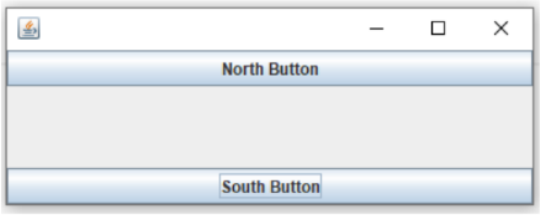
Lesson 16: Advance GUI

1. A layout manager is an object that controls the size and position (that is, the layout) of components inside a Container object. The layout manager that you assign to the window determines how the components are sized and positioned within the window.

Layout Manager	When to Use
`BorderLayout`	Use when you add components to a maximum of five sections arranged in north, south, east, west, and center positions.
`FlowLayout`	Use when you need to add components from left to right; `FlowLayout` automatically moves to the next row when needed, and each component takes its preferred size.
`GridLayout`	Use when you need to add components into a grid of rows and columns; each component is the same size.
`CardLayout`	Use when you need to add components that are displayed one at a time.
`BoxLayout`	Use when you need to add components into a single row or a single column.
`GridBagLayout`	Use when you need to set size, placement, and alignment constraints for every component that you add.

2. Border Layout Manager- is the default manager class for all content panes. You can use the BorderLayout class with any container that has five or fewer components. When you use the BorderLayout manager, the components fill the screen in five regions: north, south, east, west, and center.

```
private JButton nb = new JButton("North Button");
private JButton sb = new JButton("South Button");
setLayout(new BorderLayout());
add(nb, BorderLayout.NORTH);
add(sb, BorderLayout.SOUTH);
```



3. FlowLayout Manager - class to arrange components in rows across the width of a Container—you used FlowLayout with the content panes of JFrames. With FlowLayout, each Component that you add is placed to the right of previously added components in a row; or, if the current row is filled, the Component is placed to start a new row.

   The FlowLayoutclass contains three constants you can use to align Components with a Container:

   a) FlowLayout.LEFT
   b) FlowLayout.CENTER
   c) FlowLayout.RIGHT

4. GridLayout Manager- used to arrange components into equal rows and columns. When you create a GridLayout object, you indicate the numbers of rows and columns you want, and then the container surface is divided into a grid, much like the screen you see when using a spreadsheet program.

```
con.setLayout(new GridLayout (4, 5));
```

Example

```
private JButton b1 = new JButton("Button 1");
private JTextField t1 = new JTextField(10);
private JButton b3 = new JButton("Button 3");
private JTextField t2 = new JTextField(10);
// 3 rows, 2 columns, 5horizontal gap, 5 vertical
gap
private GridLayout layout = new GridLayout(3, 2,
5, 5);
        setLayout(layout);
add(b1);
add(t1);
add(b3);
add(t2);
```