1. Temperate VI

Design and execute a VI which converts Celsius temperatures to Fahrenheit. The equation of Fahrenheit to Celsius $F^{o} = 9/5 C^{o} + 32$. Save your VI as C-to-F.vi

Here's the Front Panel:

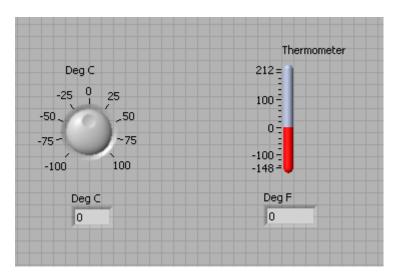


2. Temperature Sub VI

Change this VI to a sub VI (See the Appendix for how to make this change) Save your VI as C-to-F sub.vi

3. Temperature VI Upgrade

a. Upgrade your Temperature conversion VI to add a thermometer indicator and a knob input. Also include readouts with both the indicator and knob. Here is the front panel:



b. Use the Temperature Sub VI you built in step 2 as the engine for this VI.

c. Use a WHILE statement to have continuous readouts. This will add a Stop button to your front panel. Save this VI as C-to-F super.vi

Exercise 2a - Create a SubVI

Front Panel

1. Select **File**»**Open** and navigate to c:\exercises\LV Intro to open the Convert C to F VI.

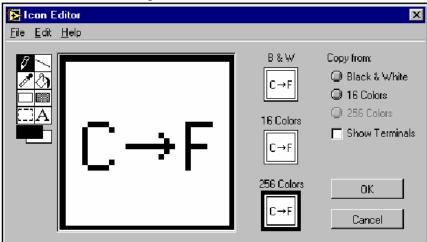
If you closed all open VIs, click the **Open...** button on the **LabVIEW** dialog box

Tip Click the arrow next to **Open...** button on the **LabVIEW** dialog box to open recently opened files, such as Convert C to F.vi.

The following front panel appears.



- 2. Right-click the icon in the upper right corner of the front panel and select **Edit Icon** from the shortcut menu. The **Icon Editor** dialog box appears.
- 3. Double-click the Select tool on the left side of the **Icon Editor** dialog box to select the default icon.
- 4. Press the <Delete> key to remove the default icon.
- 5. Double-click the Rectangle tool to redraw the border.
- 6. Create the following icon.



- a. Use the Text tool to click the editing area.
- b. Type C and F.
- c. Double-click the Text tool and change the font to **Small Fonts**.
- d. Use the Pencil tool to create the arrow.

Note To draw horizontal or vertical straight lines, press the <Shift> key while you use the Pencil tool to drag the cursor.

- e. Use the Select tool and the arrow keys to move the text and arrow you created.
- f. Select the **B&W** icon and select **256** Colors in the Copy from field to create a black and white icon, which LabVIEW uses for printing unless you have a color printer.

- g. When the icon is complete, click the **OK** button to close the **Icon Editor** dialog box. The icon appears in the upper right corner of the front panel and block diagram.
- 7. Right-click the icon on the front panel and select **Show Connector** from the shortcut menu to define the connector pane terminal pattern.

 LabVIEW selects a connector pane pattern based on the number of controls and indicators on the front panel. For example, this front panel has two terminals, **deg C** and **deg F**, so LabVIEW selects a connector pane pattern with two terminals.
- 8. Assign the terminals to the digital control and digital indicator.
 - a. Select **Help**»**Show Context Help** to display the **Context Help** window. View each connection in the **Context Help** window as you make it.
 - b. Click the left terminal in the connector pane. The tool automatically changes to the Wiring tool, and the terminal turns black.
 - c. Click the **deg** C control. The left terminal turns orange, and a marquee highlights the control.
 - d. Click an open area of the front panel. The marquee disappears, and the terminal changes to the data type color of the control to indicate that you connected the terminal.
 - e. Click the right terminal in the connector pane and click the **deg F** indicator. The right terminal turns orange.
 - f. Click an open area on the front panel. Both terminals are orange.
 - g. Move the cursor over the connector pane. The **Context Help** window shows that both terminals are connected to floating-point values.
- 9. Select **File**»Save to save the VI because you will use this VI later in the course.
- 10. Select **File**»Close to close the Convert C to F VI.

End of Exercise