then modify the program by fixing the causes of run-time (including logical) errors and test it by compiling and running the program.

```
/*
    A component that draws two rectangles.
*/
public class RectangleComponent extends JComponent {
    public void paintComponent(Graphics g) {
        // Recover Graphics2D
        Graphics2D g2 = (Graphics2D) g;
        // Construct a rectangle and draw it
        Rectangle box = new Rectangle(50, 70, 20, 30);
        g2.draw(box);
        // Move rectangle 15 units to the right and 25 units down
        box.translate(-15, -25);
        // Draw moved rectangle
        g2.draw(box);

    }
}
```

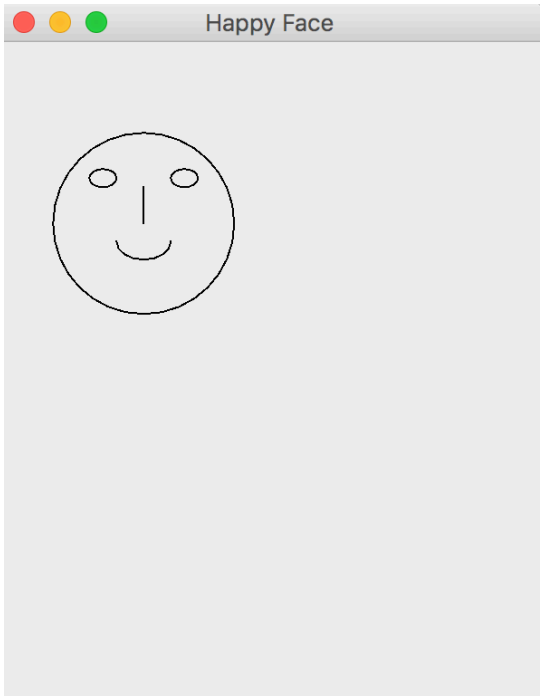
```
/*
    Create a Frame, set size, title and exit button, add a component, and make the frame visible.
 */
public class RectangleViewer {
    public static void main(String[] args) {

        JFrame frame;
        frame.setSize(300, 400);
        frame.setTitle("Two rectangles");
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        RectangleComponent component = new RectangleComponent();
        Frame.add(RectangleComponent);
        frame.setVisible(false);

    }
}
```

Activity 3.

Using the example at the end of Chapter 2 that draws two rectangles on a window frame, update it such that the program prints something similar to the following shape on a frame. You can use Java API Documentation to find suitable classes and their methods to complete the task.



Now, try to translate all the components of this happy face to another place of the frame, say bottom-right corner of the window. You will see that it would be a tedious job, right? In Chapter 3, we will learn how to create a class, for instance for happy face, and then draw it in various places of an existing frame much easier than we are doing in this activity.