

## 1. Temperate VI

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

Here's the Front Panel:

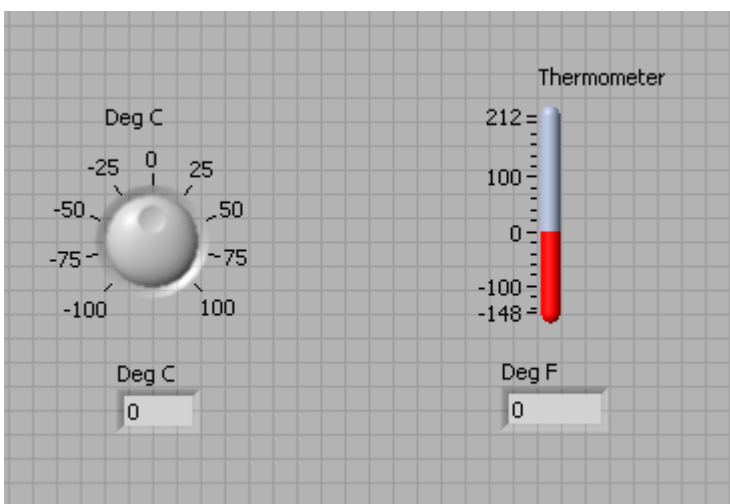


## 2. Temperature Sub VI

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

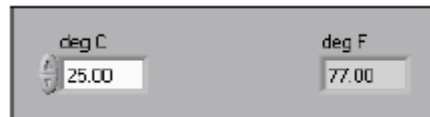
### Front Panel

1. Select **File**»**Open** and open the program you want to convert to a subVI (e.g., in part 1 you saved the program as C-to-F.vi).

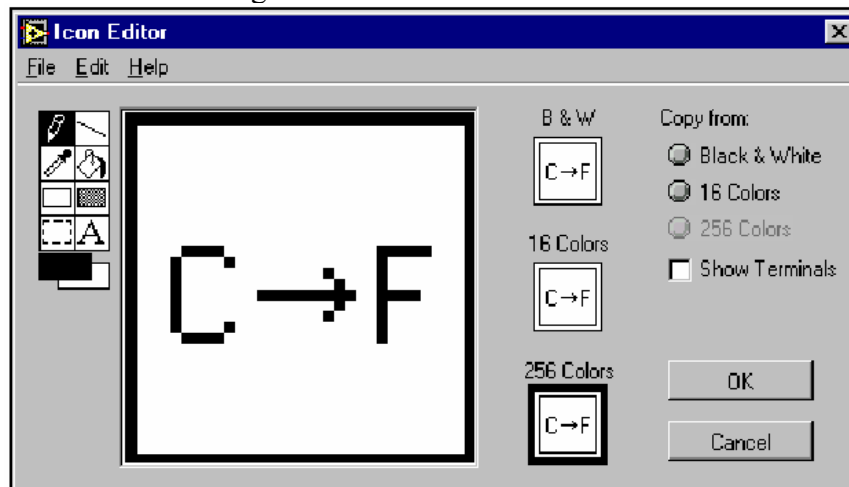
If you closed all open VIs, click the **Open...** button on the **LabVIEW** dialog box.

**Tip** Click the arrow next to **Open...** button on the **LabVIEW** dialog box to open recently opened files, such as 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.
  - h. Select **Help»Show Context Help** to display the **Context Help** window. View each connection in the **Context Help** window as you make it.
  - i. Click the left terminal in the connector pane. The tool automatically changes to the Wiring tool, and the terminal turns black.
  - j. Click the **deg C** control. The left terminal turns orange, and a marquee highlights the control.
  - k. 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.
  - l. Click the right terminal in the connector pane and click the **deg F** indicator. The right terminal turns orange.
  - m. Click an open area on the front panel. Both terminals are orange.
  - n. 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