Experiment No. 9

Aim: Implementation of Layout Managers.

Problem Statement:

1. Write a Program to demonstrate use of GridLayout Manager.
2. Write a Program to demonstrate use of BorderLayout and FlowLayout Managers.

Theory:

Layout means the arrangement of components within the container. In other way we can say that placing the components at a particular position within the container. The task of layout the controls are done automatically by the Layout Manager.

Layout Manager

The layout manager automatically positions all the components within the container. If we do not use layout manager then also the components are positioned by the default layout manager. It is possible to layout the controls by hand but it becomes very difficult because of the following two reasons.

- It is very tedious to handle a large number of controls within the container.
- Often the width and height information of a component is not given when we need to arrange them.

Java provides us with various layout managers to position the controls. The properties like size, shape and arrangement varies from one layout manager to other layout manager. The layout manager is associated with every Container object. Each layout manager is an object of the class that implements the LayoutManager interface.

1. Border Layout

- The BorderLayout is used to arrange the components in five regions: north, south, east, west and center.
- Each region (area) may contain one component only.
- It is the default layout of frame or window.

The BorderLayout provides five constants for each region:

1. **public static final int NORTH**
2. **public static final int SOUTH**
3. **public static final int EAST**
4. **public static final int WEST**
5. **public static final int CENTER**

Constructors of BorderLayout class:

- **BorderLayout():** creates a border layout but with no gaps between the components.
- **JBorderLayout(int hgap, int vgap):** creates a border layout with the given horizontaland vertical gaps between the components.

2. GridLayout

The GridLayout is used to arrange the components in rectangular grid. One component is displayed in each rectangle.

Constructors of GridLayout class

1. **GridLayout():** creates a grid layout with one column per component in a row.
2. **GridLayout(int rows, int columns):** creates a grid layout with the given rows and columns but no gaps between the components.
3. **GridLayout(int rows, int columns, int hgap, int vgap):** creates a grid layout with the given rows and columns alongwith given horizontal and vertical gaps.

3. FlowLayout

The FlowLayout is used to arrange the components in a line, one after another (in a flow). It is the default layout of applet or panel.

Fields of FlowLayout class

1. **public static final int LEFT**
2. **public static final int RIGHT**
3. **public static final int CENTER**
4. **public static final int LEADING**
5. **public static final int TRAILING**

Constructors of FlowLayout class

1. **FlowLayout():** creates a flow layout with centered alignment and a default 5 unit horizontal and vertical gap.
2. **FlowLayout(int align):** creates a flow layout with the given alignment and a default 5unit horizontal and vertical gap.
3. **FlowLayout(int align, int hgap, int vgap):** creates a flow layout with the given alignment and the given horizontal and vertical gap.

Conclusion:

Layout manager are used to arrange components within the container. It automatically places the control at a particular position within window.