

LabVIEW Training

MODULE 2 – LabVIEW DataTypes / While Loop

Numeric Data Types

■ Floating Point / Integers

- Float can have fractions, integers are whole numbers

■ Each has different sizes indicating how much memory they consume and the range of values they store

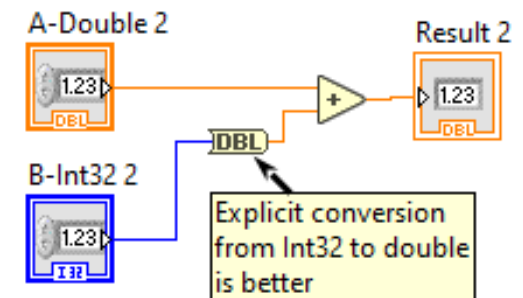
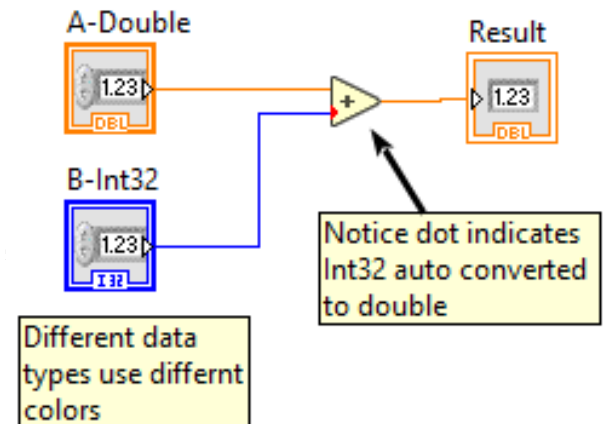
■ Robot programming most often uses

- Int32 (32 bit integer +/- 2^{31})
- Double (floating 64bit, approx 15 dig precision exponent approx +/- 308)

■ LabVIEW

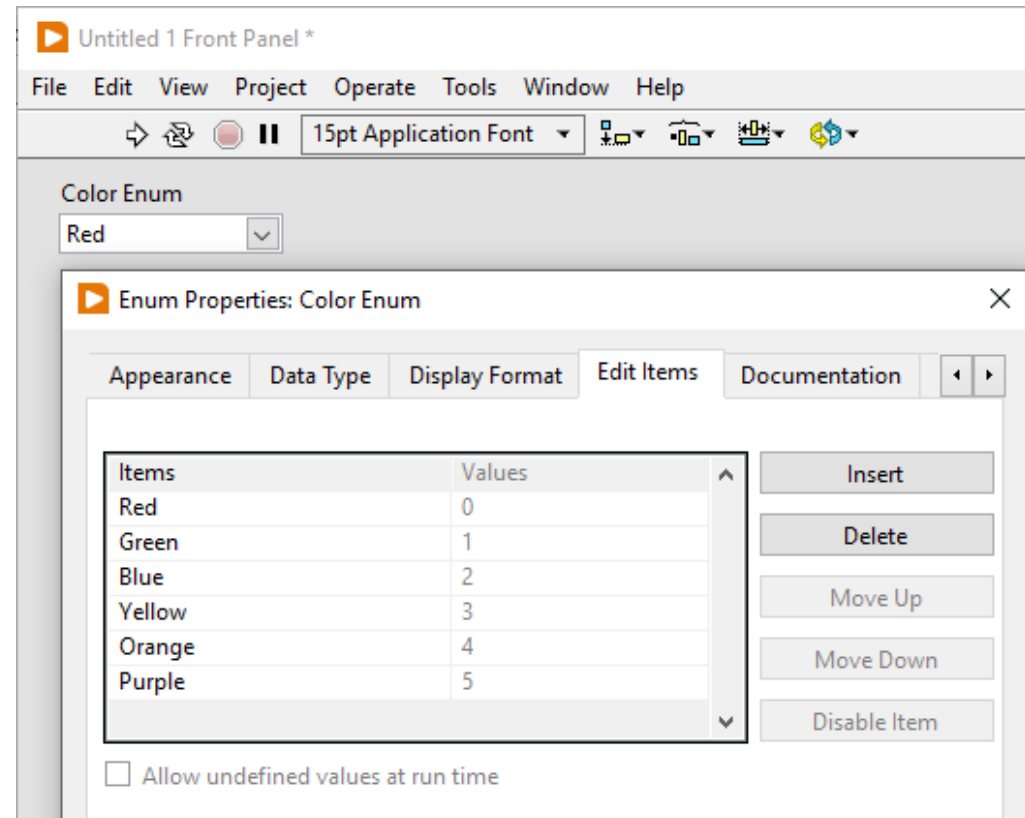
- Uses different wire colors for different types
- Does automatic conversion, shown by “dot”. This is not always your friend!

■ Use “right click” menu to change type.



Enumerated Values

- A special numeric data type that associates names with particular values
 - This type is called - **Enum**
- To create
 - Add Enum control to front panel
 - The Enum under the System style palette allows drop down.
 - Right click, then select **“Edit Items”**



Custom Type Definition

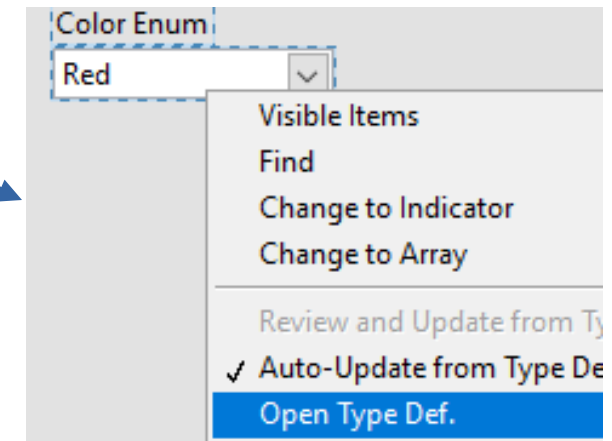
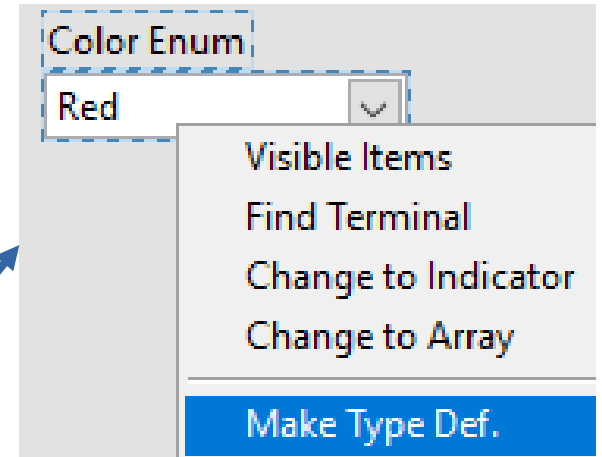
- Custom type definitions, TypeDef, allow customized controls to be used in more than one place

- Especially useful for

- Enumerated types
- Clusters (more on clusters later)

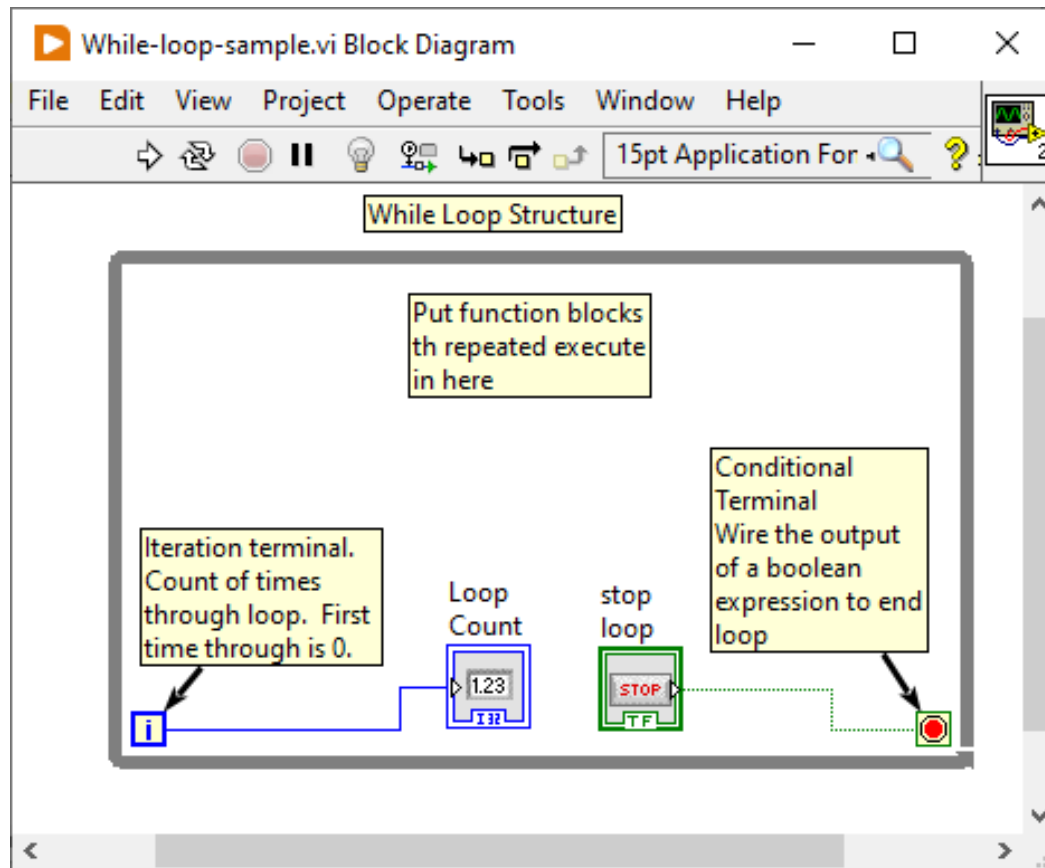
- To Create:

- Create custom control
- Right click then “Make TypeDef”
- Right click again then “Open TypeDef”
- Save the newly opened. This file can now be used as a custom control, indicator, or constant.



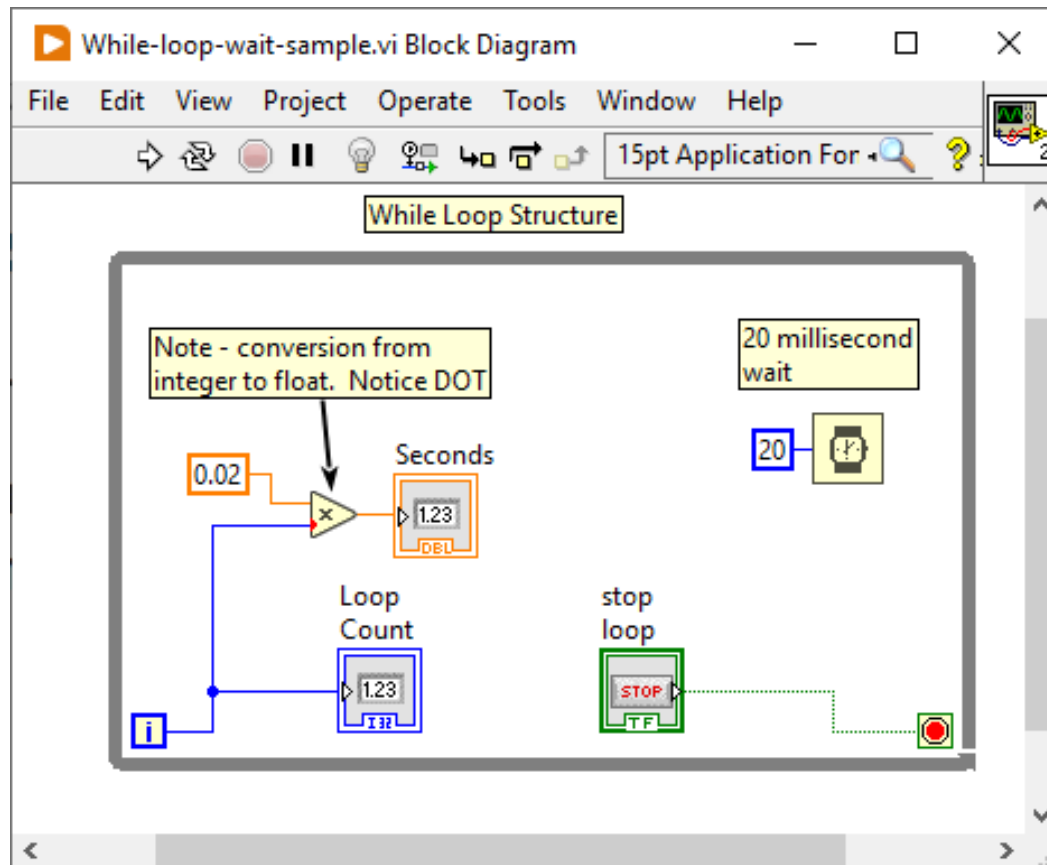
While Loop Structure

- **Executes code repeatedly until the termination condition is TRUE.**
 - Loop can be made to always execute once or forever if desired



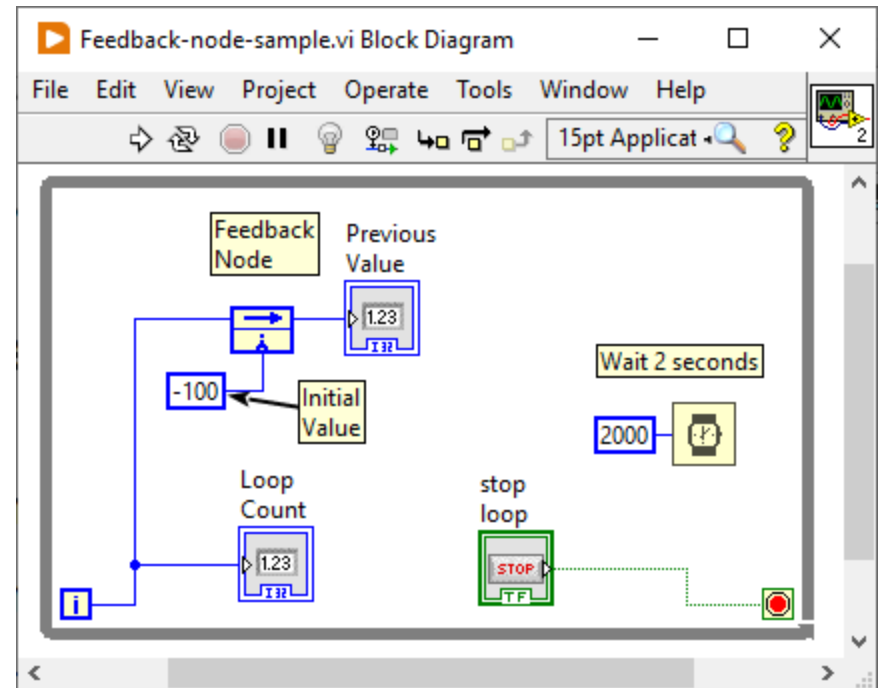
Wait Inside a Loop

- Loops normally run as fast as possible
- To make a loop run at a particular rate, use the “Wait” function.



Remembering Past Data – Feedback Node

- **Use “Feedback Node” function to remember data from the last execution**
 - Can be used anywhere. Inside or outside of loop
 - Works with ANY data type
 - To reverse icon, right click then select “Change Direction” (This is visual, not function.)
 - Has optional initialize value



Exercise 2.1 – Calculate Speed from Distance

- **Create a new VI**
- **Add a while loop that loops once per second**
- **Add a control that allows entry of feet traveled.**
- **Calculate and display**
 - Number of feet traveled in the last second.
 - Average speed of travel over the last second in feet/second.