

Inner Class GUI Exercise

Instructions

Create an Eclipse Project named **InnerClassGUI** and complete all your work in that project. By the end of the lab you need to upload any of the completed work associated with this exercise set to the submit server (<https://submit.cs.umd.edu/>). Use the submit server project entry named LabWorkSep22-24 to upload a zip file with the Eclipse project. Make sure each person in your group uploads the completed work to the submit server.

Questions regarding the exercise set should be handled ONLY in lab and not in regular office hours or via e-mail. You are welcome to work on the exercise set (that includes working with the persons in your group) after lab, but keep in mind that Sep 24, 6pm is the deadline to upload any completed work to the submit server.

We are considering using these exercise sets as bonus points for homework assignments. More information regarding these bonus points will be provided in lecture.

Exercises

1. Define a class named Factorial that has the following methods:
 - a. Constructor - Factorial(lowerLimit, upperLimit)
 - b. toString() – returns a string with the factorials of numbers starting at lowerLimit (inclusive) and ending at upperLimit (inclusive). For example, for lowerLimit 2 and upperLimit 4 the string returned will be: "2, 6, 24"
2. Expand the Factorial class as follows:
 - a. Make the class implement the Iterable interface
 - b. Use a non-anonymous inner class to implement the iterator.
 - c. Define a main method that uses the Factorial class.
3. A Car class is defined as follows:

```
public abstract class Car {  
    private String make;  
    public abstract void start();  
    public void setMake(String make) { this.make = make; }  
    public String getMake() { return make ;}  
}
```

Complete the assignment statement below so we can define a hybrid car object that has an instance variable representing battery power. In addition the object will be associated with a start() method that decreases the battery power by 100 units. The initial battery power is 3000 units. You must use an anonymous inner class.

```
public static void main(String[] args) {  
    Car Hybrid = // COMPLETE THIS ASSIGNMENT  
}
```

4. The following exercises rely on the code available at:

<http://www.cs.umd.edu/class/fall2008/cmsc132/lectures/GUICode.zip>

- a. Modify the CounterGUI class so the incrementButton relies on an anonymous inner class to increase the value presented.

- b. Add a button (and expected functionality) to the CounterGUI class that resets the value to zero. Feel free to rearrange the GUI as you see fit. One alternative is to use BorderLayout.WEST to place the reset button.
- c. Modify the TextFileReaderFont.TextFileReader GUI so it has a checkbox that allow us to select whether text should be in bold or not. The following link discusses checkboxes:

<http://java.sun.com/docs/books/tutorial/uiswing/components/button.html#checkbox>

- d. Modify the CounterGUI class so the message "Thank you for using our counter" is displayed using JOptionPane.showMessageDialog when the user closes the window. You need to implement a WindowListener. Additional information about WindowListener I can be found at:

<http://java.sun.com/javase/6/docs/api/java/awt/event/WindowListener.html>