

Vision 4.2.7

Nested Branch Loop Reset

This document accompanies the distribution of Vision Version 4.2.7 or later. The primary change between Vision 4.2.6 and Vision 4.2.7 was the addition of an option called the Nested Branch Loop Reset. The Nested Branch Task was introduced in December 2008. It allows Nested Branch Looping by allowing Branch Tasks (and their target Tasks) to be included in the Nested Branch Loop. The Branch Task defines an inner loop and the Nested Branch Task an outer loop. As originally conceived the use of the Nested Branch Task was confusing and its purpose difficult to grasp. This was primarily because the user was strongly cautioned against including Measurement and Filter Tasks within the inner Branch Loop. In this situation the inner loop could only be used for GPIB or program control.

With the release of Vision 4.2.7, a simple mechanism has been added to Vision to make Nested Branch Looping simpler and more useful. The Nested Branch Loop has added a Boolean User Variable, called “Reset”, added by the Nested Branch Loop Task, that can be used by Hardware Tasks, Measurement Tasks and Filters to return their configuration to the original state in a Branch Loop. Consider the Test Definition of **Figure 1**...

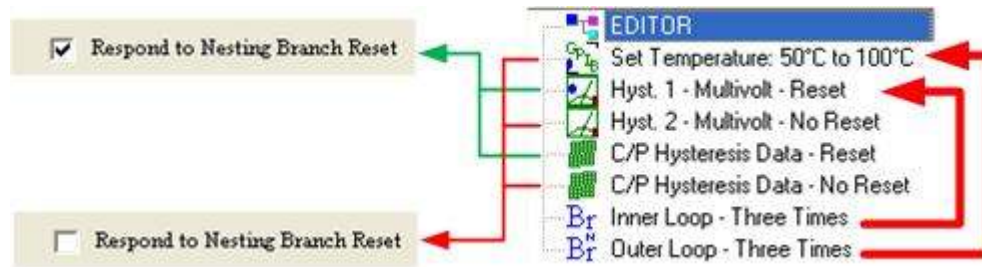


Figure 1 – Nested Branch Loop Test Definition.

The Tasks are defined as follows:

- *Set Temperature 50°C to 100°C* – **GPIB Set Temperature** – This Task sets a thermal controller. Its initial temperature is 50° C. It is programmed to increment its temperature by 25° C in a Branch Loop. It has Nested Branch Loop Reset disabled.
- *Hyst.1 – Multivolt – Reset* – **Hysteresis** – A Hysteresis Task programmed to perform a 5.0-Volt initial measurement and to increment its voltage by 1.0 Volts in a Branch Loop. Nested Branch Loop Reset is enabled.
- *Hyst.2 – Multivolt – Reset* – **Hysteresis** – A Hysteresis Task programmed to perform a 5.0-Volt initial measurement and to increment its voltage by 1.0 Volts in a Branch Loop. Nested Branch Loop Reset is disabled.

- *C/P Hysteresis Data – Reset – Collect/Plot Filter* – The Filter Task collects data from both preceding Hysteresis Tasks. It is programmed to append data in a Branch Loop. It is programmed with Nested Branch Loop Reset enabled.
- *C/P Hysteresis Data – No Reset – Collect/Plot Filter* – The Filter Task collects data from both preceding Hysteresis Tasks. It is programmed to append data in a Branch Loop. It is programmed with Nested Branch Loop Reset disabled.
- *Inner Loop – Three Times – Standard Branch* – This Task is programmed to Branch twice, causing a total of three executions of its nested Tasks. (The Branch Logic Condition is “Loop Counter <= 2”.) Its Branch Target is *Hyst.1 – Multivolt – Reset*. This Task automatically sets the “Reset” User Variable to “false”.
- *Outer Loop – Three Times – Nested Branch* – This Task is programmed to return execution to its *Set Temperature 50°C to 100°C* Branch Target three times. (The Branch Logic Condition is “Loop Counter – Nested <= 2”.) This Task is programmed by the user to set the “Reset” flag to “true”. This is a new option in the Nested Branch Task.

The Respond to Nesting Branch Reset checkbox of **Figure 1** has been added to all appropriate Hardware, Measurement and Filter Tasks to allow “Reset” to be either acknowledged or ignored. Tasks that have Reset enabled will execute their initial conditions on first execution and after each Nested Branch Task execution. Tasks that have Reset disabled will execute their initial conditions only on first execution. Note that, for Filter Tasks that have Reset conditions, the condition only applies if the Task is programmed in Append mode. **Table 1** tracks the progress of the execution of the Test Definition and highlights the difference between Reset enabled (green) and Reset disabled (red) Tasks.

Outer Loop Iteration	Inner Loop Iteration	Temperature (°C)	Hysteresis 1 Voltage	Hysteresis 2 Voltage	Filter 1 Plots	Filter 1 Traces/Plot	Filter 2 Plots	Filter 2 Traces/Plot
1	1	50	5.0	5.0	1	2	1	2
1	2	50	6.0	6.0	1	4	1	4
1	3	50	7.0	7.0	1	6	1	6
2	1	60	5.0	8.0	2	6/2	1	8
2	2	60	6.0	9.0	2	6/4	1	10
2	3	60	7.0	10.0	2	6/6	1	12
3	1	70	5.0	11.0	3	6/6/2	1	14
3	2	70	6.0	12.0	3	6/6/4	1	16
3	3	70	7.0	13.0	3	6/6/6	1	18

Table 1 - Task Condition at Each Test Definition Branch Iteration.

As is evident from the Table, the Reset option allows the Hysteresis Task to repeat a series of Voltages over a range of temperatures. With Reset disabled, a different range of voltages is covered at each temperature. For the Filter plot, a new plot is generated at each new temperature if Reset is enabled. If Reset is disabled, all data are shown on a single plot.

Accompanying this document is a DataSet, named Nested Branch Reset, that may be downloaded and registered into Vision for review. The DataSet contains no Archive, but the Current Test Definition is the Test Definition of **Figure 1**.

Please do not hesitate to contact me if you have questions or difficulties with this or any Vision program feature.

Sincerely,

Scott P. Chapman
Computer Engineer