Use the FlowLayout Manager

This practice is an extension to the practices in Chapter 16. It steps through the use of the FlowLayout manager. The steps assume that you have created the application workspace as described in Phase I of the practice. In addition, you need to create a separate project with new Java application and frame files also as described in Phase I of the practice. (The steps are not repeated in this phase of the practice.) When following the instructions to set up the project, create a Client3 project and substitute FlowLayout where the instructions mentions BorderLayout. Name the application file "FlowLayoutApp." Alternatively, you can begin this practice by using the starting files for this chapter available on the authors' websites mentioned at the beginning of the book.
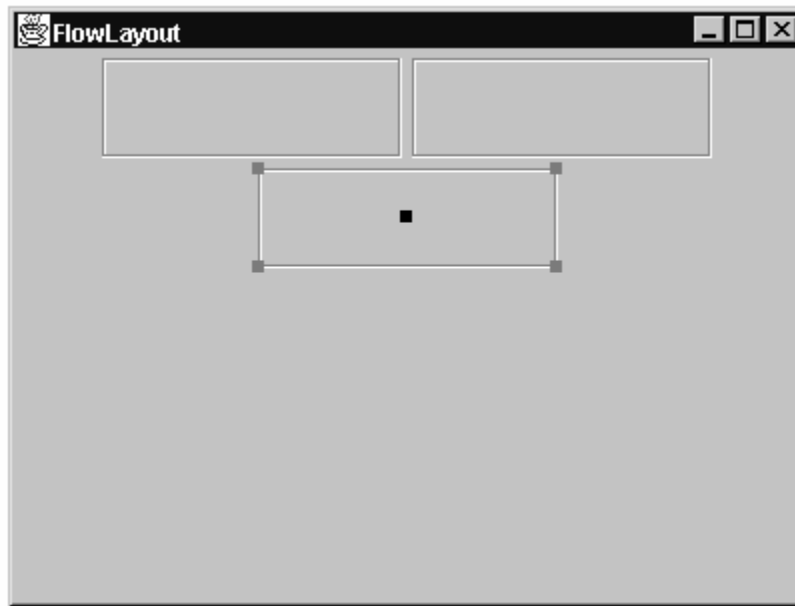
Add the Components

The first set of steps adds the components to the frame.

1. Double click the frame file (FlowLayoutFrame.java) in the navigator to display the visual editor (click the Design tab if you do not see the visual editor).

2. Change the *layout* property for "this" from the default to BorderLayout. The name will change to "borderLayout1."

3. In the Swing Containers page of the Component Palette, click the JPanel component. Drag the cursor to the visual editor and drop the component when the lower left corner of the IDE status bar reads "this (BorderLayout): Center."

4. Change the name of the new panel (called jPanel1 by default) to "mainPanel" using the Property Inspector *name* property.

5. Change the *layout* for mainPanel from the default to "FlowLayout" This creates the layout manager for this panel. Confirm that the *constraints* property is set to "Center."

> Tip: Since the default layout manager for a JPanel object is FlowLayout, selecting "FlowLayout" in the "layout" property may not change the value. If this happens, change the value to another layout manager such as "BorderLayout" and then to "FlowLayout."

6. Click the JPanel component in the Swing Containers page of the Component Palette. Drop it on mainPanel in the visual editor when the IDE status bar reads "mainPanel (FlowLayout) z: 0." This indicates you will drop the component into the first position of the mainPanel. The new panel will appear as a small square selected in the visual editor.

7. Change the *preferredSize* property to "150, 50." Press ENTER. Although there is no border yet, you will see the corners of the new panel resize in the visual editor.

8. Click jPanel1 and select "Swing Border" in the *border* property of the Property Inspector. Change the *border* property to "EtchedBorder" and select "LOWERED." Click OK to dismiss the border editor. The border allows you to see the edges of the panel.

9. Repeat step 6 and drop the component to the right of the existing panel (the IDE status bar will show "mainPanel (FlowLayout) z: 1).

10. Repeat step 7 and 8 to resize and add a visible border to the new panel.

11. Look at the panels in the UI Editor. The panels appear side by side because the layout manager's rules place new objects in the same row.

12. Click Save All. Click Rebuild and run the FlowLayoutApp file.

13. Resize the window so the right side of the frame is on top of the rightmost panel. The layout manager will wrap the panel to the next row. This is an effect that this layout manager provides.

14. Try resizing the window so that the bottom side of the frame is on top of the bottom panel. The layout manager does not resize the components to account for this action. Therefore, the bottom component will not be fully visible.

15. Close the application and add another panel to mainPanel using the techniques in steps 6–8. The new panel will wrap to the next line, as shown here:
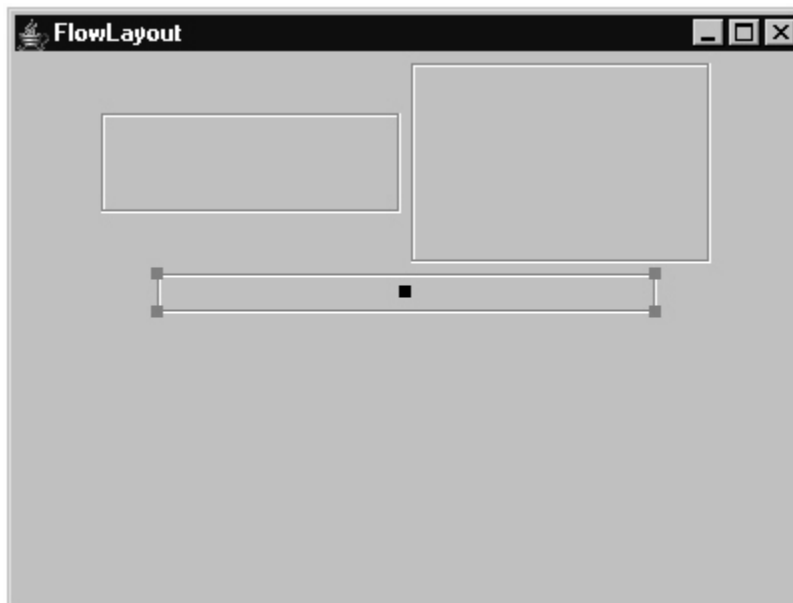
16.   Click Save All and Rebuild. Run the FlowLayoutApp file. You see the same effects as before when you resize the window. If you increase the width of the window sufficiently, the second row's panel moves up to the first row.

Change the Component Sizes
The next set of steps uses the Property Inspector to change the component sizes.

1.   Click the second panel in the UI Editor and change its *preferredSize* to "150, 100" to increase its height. The first component moves down because the height of the row is taken from its highest component (the second panel). This is another effect of this layout manager.

2.   Click the third panel and change its *preferredSize* property to "250, 20." The designer should appear as follows:

3.   Click Save All and Rebuild. Run the application file. Move the right side of the window in to the left until the tall panel moves to the second row. The top row component will move up because the first row is now shorter.

4.   Move the right side out so that all components appear on the first row. The row height will resize to accommodate the highest component.

5.   Move the right side, trying to keep all components on the first row. The components will always be centered within the available space. This is another function of this layout manager. Close the application.
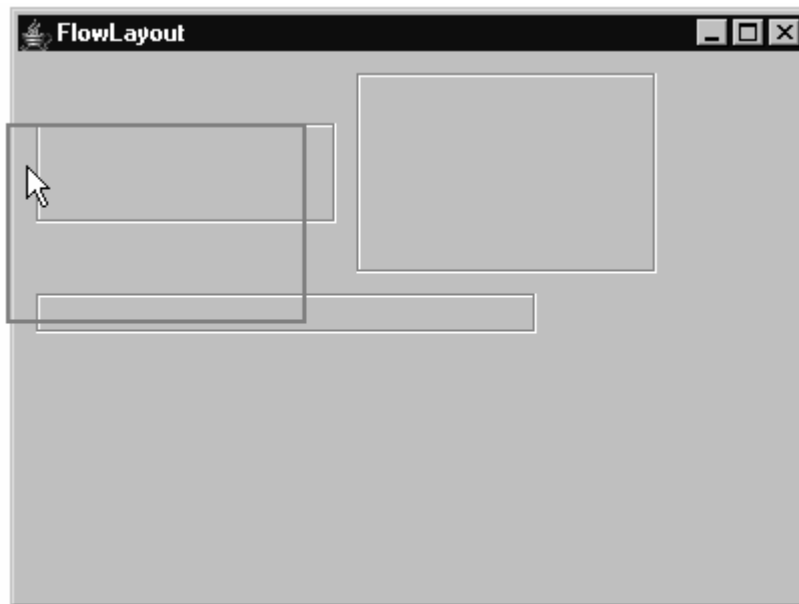
Try Some Variations

You can try a few things to test more of the capabilities of this layout.

1. Click the flowLayout1 node (the layout manager object for the panel) under main Panel in the Structure window.
    Additional Information: The layout manager properties appear in the Property Inspector. The *alignment* property is set to "1" by default. This indicates that the components will be centered within the width of the row.

2. Change *alignment* to "2." This right justifies the components within the container. Although you will be able to see the effect of this change in the visual editor, you can also run the application to verify how the window contents react when the window is resized.

3. Change the *alignment* to "0." This left justifies the components.

4. Change the *hgap* property to "10." The effect is to increase the horizontal space between the left side of one component and the right side of the next. Increase the *vgap* property to "10" to increase the vertical space between rows of components.

    > Note: After you change a property value, be sure to press ENTER or click the mouse in another property to apply the new value.

5. Click Save All and Rebuild. Run the application file. The gaps and alignments are preserved regardless of how you resize or move the window. Close the application.

6. Drag the first panel after the second panel in the visual editor. The order of the panels will change in the Structure window.
    Additional Information: This shows that the order of the components in the Structure window will determine the layout within the container. You can also cut and paste objects in the Structure window to reorder them. Drag and drop within the Structure window is not supported.

7. Tip: Dragging and dropping components to change their order takes some practice. For example, you accomplish the task in the preceding step, you need to overlay the second component on top of the first component (before dropping it) as shown here:

 WHAT JUST HAPPENED?

You defined a FlowLayout manager and added panels to it. You also resized the components and set the alignment and gap properties to experience the effects of the layout manager's placement logic. Experiment more with the component sizes and layout properties if you need more practice with this layout.