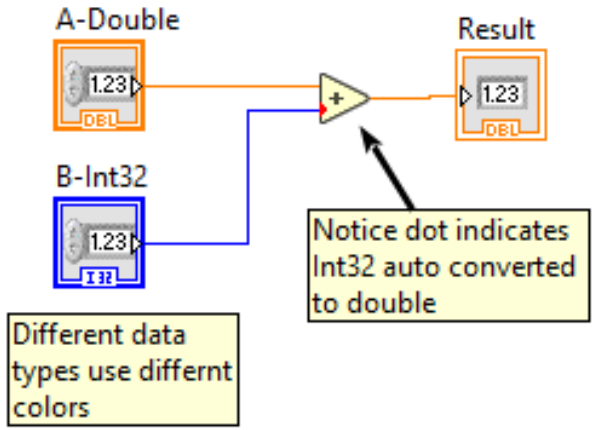
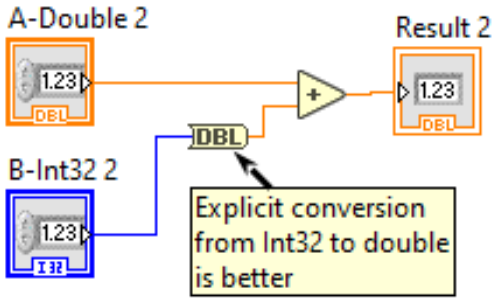
LabVIEW Training

MODULE 2 – LabVIEW DataTypes / While Loop

Numeric Data Types

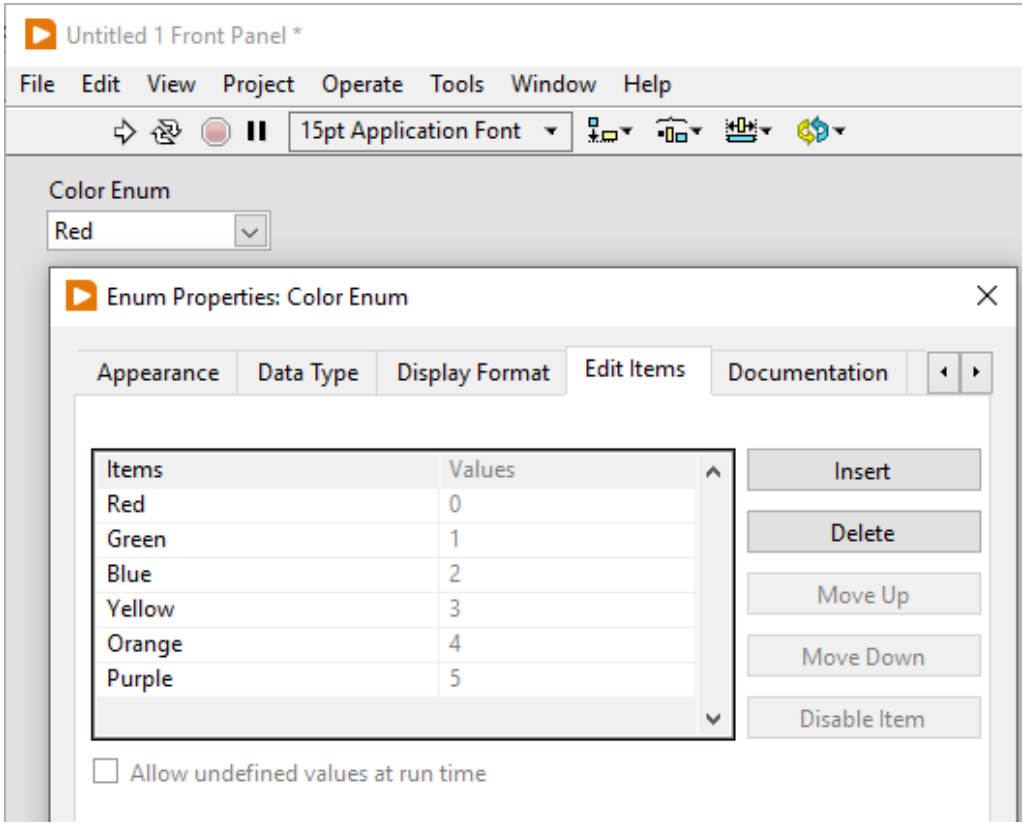
- **Floating Point / Integers**
  - Float can have fractions, integers are whole numbers
- **Each has different sizes indicating how much memory they consume and the range of values they store**
- **Robot programming most often uses**
  - Int32 (32 bit integer +/- 2^31)
  - Double (floating 64bit, approx 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.**





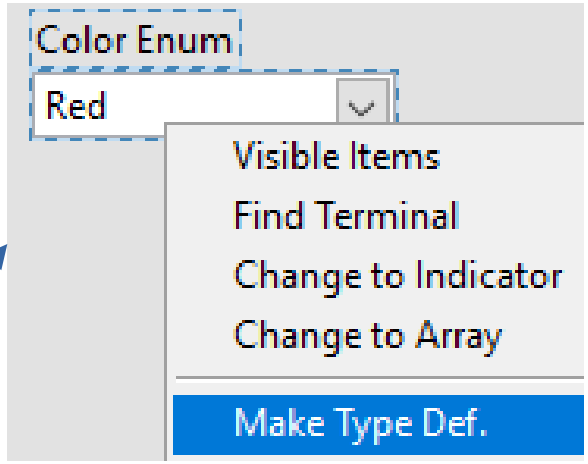
Enumerated Values

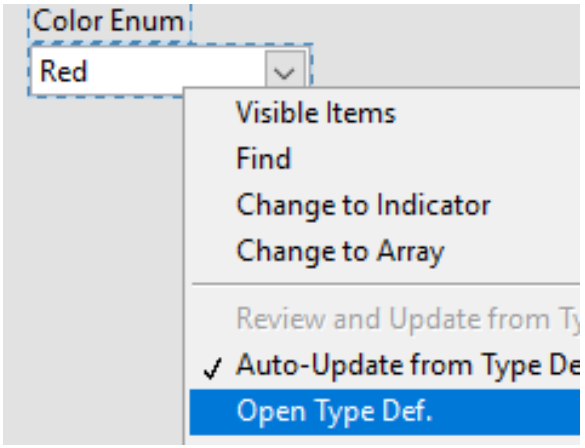
- **A special numeric data type that associates names with particular values**
  - This type is called **- Enum**
- **To create**
  - Add Enum control to front panel
    - The Enum under the System style palette allows drop down.
  - Right click, then select "**Edit Items**"



Custom Type Definition

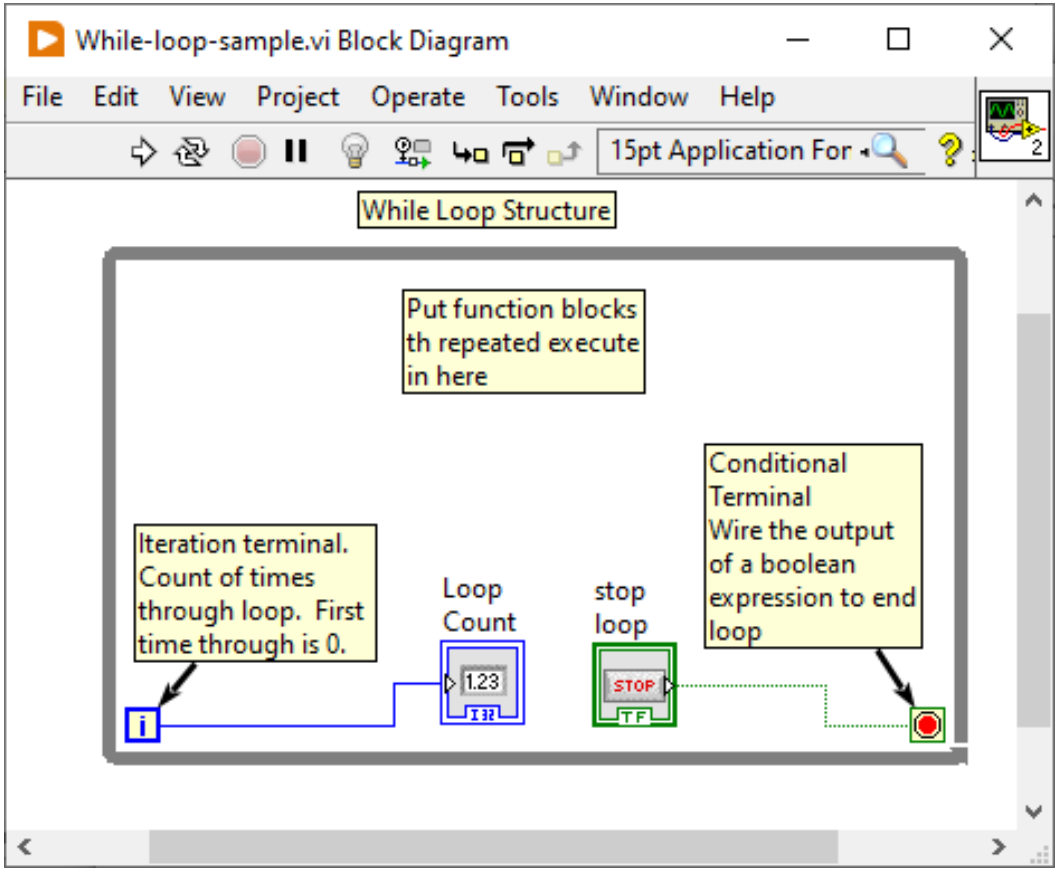
- **Custom type definitions, TypeDef, allow customized controls to be used in more than one place**
- **Especially useful for**
  - Enumerated types
  - Clusters (more on clusters later)
- **To Create:**
  - Create custom control
  - Right click then “Make TypeDef”
  - Right click again then “Open TypeDef
  - Save the newly opened. This file can now be used as a custom control, indicator, or constant.





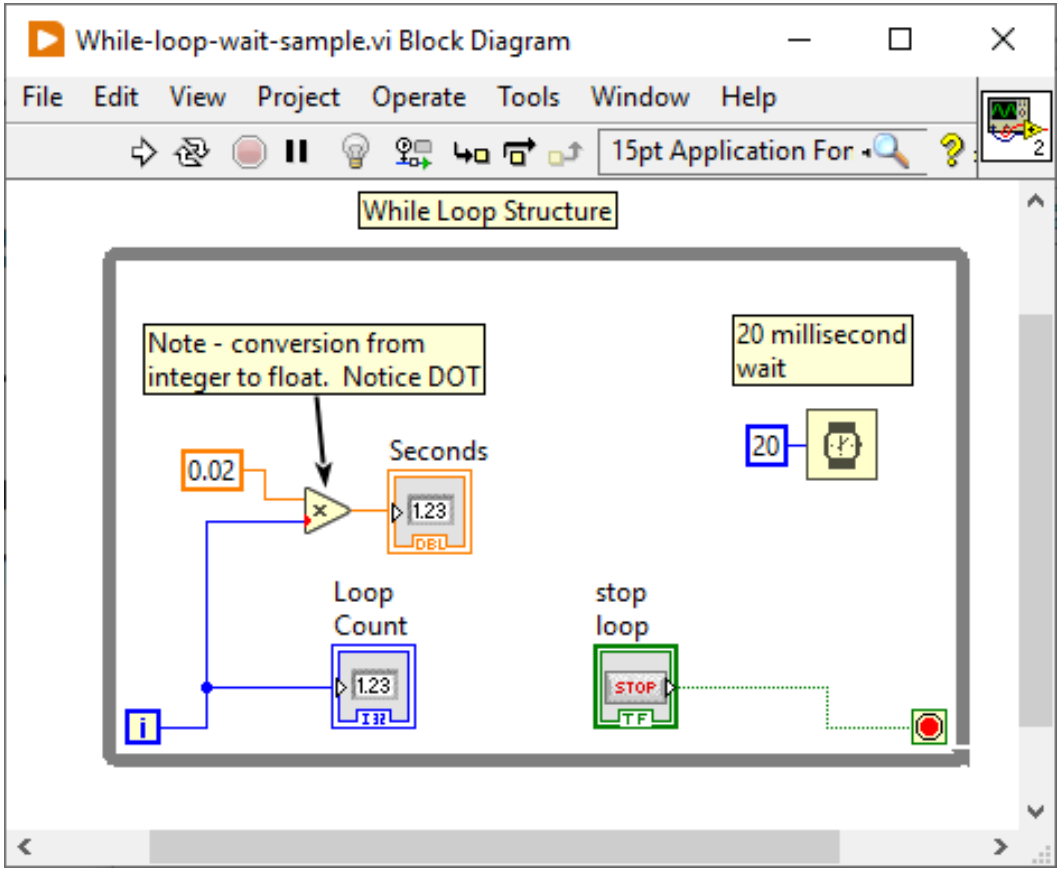
While Loop Structure

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



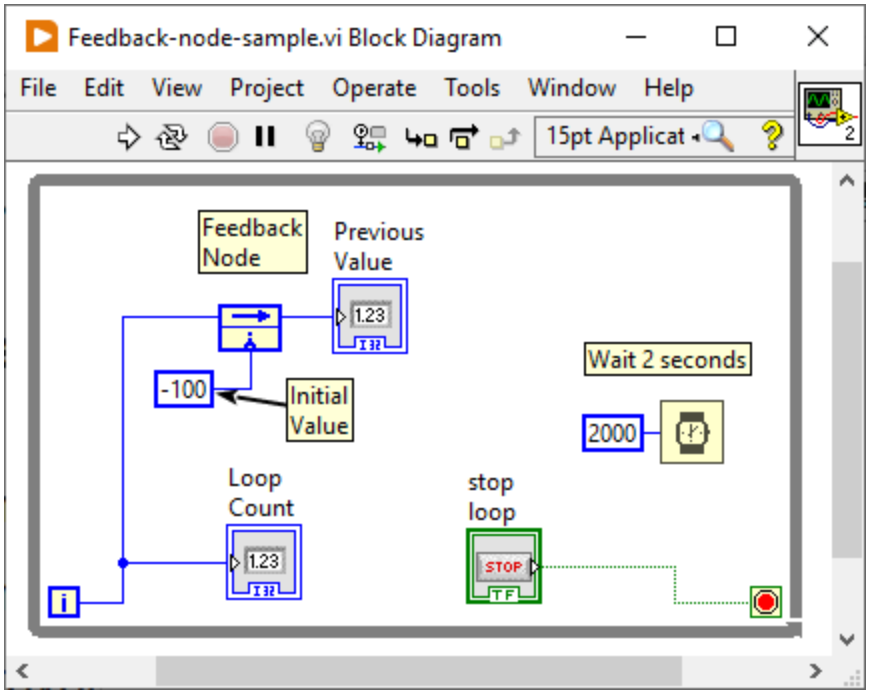
Wait Inside a Loop

- **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.