## How to Use the For Structure Tutorial

Functions -> Programming -> Structures -> For Loop

The For Loop structure is a type of loop which executes everything inside it for N number of iterations where N is defined by some input.

To create a For Loop structure, open the Functions palette and navigate to the Programming

palette. Under Programming, select the Structures sub-palette where you should find the For

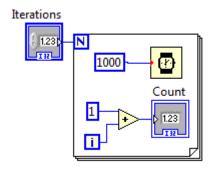
Loop structure

To create, click on the For Loop structure in the palette. This should convert your cursor to a For Loop tool cursor. To create the For Loop structure, click and drag a box around the functions you want to be in the For Loop.

If you haven't created the functions you want to put the For Loop around, just drag a box large enough to enclose what you anticipate will go into the For Loop. If you need more space later, you can adjust the size of the For Loop by resizing the frame.

Inside the For Loop structure, you will notice at the top left corner there is a blue "N" in a box. This stands for the number of iterations that the loop will execute which should be supplied as an I32 data type. At the bottom left corner you will notice that there is another I32 value "i" which stands for the current iteration the loop is on. By default, this value is initialized to 0 so make sure to adjust this if necessary.

For example, consider the simple block diagram for the following counter which takes in an integer as its input and displays the integers from 1 to the input value. The Wait function is used in this example to provide a "delay" of 1000 milliseconds so that we can see the output of count. Note that the wait function is simply a parallel thread that takes 1000 milliseconds to complete and does not necessarily guarantee a 1000 ms delay if another thread takes longer to execute.



Counter.vi

This VI takes an input value and outputs the numbers from 1 to the number of iterations. Notice that we add one to the number of iterations to accomplish this because the iterator initializes to 0. See "Timer" function for details.

Also note that the input and output data types were changed to the I32 data type for consistency.

## How do we save values across iterations?

If we needed to use a value we computed in one or more iterations to compute a value in the next iteration. If this is the case then we need to introduce a Shift Register. See "Shift Registers" for details.

## How does data flow into and out of the For loop structure?

If we needed the For loop structure to take inputs or produce outputs we would need to create Tunnels in order to allow data to "Tunnel" in or out of the loop. See "tunneling and auto-indexing" for details.