

Lab 9: Graphical User Interface

Objectives

- Learn about Java Graphic User Interface (GUI) programming.
- Define how each component and container is used.
- Illustrate how components and containers are assembled into applications.
- To use the layout managers to layout components in a container.

Theory

In Java there are two levels of graphics programming:

1. awt (abstract window toolkit) -- which contains the definitions for containers and components, graphics figures, fonts, and fontmetrics. To use the awt package the program must have the following: **import java.awt.*;**
2. swing components -- contains more platform independent GUI components (frames, buttons, etc) which are not as subject to platform-specific problems. Swing component names are similar to the awt components except that the component name is preceded by a capital "J". To use the swing package the program must have the following: **import javax.swing.*;**

There are *three* categories (Classes) of GUI objects:

1. Container Classes: Such as: JFrame, JPanel, JApplet, JDialog.
2. Helper Classes: Such as: Graphics, Color, Font and FontMetrics.
3. Component Classes: Such as: JLabel, JTextField, JButton, JCheckBox, JComboBox, ...etc

Any container should have a LayoutManager to automatically control placement of components in a Container after that components can be added to the container.

Syntax

To create a GUI Applications you have to:

1. Instantiate a container as the following example:

```
Container container = new JFrame();
```
2. Then you have to instantiate components, for example:

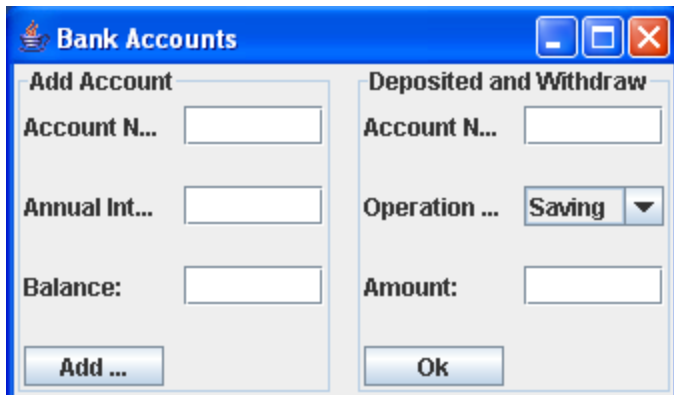
```
JButton jbt = new JButton("Text"); // Create a Button
JLabel jlbl = new JLabel("Text"); // Creates a Label
JTextField jtf = new JTextField("Text "); // Creates Text Field
JCheckBox jchk = new JCheckBox("Text "); // Create Check Box
JRadioButton jrb = new JRadioButton("Text "); // Creates Radio Button
JComboBox jcho = new JComboBox(new String[]{"value1",
"value2", "value3"}); // Creates Combo Box
```
3. Set the properties of the components, such as:

```
jbt.setColor(new Color(Color.red)); // Color the Button with red
```
4. Add the components to the container using the add component method:

```
public void add(Component c);
```

Exercises

1. Redesign and implement a version of Exercise 1 from Lab3 so that it uses a GUI. The cashier window should appear as follows.



2. Redesign and implement a version of Exercise 2 from Lab3. Your frame should include two panels one to add an employee, in this panel you should ask the user to enter all the employee information. And in the other panel the user will enter the employee Name to get the employee information.
3. The owner of the Pizza shop in exercise 3 Lab 8 asked you to create a Graphical User Interface to be able to make orders in the Pizza shop. The Order window should appear as follows.

