Concept: Type Definition

Goal

Explore the differences between a type definition and a strict type definition.

Implementation

The files that you need to complete this exercise are here:
`<NI eLearning>\LV Core 1\Type Definitions\Exercise`.

1. Open a blank VI.
2. Create a custom control with a strict type definition status.
   - ❑ Add a numeric control to the front panel window and rename it as `Strict Type Def Numeric`.
   - ❑ Right-click the control and select **Advanced»Customize** from the shortcut menu to open the Control Editor.
   - ❑ Select **Strict Type Def.** from the **Control Type** pull-down menu.
   - ❑ Right-click the numeric control and select **Representation» Unsigned Long** from the shortcut menu.
   - ❑ Select **File»Save**.
   - ❑ Name the control `Strict Type Def Numeric.ctl` in the `<Exercise>` directory.
   - ❑ Close the Control Editor window.
   - ❑ Click **Yes** when asked if you would like to replace the original control.
3. Explore the strictly defined custom numeric.
   - ❑ Right-click the **Strict Type Def Numeric** control and select **Properties** from the shortcut menu. Notice that the only options available are Appearance, Documentation, and Key Navigation. All other properties are defined by the strict type definition.
   - ❑ Click **Cancel** to exit the **Properties** dialog box.
   - ❑ Right-click the **Strict Type Def Numeric** control again. Notice that representation is not available on the shortcut menu. Also notice that you can open the type definition or disconnect from the type definition.

4. Edit the strict type def control.
   - ❑ Right-click the **Strict Type Def Numeric** control and select **Open Type Def.** from the shortcut menu.
   - ❑ Right-click the numeric control and select **Representation»DBL** from the shortcut menu in the Control Editor window.
   - ❑ Select **File»Save**.
   - ❑ Close the Control Editor window.
   - ❑ Select **Help»Show Context Help** to open the Context Help window.
   - ❑ Hover your mouse over the control on the VI and notice that it changed from a U32 numeric data type to a DBL numeric data type.
   - ❑ Right-click the **Strict Type Def Numeric** control and select **Open Type Def.** from the shortcut menu.
   - ❑ Change the physical appearance of the numeric control by resizing it in the Control Editor window.
   - ❑ Select **File»Save**.
   - ❑ Close the Control Editor window.
   - ❑ Notice that editing the strict type def control updates the size of the numeric control on the VI front panel.
5. Create a custom control with a type definition status.
   - ❑ Add another numeric control to the front panel window and rename it as `Type Def Numeric`.
   - ❑ Right-click the control and select **Advanced»Customize** from the shortcut menu to open the Control Editor.
   - ❑ Select **Type Def.** from the **Control Type** pull-down menu.
   - ❑ Right-click the numeric control and select **Representation» Unsigned Long** from the shortcut menu.
   - ❑ Select **File»Save**.
   - ❑ Name the control `Type Def Numeric.ctl` in the `<Exercise>` directory.

- ❑ Close the Control Editor window.
- ❑ Click **Yes** when asked if you would like to replace the original control.

6. Explore the type defined custom numeric.
   - ❑ Right-click the **Type Def Numeric** control and select **Properties** from the shortcut menu. Notice that more items are available, such as Data Entry and Display Format.
   - ❑ Click **Cancel** to exit the **Properties** dialog box.
   - ❑ Right-click the **Type Def Numeric** control again. Notice that **Representation** is dimmed on the shortcut menu because the type definition defines the data type. Also notice that you can choose whether to auto-update with the type definition.
7. Edit the type def control.
   - ❑ Right-click the **Type Def Numeric** control and select **Open Type Def.** from the shortcut menu.
   - ❑ Right-click the Type Def Numeric control and select **Representation» DBL** from the shortcut menu in the Control Editor window.
   - ❑ Select **File»Save**.
   - ❑ Close the Control Editor window.
   - ❑ Select **Help»Show Context Help** to open the Context Help window.
   - ❑ Hover your mouse over the Type Def Numeric control on the VI and notice that it changed from a U32 numeric data type to a DBL numeric data type.
   - ❑ Right-click the **Type Def Numeric control** and select **Open Type Def.** from the shortcut menu.
   - ❑ Change the physical appearance of the numeric control by resizing it in the Control Editor window.
   - ❑ Select **File»Save**.

- ❑ Close the Control Editor window.
- ❑ Notice that resizing the type def control in the Control Editor did not update the size of the Type Def Numeric control on the VI front panel. Instances of a type def control will only update when the data type of the type definition changes.

8. Add another instance of the custom control to the front panel window and disconnect it from the type definition.
   - ❑ Select **Select a control** from the **Controls** palette.
   - ❑ Select the `Type Def Numeric.ctl` from the `<Exercise>` directory.
   - ❑ Click **OK**.
   - ❑ Right-click the new control and select **Disconnect from Type Def.** from the shortcut menu.
   - ❑ Click **OK**.
   - ❑ Right-click the control again and notice that you can now change the **Representation** because the numeric is no longer linked to the type definition.
9. Close the VI when you are finished. You do not need to save the VI.

End of Exercise

Notes