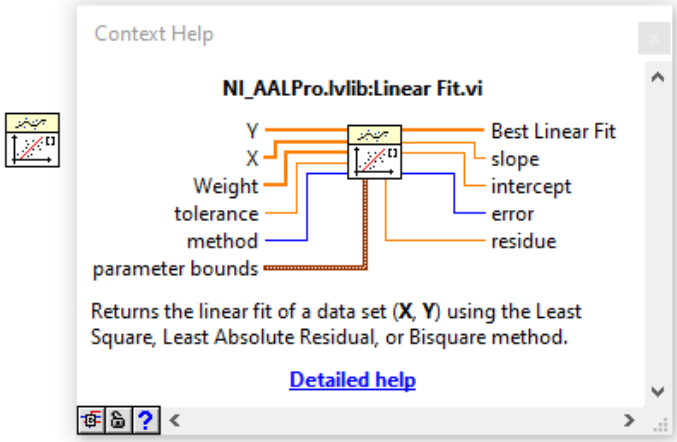
Software Development for INL and DNL test for DAC and ADC

Flow:

Architecture: Producer/Consumer

- The Icons get loaded and the user selects the page as per their requirement.
- The **Home page** gives an overview of the INL and DNL calculation test.
- The **Mode page** allows the user to select ADC and DAC Mode.
- The **Configuration page** has the details of the instrument and contains the options for INL calculation i.e) Best fit or End point
- The Best fit contains the details about the offset and gain error whereas end point does not have.
- The Configuration page directs to the **Input page** in which the user specifies the voltage range and number of bits from which the ideal LSB voltage is calculated and based on the number bits and the voltage range, ramp signal is generated for the maximum points of 2 power N.

  For example, say the input values (Voltage range = 4 and No.of bits= 3), there exists 8 points with a difference 0.5 (i.e., $4/2^3$)
- For Calculation, the actual voltage value is got (Sub VI) and the operations are performed as per the formula attached in the design.
- The **Best fit straight line** is drawn covering the best possible points of the transfer function and the INL is calculated using the Linear Fit.vi.



- The **end fit INL calculation** is such a way in which a straight line is drawn upon the zero and full-scale value of the transfer curve and the INL is calculated based on the difference between transfer function and the end point line. This can be achieved by removing the slope and intercept value from the best fit value
- The **Status and Graph page** displays the result when user clicks start.
- All these cases that displays the page contents get updated based on user interaction in the front panel by the event handling loop

Milestones:

Release 1: UI, Functional Home, Mode Selection, Configuration Screen
Release 2: Simulation of signals from user specified input and DNL Calculation
Release 3: Functional Software for INL and DNL Calculation