

The Swing library is the main way to develop GUIs in Java. The Swing library can be used with the AWT library and their components can be mixed to make the GUI. The Swing library has many components that allow the programmer to get input from the user. The library consists of 17 packages but the ones that will be used the most are `javax.swing` and `javax.swing.event` because they contain most of the basic commands one needs. The Swing library is used for many reasons, and the first is that it is extendable. A programmer is able to plug in various custom pieces into the interface. Second it is highly customizable. Using the Swing library, the programmer has a lot of control over the GUI, from how it is laid out to what components it's made of.

To use the Swing library one makes a new window which is done by making a `JFrame` object which will hold the GUI. Then one sets the frame's layout manager to organize how the GUI is made and what the final GUI will look like. Finally, one adds components to these layouts to add actual content to the GUI.

There are several layout managers available. In the Border layout, the window is split into 5 regions: North, South, East, West, and Center. One can set this layout, for example, by using `.setLayout(new BorderLayout())`. Then, one can add components with `.add(component, BorderLayout.NORTH)`. The Flow Layout is another simple layout. It places components from left to right. There is no special syntax to add anything. You can set this layout by doing `.setLayout(new FlowLayout())`. The Grid Layout has a similar flow from left to right, however, you add components to cells of equal size. You do need to define how many rows and columns are in the grid. You can make one by doing `setLayout(new GridLayout(r,c));`. You add components left to right, top to bottom.

The Swing library uses components that are the meat of the GUI, the part that gets the user input and displays output. Some of the basic components are `JButton`, which puts a button in the GUI; `JCheckBox`, which makes a list in which the user can select which ones he or she wants to input, and finally `JComboBox`, which is where you can select one choice out of many listed. There are many of these components, but these are just some of the ones you can use.

#### Example Swing Code:

```
//make the JFrame
JFrame f = new JFrame("Swing Example Window");

//Set the layout manager to BorderLayout
f.setLayout(new BorderLayout());

//Add a JLabel component to the JFrame
f.add(new JLabel("Hello, world!"), BorderLayout.NORTH);

//Make the JFrame visible
f.setVisible(true);
```