Lab 8 (50 pts)

In this lab, you will work with an application which implements the Observer pattern. You will also provide a GUI for the application.

Question 1 (10 pts)

Using Eclipse, create a project called **Lab8_1**.

Copy the file, WTSim1.java into this folder. The program in this file is complete (except for the additional requirements you have to add as described in b)) and should compile and run without errors.

Problem Description

The Java application in WTSim1.java simulates the monitoring by a LevelMonitor , of water levels in a WaterTank. Assume that by level we mean the gallons of water in the watertank.

Class **WaterTank** has a water-capacity to hold water and allows water to flow in and flow out. When the water reaches a critical level, any interested observers should be notified. This will be the model in your application and is the Observable.

Class **LevelMonitor** monitors the water levels in a water-tank. If the water-level reaches a critical level, it displays an alert. LevelMonitors are Observers and currently they display the alert on the console.

Compile, run and test your program.

Examine the code and answer the following questions (5 + 5 + 10 pts)

a) When the water level in a WaterTank object changes, how is a LevelMonitor object notified?

b) On notification, name the method in the LevelMonitor that is called?

c) Add code to the relevant class(es) to count the no. of times, the CRITICAL_LEVEL is reached. Show the count.

Question 2 (40 pts)

Create a project called **Lab8_2**.

Copy the file, WTSim2.java into this folder. In this exercise, you must provide a GUI to the WTSim1 program from Q2. When the FLOW-OUT button is pressed, the flow-out() of WaterTank should be called; similarly, when FLOW-IN button is pressed, flow-in() of WaterTank object must be called and implement a feature such that the output appears on the GUI. For example, you may place a JLabel and update the text of the label with the output. You are free to use any other GUI widget you may choose to show the output.
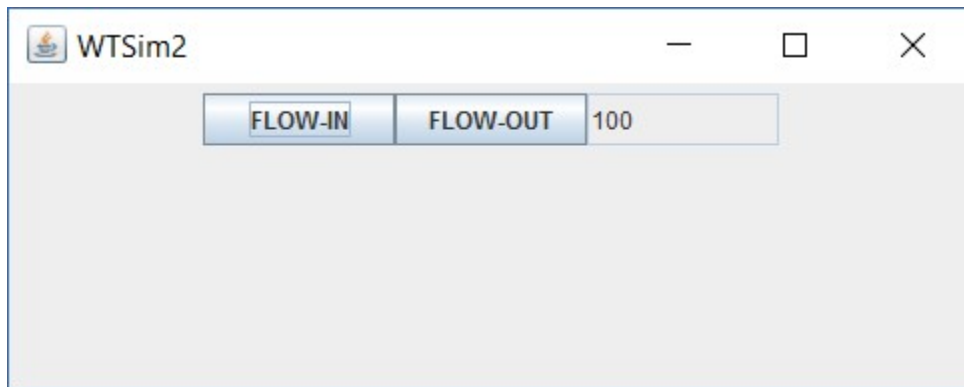
You must complete the code segments using the comments given in the program, WTSim2.java.

Submit: WTSim1.java and WTSim2.java