LabVIEW – Variables

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Dual While Loops

• Two While loops in parallel. Equal processor time given to each loop.
• How to stop both loops with only one Stop button?
Local Variables

• A Local Variable can read or write to controls or indicators on the front panel of a VI
• Useful to communicate between structures within one VI
• Place Local Variable on diagram, select the variable to which to link and whether read/write
Global Variables

- A Global Variable is used to access and pass data among several VIs.
- A global variable is a VI that has its own front panel, but no diagram.

![Global Variable Diagram]

- Global Variable linked to ‘global stop’ direction ‘write’
- Global Variable linked to ‘global stop’ direction ‘read’
Variable Hazards I

• Both Locals and Globals must be initialised (must be written to first before being read).
• Variable will contain default data if un-initialised
• Be aware of Race Hazards – the variable being read before meaningful data has been written to it
• Each copy of a Local or Global creates a new buffer in memory – fine for scalar Booleans, not so good for large 3D arrays of Doubles…
Variable Hazards II

• Order of execution of variable reading/writing must be guaranteed

• Do not write to the same variable you read from
Functional Global Variables I

• Functional Global Variables (FGV) are VIs that use loops with un-initialised shift registers to hold global data
• Data is kept even when VI is not running, until FGV VI removed from memory
• Can be accessed by multiple VIs
• Can provide more functionality than just read/write
Functional Global Variables II

Implements initialise/read/increment/decrement