

JC2002 Java Programming - Practical 6 (Day 7)

The goal of this practical is to get familiar with Swing library and implementing graphical user interfaces in Java. In this practical, we will just play around with dummy GUIs, in the next practical, we will add the functionality in the GUI.

1. First, you need to prepare your Codio environment for GUI based output. If your Codio Box does not have X server installed already, select **'Tools' -> 'Install Software'** from the menu, and then install **'X server'** from the list of available software to install. After successful installation, you need to restart the Codio Box.

Second, you may need to reconfigure the viewer to display your GUI. The viewer is a special window appearing inside Codio or in a separate browser tab. It may be automatically added as **'Virtual Desktop'**, but if not, you can add it manually by following the instructions below.

Choose the menu item for the viewer (the item with a globe icon and text **'Project Index (static)'** or something else), and there **'Configure'**. In the section *"preview"*, add the following line:

```
"Virtual Desktop": "https://{{domain3050}}/"
```

Now, there should be an option **'Virtual Desktop'** available in the menu, and you can choose it to open the viewer for your GUI.

2. Test running Swing GUI by compiling and running the Swing Hello World application (with class **FrameTest**) introduced in the lecture slides. A window displaying text "Hello World" should appear in the viewer. You can try to resize the window and move it around using the mouse. You can also use **setSize()** method of **JFrame** object with different parameters to get an idea how the units relate to actual window size in the viewer.
3. In the next phase, the task is to implement a graphical version of the calculator. First, create **GraphicalCalculator** class. In its **main()** method, create an instance of the class and invoke the method of your choice to create the user interface (you can do that even in the constructor). Note that it is not necessary to use **invokeLater()** method for launching a Swing application as in the "Hello World" example, although it is typically recommended.

In the method creating the user interface, create seven GUI components: **JTextField** for writing the numerical input, and six **JButton** buttons: "Clear", "Add", "Subtract", "Multiply", "Divide", and "Result". You can use any layout you prefer, but a simple option is just to stack the components vertically using **GridLayout(7,1)**, as shown in the Figure in the next page. If you wish, you can try different layouts to make it look better.

In this practical, we do not implement any functionality in the calculator yet. In the next practical, we will extend the calculator to compute and display the actual results.

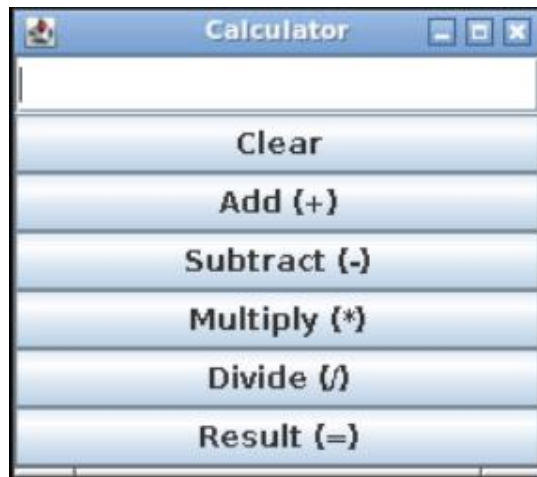


Figure 1. Example layout for the practical.