

# 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)

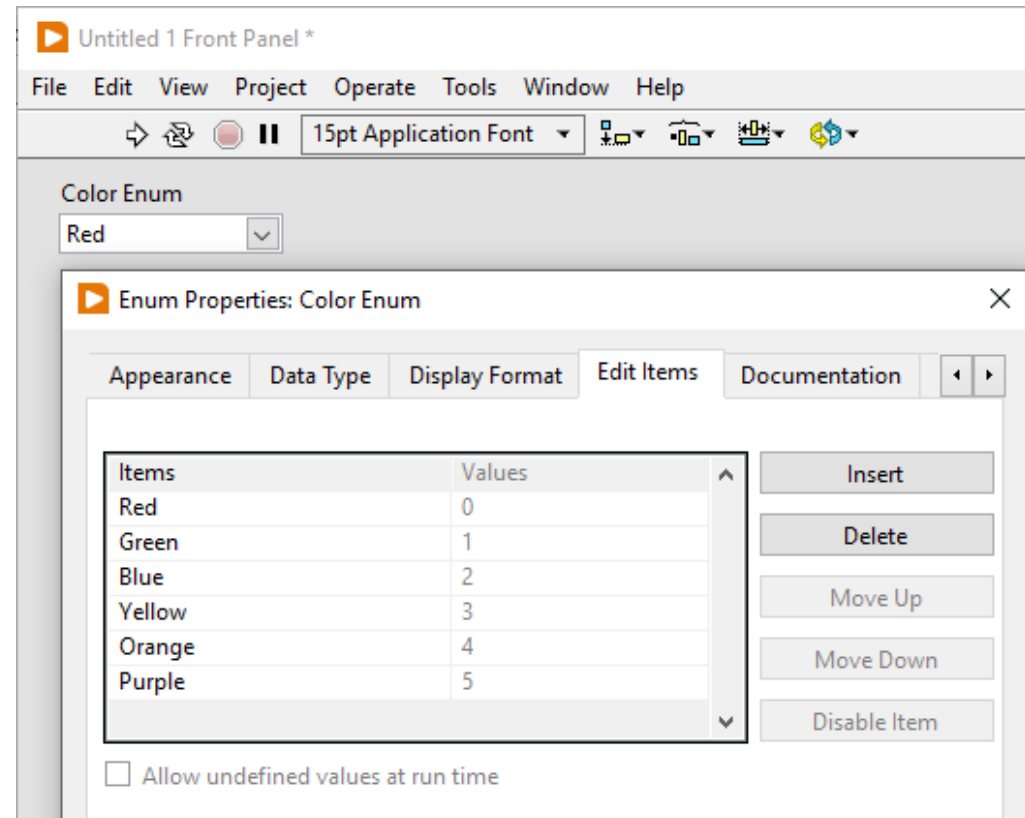
## ■ LabVIEW

- 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.

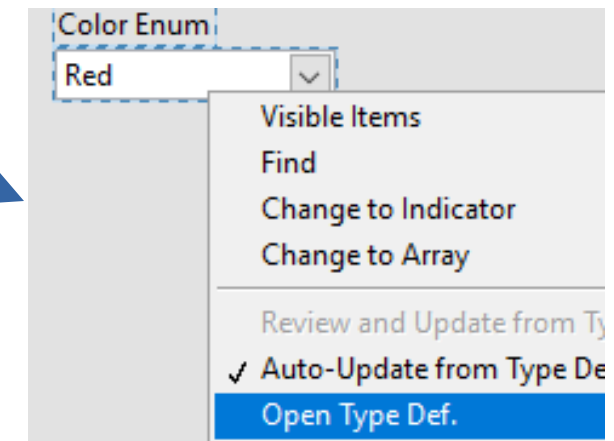
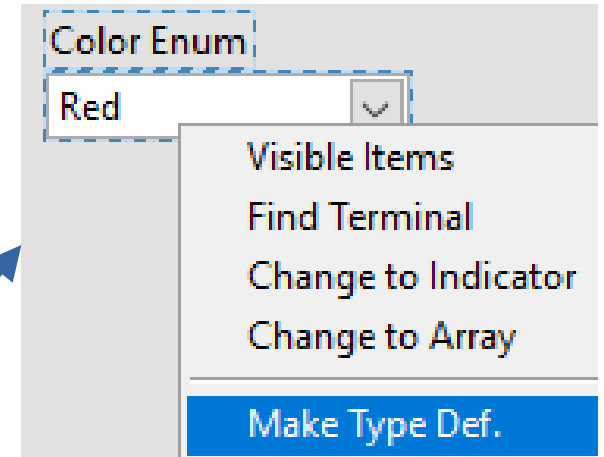
# Enumerated Values

- 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”**



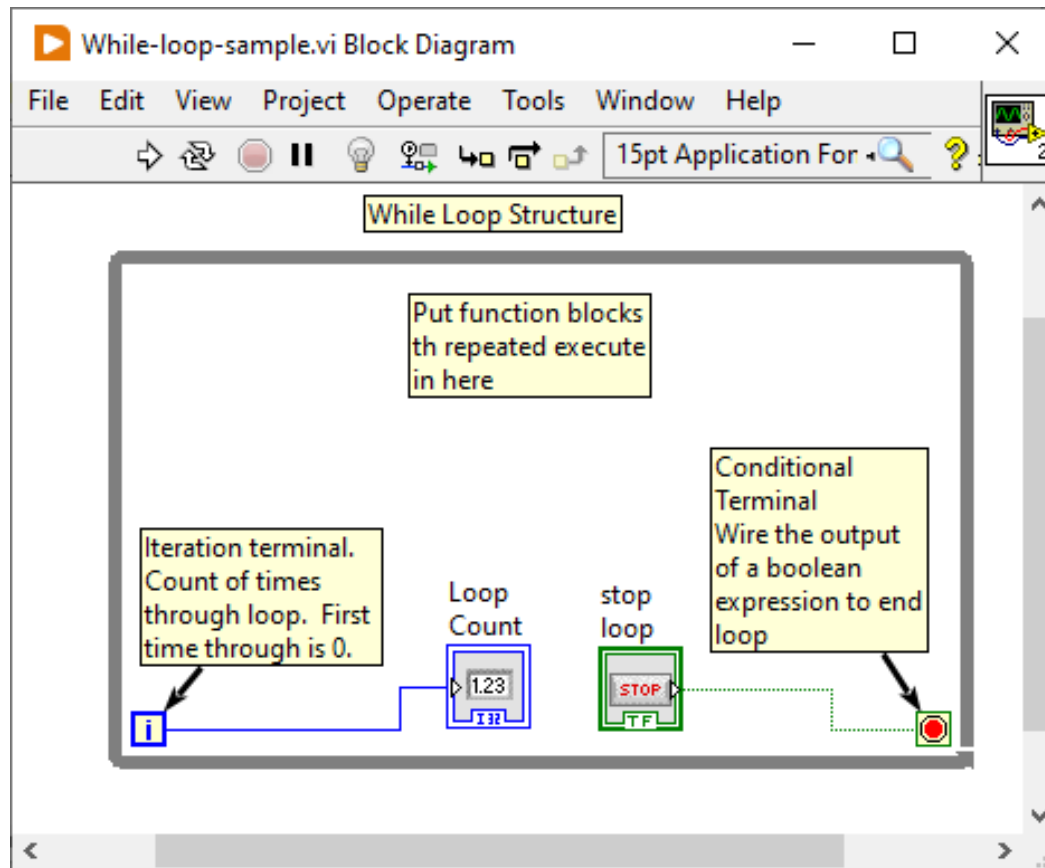
# Custom Type Definition

- 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.



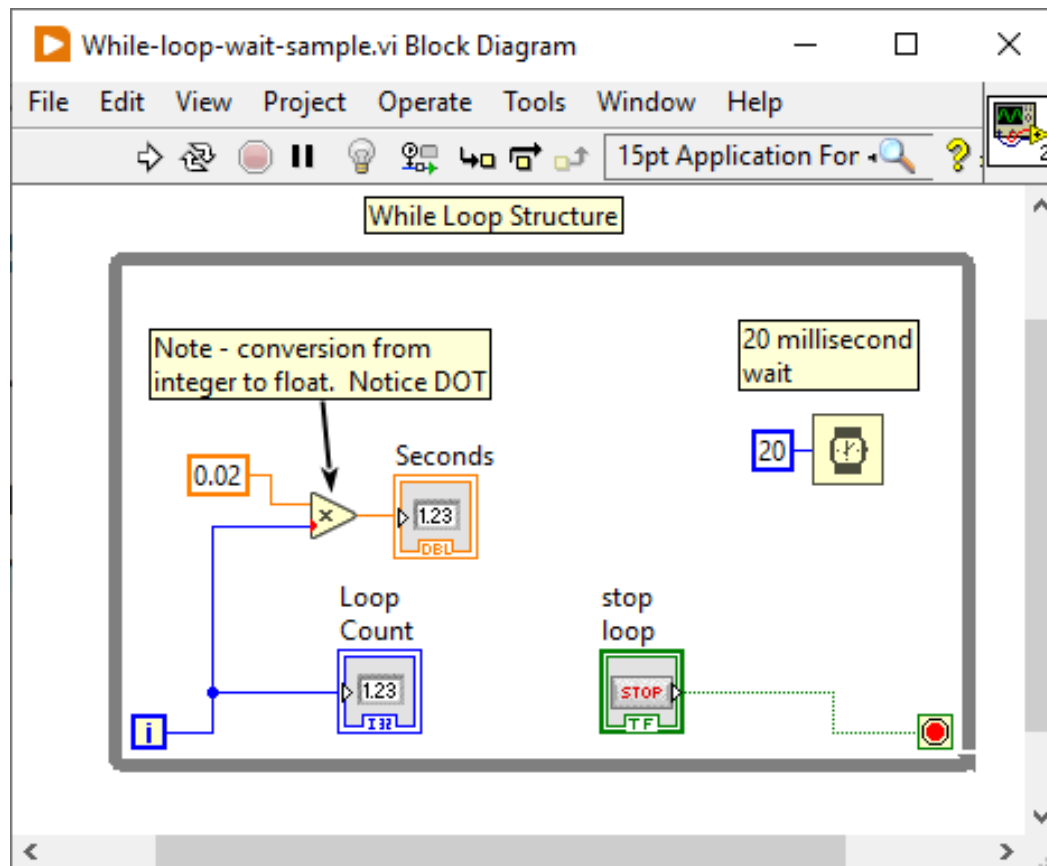
# While Loop Structure

- Executes code repeatedly until the termination condition is **TRUE**.
  - It can loop forever



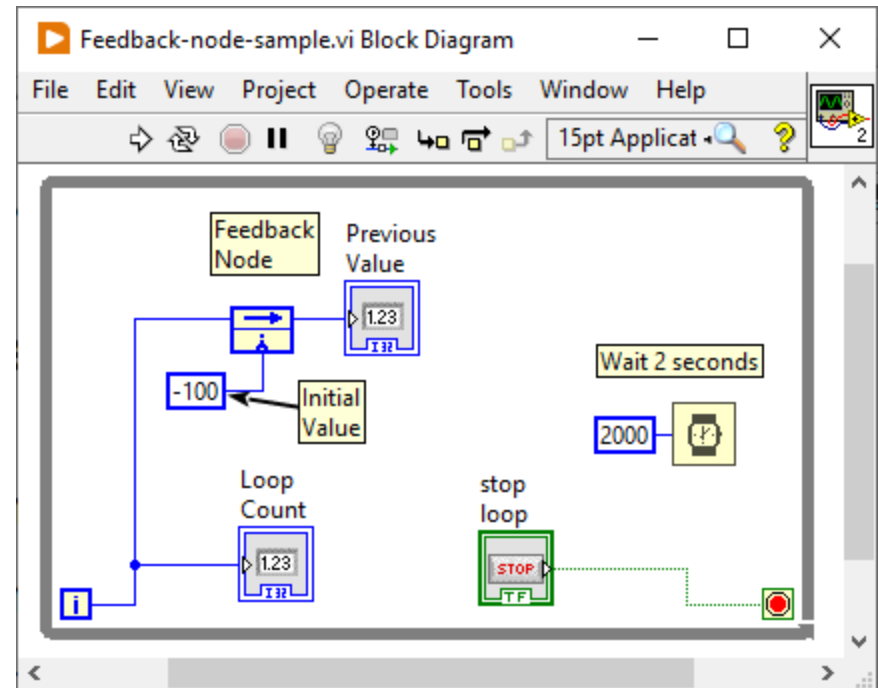
# Wait Inside a Loop

- 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.