Virtual Instrumentation: Multiples Microcontrollers

Table of Contents

1. Project description

With the help of a clonable DQMH module, object-oriented programming is carried out in which each object is a microcontroller which obtains and sets different information through commands sent by the interface, which are automatically generated depending on the microcontroller chosen.

2. Code component descriptions

2.1. DQMH® modules

This section describes DQMH® module responsibilities and relationships.

2.1.1. Preamble

A DQMH module is the main component of an architecture based on DQMH® framework. A DQMH module is used to implement a section of the application that has one responsibility.

DQMH® framework defines two different type of DQMH module.

Singleton:

A Singleton DQMH module can have only one instance running at any given time.

Cloneable:

A Cloneable DQMH module can have one or multiple instances running in parallel.

DQMH® framework defines two different ways to carry data throughout the application and with both other DQMH modules and non-DQMH based code.

Request events:

A request is a code that fires an event requesting the DQMH module to do something. Multiple locations in the code can send events to the DQMH module.

Request events are many-to-one.

Requests are usually named using imperative tense.

Broadcast events:

A broadcast is a code that fires an event broadcasting that the DQMH module did something. Multiple Event Structures can register to handle the Broadcast Events.

Broadcast Events are one-to-many.

Broadcasts are usually named using past tense or passive voice.

Refer to the DQMH® framework official documentation (http://delacor.com/documentation/dqmh-html/) to find more details on how the framework works

The following section gives you details on the project architecture relying on this framework. It gives you an overview of the modules' interaction and detailed information on each module.

Graphs used in this section have the following legend:

Components:

```
digraph G611443 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"DQMH module / Lvlib"[color=black shape=component]
"Vi"[color=skyblue shape=note]
}
```

Events:

```
digraph G736499 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
" "[color=white shape=box]
"  "[color=white shape=box]
"   "[color=white shape=box]
"    "[color=white shape=box]
" " -> "  " [label="Request to a DQMH module" dir=both color=forestgreen  arrowhead=normal arrowtail=none style=filled
penwidth=1];
"   " -> "    " [label="Broadcast from a DQMH module" dir=both color=goldenrod  arrowhead=normal arrowtail=none
style=dashed penwidth=1];
}
```

Start and Stop module callers:

```
digraph G376610 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"Start Module
caller"[color=black shape=component]
"Start Module"[color=yellowgreen shape=note]
"Start Module" -> "Start Module
caller" [label="Called by" dir=both color=yellowgreen  arrowhead=odot arrowtail=inv style=filled penwidth=1];
}
```

```
digraph G97177 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"Stop Module
caller"[color=black shape=component]
"Stop Module"[color=tomato shape=note]
"Stop Module" -> "Stop Module
caller" [label="Called by" dir=both color=tomato  arrowhead=odot arrowtail=inv style=dotted penwidth=1];
}
```

2.1.2. Modules overview

This project contains the following modules.

Table 1. Modules list

Singleton	Cloneable
	Multiple_uC.lvlib

This graph represents the links between all DQMH modules.

```
digraph G892513 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"Multiple_uC"[color=black shape=component]
"Multiple_uC" -> "Multiple_uC" [dir=both color=forestgreen  arrowhead=normal arrowtail=none style=filled penwidth=1];
}
```

2.1.3. Multiple_uC.lvlib

Type: Cloneable

Responsibility: This clonable module of DQMH can evaluate 3 microcontroller at the same time. All the comands were generated with global commands and inheritance

Module Start/Stop calls

```
digraph G526289 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"Start Module"[color=yellowgreen shape=note]
"Test Multiple_uC API"[color=skyblue shape=note]
"Stop Module"[color=tomato shape=note]
"Multiple_uC"[color=black shape=component]
"Start Module" -> "Test Multiple_uC API" [dir=both color=yellowgreen  arrowhead=odot arrowtail=inv style=filled
penwidth=1];
"Stop Module" -> "Multiple_uC" [dir=both color=tomato  arrowhead=odot arrowtail=inv style=dotted penwidth=1];
"Stop Module" -> "Test Multiple_uC API" [dir=both color=tomato  arrowhead=odot arrowtail=inv style=dotted penwidth=1];
}
```

Table 2. Start and Stop module callers

Function	Callers
Multiple_uC.lvlib:Start Module.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Stop Module.vi	Multiple_uC.lvlib:Handle Exit.vi Test Multiple_uC API.vi

Module relationship

```
digraph G743457 {
rankdir=LR;
edge[dir=both color=black  arrowhead=normal arrowtail=none style=filled penwidth=1]
node[color=black shape=box]
"Multiple_uC"[color=slateblue shape=component]
"Test Multiple_uC API"[color=skyblue shape=note]
"Test Multiple_uC API" -> "Multiple_uC" [dir=both color=forestgreen  arrowhead=normal arrowtail=none style=filled
penwidth=1];
"Multiple_uC" -> "Multiple_uC" [dir=both color=forestgreen  arrowhead=normal arrowtail=none style=filled penwidth=1];
"Multiple_uC" -> "Test Multiple_uC API" [label=" " dir=both color=goldenrod  arrowhead=normal arrowtail=none
style=dashed penwidth=1];
}
```

Table 3. Requests callers

Request Name	Callers
Multiple_uC.lvlib:Show Panel.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Hide Panel.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Show Diagram.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:ADC´s View.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Write_1BIT.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Set 8 bits.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:GET_1BIT.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:GET_8BITS.vi	Test Multiple_uC API.vi

Table 4. Broadcasts Listeners

Broadcast Name	Listeners
Multiple_uC.lvlib:Module Did Init.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Status Updated.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Error Reported.vi	Test Multiple_uC API.vi
Multiple_uC.lvlib:Module Did Stop.vi	Test Multiple_uC API.vi

Broadcast Name	Listeners
Multiple_uC.lvlib:Update Module Execution Status.vi	Test Multiple_uC API.vi

Table 5. Used requests

Module	Broadcasts
—	—

Table 6. Registered broadcast

Module	Broadcasts
—	—

2.2. Libraries

This section describes the libraries contained in the project.

2.2.1. VITesterUtilities.lvlib

No description found (add content in lvlib description)

2.3. Classes

This section describes the classes contained in the project.

2.3.1. Serial Device.lvclass

This is the fathers class where the childs can inherit the actions of the father

2.3.2. NXP.lvclass

Class to obtain access to NXP MCU. This MCU can obtain the temperature in LM35 conected to J12.2, read and write a 8-bit The code of the MCU is in MCUXpresso, their name is Proyecto_UART_ADC_&_IO_DIGITAL

2.3.3. Simulated uC.lvclass

Class to obtain access to Simulated MCU. This MCU can obtain the simulated commands with an specific response

2.3.4. Cypress.lvclass

Class to obtain access to Cypress MCU. This MCU can obtain the simulated temperature from pot conected to P3.0, read and write a 8-bit The code of the MCU is in Psoc Creator

2.3.5. tests_actions.lvclass

This class is generated to do a test from VI Tester. In this class we can observe a template to generate code to test commands. This is used to prove simulated commands and those responses

2.3.6. Delacor_lib_QMH_Cloneable Module Admin.lvclass

No description found (add content in lvlib description)

2.3.7. Delacor_lib_QMH_Module Admin.lvclass

No description found (add content in lvlib description)

2.3.8. Delacor_lib_QMH_Message Queue.lvclass

No description found (add content in lvlib description)

2.3.9. TestCase.lvclass

No description found (add content in lvlib description)

2.3.10. TestResult.lvclass

No description found (add content in lvlib description)

2.3.11. TestSuite.lvclass

No description found (add content in lvlib description)

2.3.12. TestLoader.lvclass

No description found (add content in lvlib description)

3. VI descriptions

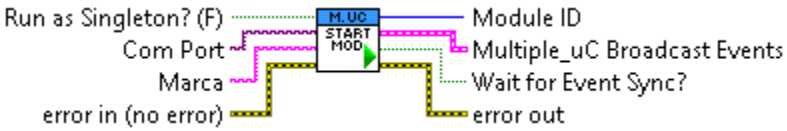
3.1. DQMH® modules

This section describes DQMH® modules events.

3.1.1. Multiple_uC.lvlib

Multiple_uC.lvlib:Start Module.vi

Event type: Not a DQMH Event

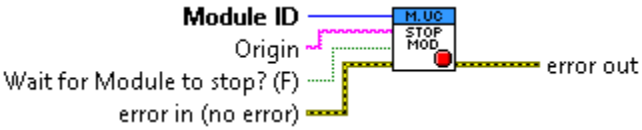


Description:

Launches the Module Main.vi. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Stop Module.vi

Event type: Not a DQMH Event

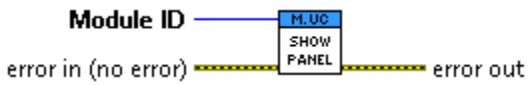


Description:

Send the Stop request to the Module's Main.vi. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Show Panel.vi

Event type: Request

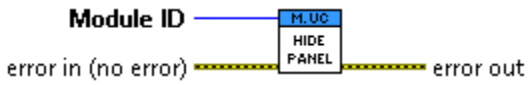


Description:

Send the Show Panel request to the Module's Main.vi. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Hide Panel.vi

Event type: Request

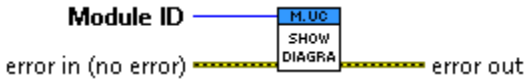


Description:

Send the Hide Panel request to the Module's Main.vi. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Show Diagram.vi

Event type: Request

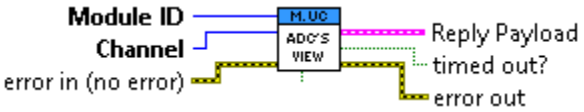


Description:

This VI tells the Module to show its block diagram to facilitate troubleshooting (add probes, breakpoints, highlight execution, etc). _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:ADC´s View.vi

Event type: Request And Wait For Reply

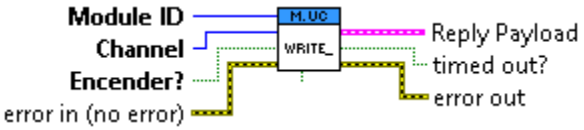


Description:

Request and wait for reply of ADC Channel _____ Created using Delacor QMH Event Scripter 5.0.0.112.

Multiple_uC.lvlib:Write_1BIT.vi

Event type: Request And Wait For Reply

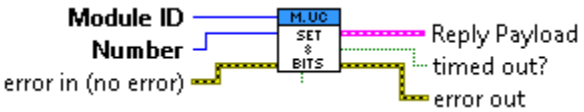


Description:

Event to rewrite the value of one bit in an array _____ Created using Delacor QMH Event Scripter 5.0.0.112.

Multiple_uC.lvlib:Set 8 bits.vi

Event type: Request And Wait For Reply

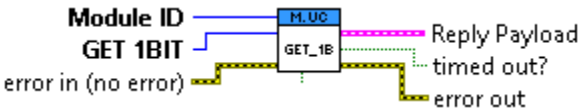


Description:

Set a number of 8 bits in the microcontroller _____ Created using Delacor QMH Event Scripter 5.0.0.112.

Multiple_uC.lvlib:GET_1BIT.vi

Event type: Request And Wait For Reply

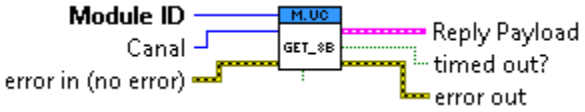


Description:

Obtain the value of 1 specific bit of the input of the microcontroller _____ Created using Delacor QMH Event Scripter 5.0.0.112.

Multiple_uC.lvlib:GET_8BITS.vi

Event type: Request And Wait For Reply

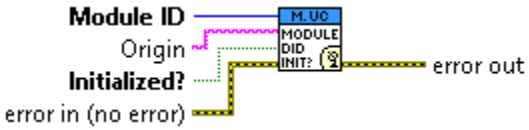


Description:

Event created to get the eight bits of the eight inputs in the microcontroller _____ Created using Delacor QMH Event Scripter 5.0.0.112.

Multiple_uC.lvlib:Module Did Init.vi

Event type: Broadcast

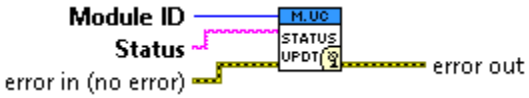


Description:

Send the Module Did Init event to any VI registered to listen to this module's broadcast events. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Status Updated.vi

Event type: Broadcast

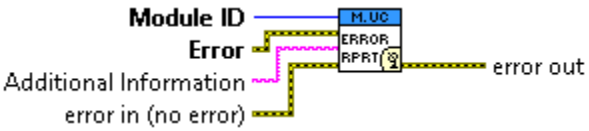


Description:

Send the Status Updated event to any VI registered to listen to events from the owning module. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Error Reported.vi

Event type: Broadcast

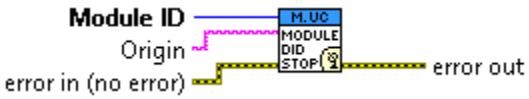


Description:

Send the Error Reported event to any VI registered to listen to events from the owning module. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Module Did Stop.vi

Event type: Broadcast

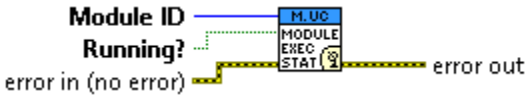


Description:

Send the Module Did Stop event to any VI registered to listen to this module's broadcast events. _____ Based on Delacor QMH Project Template 5.0.0.82.

Multiple_uC.lvlib:Update Module Execution Status.vi

Event type: Broadcast



Description:

Fire the Get Module Execution Status request. _____ Created using Delacor QMH Event Scripter 3.0.0.12. _____ Based on Delacor QMH Project Template 5.0.0.82.

3.2. Libraries

This section describes libraries public VIs.

3.2.1. VITesterUtilities.lvlib

VITesterUtilities.lvlib:Get LVClass Name from TD__jki_vi_tester.vi

Description: No description found (add content in VI description)

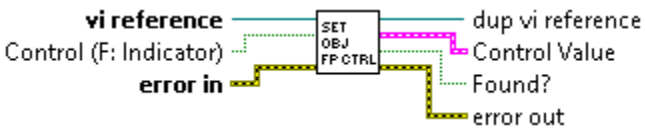
VITesterUtilities.lvlib:Load Test Case from File.vi

Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get LVClass Name from Data String__jki_vi_tester.vi

Description: No description found (add content in VI description)

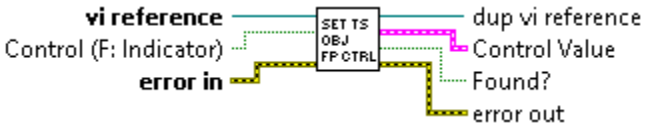
VITesterUtilities.lvlib:Set Front Panel Object Control Value__jki_vi_tester.vi



Description:

Sets the FP control value of an LVClass control, whose type matches the specific type of object in **Object in** to the value of **Object in**.

VITesterUtilities.lvlib:Set Front Panel TestSuite Object Control Value__jki_vi_tester.vi



Description:

Sets the FP control value of an LVClass control, whose type matches the specific type of object in **Object in** to the value of **Object in**.

VITesterUtilities.lvlib:Get All__jki_vi_tester.vi

Description:

Retrieves all elements in tree at and below the starting tag. When Starting Tag and Input Tree Items are left unwired it will return all elements in the tree.

VITesterUtilities.lvlib:Get Children__jki_vi_tester.vi

Description:

Collects and returns all tags of parents immediate children. If the parent tag is an empty string, the currently selected item is used.

VITesterUtilities.lvlib:Get Current__jki_vi_tester.vi

Description:

Returns the tag of the currently selected item in the tree. If there is no item selected an empty string is returned.

VITesterUtilities.lvlib:Get Oldest__jki_vi_tester.vi

Description:

Collects and returns all tags of oldest (leftmost) items in the tree.

VITesterUtilities.lvlib:Get Parent__jki_vi_tester.vi

Description:

Retrieves the parent of the child. Uses the currently selected item if input is left unwired or empty string. Also returns a 1-D array of all members in its family starting at its parent and leading back to its most mature member.

VITesterUtilities.lvlib:Get Siblings__jki_vi_tester.vi

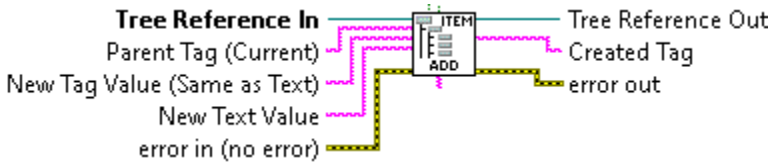
Description:

Retrieves a 1-D array of tags of all items in the tree that have the same parent and deletes the requested tag giving all siblings of an item. Uses the currently selected item if the tag input is unwired.

VITesterUtilities.lvlib:INDEX - Tree Control__jki_vi_tester.vi

Description: No description found (add content in VI description)

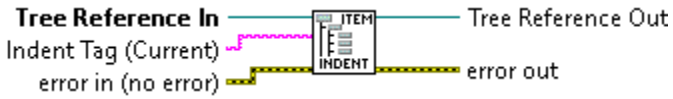
VITesterUtilities.lvlib:Item Add__jki_vi_tester.vi



Description:

Adds a new item to the tree. Uses the current selection if there is no parent value input. The tag is set to the same value as the input text if it is left blank. NOTE: TAGS MUST BE UNIQUE.

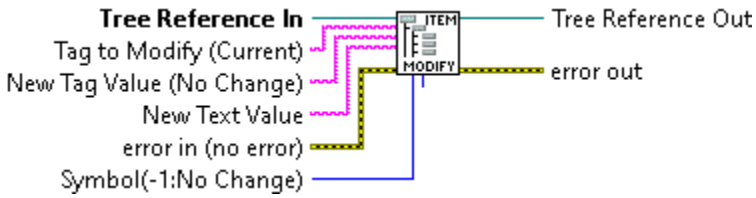
VITesterUtilities.lvlib:Item Indent__jki_vi_tester.vi



Description:

Takes the input tag item and places it along with its children as a child family of its current topmost sibling. Ignores the indent command if there is no current sibling to indent under.

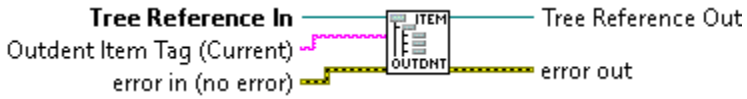
VITesterUtilities.lvlib:Item Modify__jki_vi_tester.vi



Description:

Modifies an item in the tree. Uses the current item if input is blank. Allows to modify both the tag and text

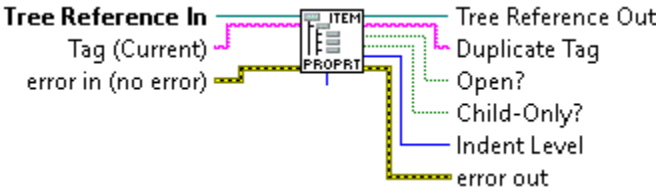
VITesterUtilities.lvlib:Item Outdent__jki_vi_tester.vi



Description:

Outdents the currently selected item or the input tag to the same indent level of its parent. Places in the topmost position of its siblings thus disrupting the order. If already at the most mature level in the tree, it moves it to the top of the structure.

VITesterUtilities.lvlib:Item Properties__jki_vi_tester.vi



Description:

Gets a limited set of properties about the input item

VITesterUtilities.lvlib:Item Remove__jki_vi_tester.vi

Description:

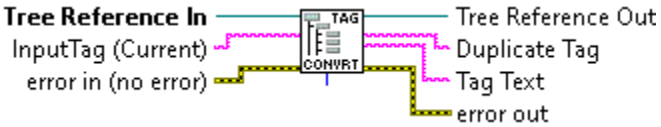
Deletes item from tree along with any children. Uses the current selection if there is no item input. If there is no item selected within the tree it deletes nothing. Returns error code 1136 if an invalid tag is passed in

VITesterUtilities.lvlib:Tag Check__jki_vi_tester.vi

Description:

Checks the input tag and makes sure that it is a valid tag within the referenced tree. Returns all errors including the invalid tag error.

VITesterUtilities.lvlib:Tag Convert__jki_vi_tester.vi



Description:

Retrieves the text in column 0 assosciated with the Input Tag or if there is no input, the currently selected item. Ignores the call if no item is selected. Returns error code 1136 if an improper tag is input.

VITesterUtilities.lvlib:Tag Find__jki_vi_tester.vi

Description:

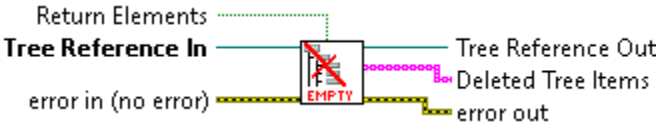
Searches the tree for a tag whose text matches the Input text. USE SPARINGLY - Processor Intensive

VITesterUtilities.lvlib:Tree Collapse__jki_vi_tester.vi

Description:

Collapses the tree to the oldest level

VITesterUtilities.lvlib:Tree Empty__jki_vi_tester.vi



Description:

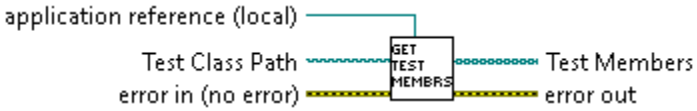
Deletes all elements from**Tree Reference In**. Passes deleted elements from the tree out in a 1-D array. The array is ordered top to bottom item as they were in the tree.

VITesterUtilities.lvlib:Tree Expand__jki_vi_tester.vi

Description:

Expands the entire tree

VITesterUtilities.lvlib:Get Test Members__jki_vi_tester.vi

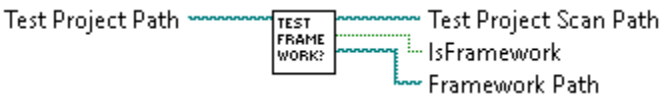


Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Check if Path Is Test__jki_vi_tester.vi

Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get Project Scan Path__jki_vi_tester.vi

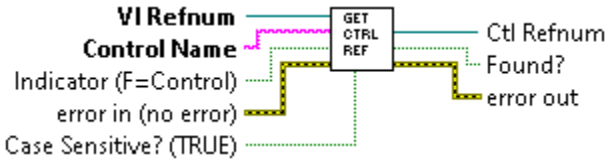


Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Find Project Test Objects__jki_vi_tester.vi

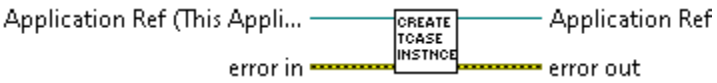
Description: No description found (add content in VI description)

VITesterUtilities.lvlib:GetControlRef__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Create TestCase Template Instance__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Create TestSuite Template Instance__jki_vi_tester.vi

Description: No description found (add content in VI description)

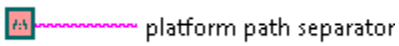
VITesterUtilities.lvlib:Check if Path Is Test Class__jki_vi_tester.vi

Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get All Project Class Paths__jki_vi_tester.vi

Description: No description found (add content in VI description)

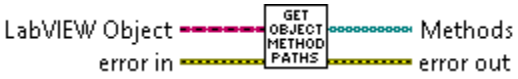
VITesterUtilities.lvlib:Get Platform Path Separator__jki_vi_tester.vi



Description:

Returns the path separator for the platform on which the software is running, as shown below: Windows: "\" (backslash) Linux: "/" (slash) Mac: ":" (colon)

VITesterUtilities.lvlib:Get All Methods from LVObject__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get All Methods from LVClass Path__jki_vi_tester.vi

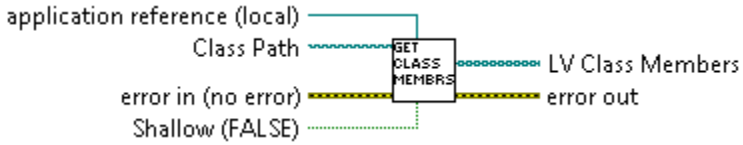
Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Create Test GUID__jki_vi_tester.vi

Description:

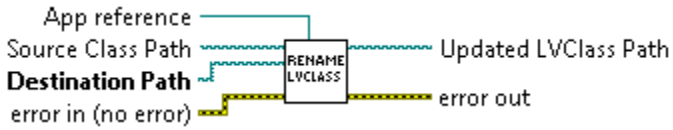
Outputs a **random data** string of the specified **length**.

VITesterUtilities.lvlib:Get LV Class Members from Path__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Rename LVClass__jki_vi_tester.vi

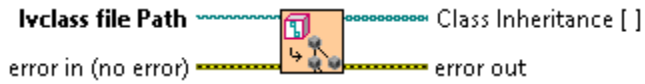


Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get Name Or Data Format As String__jki_vi_tester.vi

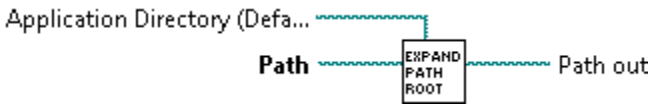
Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get Class Inheritance from Class Path__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Expand Pathroot__jki_vi_tester.vi

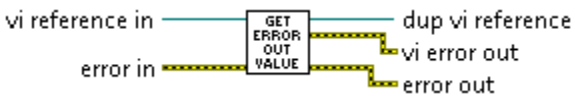


Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Convert Relative to Absolute Project Paths__jki_vi_tester.vi

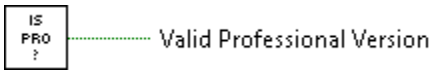
Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get VI Error Out Value__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:Get Activation Level__jki_vi_tester.vi



Description: No description found (add content in VI description)

VITesterUtilities.lvlib:CheckForLabVIEW_IDE__jki_vi_tester.vi

Description: No description found (add content in VI description)

3.3. Classes

This section describes classes public VIs.

3.3.1. Serial Device.lvclass

Serial Device.lvclass:Read Marca.vi

Description:

This Vi is used to identify the microcontroller mark (marca) and help to know it

Serial Device.lvclass:Write Marca.vi

Description:

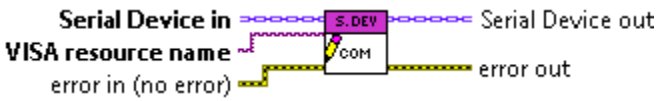
This Vi is used to identify the microcontroller mark (marca), when its identified its update the code to generate the data depending the mark.

Serial Device.lvclass:Read VISA resource name.vi

Description:

This Vi is used to identify the VISA PORT

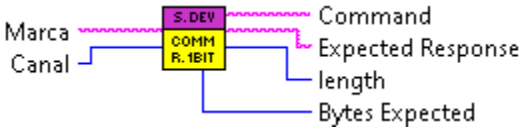
Serial Device.lvclass:Write VISA resource name.vi



Description:

This Vi is used to write the VISA PORT from Vi Tester to The Main of the module

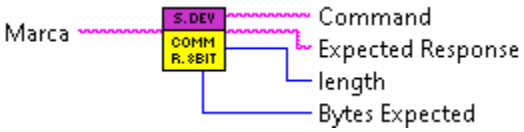
Serial Device.lvclass:GET_1BIT_Command.vi



Description:

This Vi Generates the command of Read 1 Bit for each microcontroller

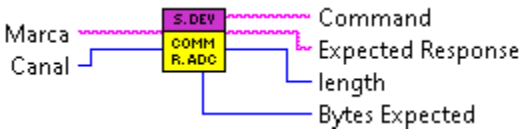
Serial Device.lvclass:GET_8BITS_Command.vi



Description:

This Vi Generates the command of Read 8 Bit for each microcontroller

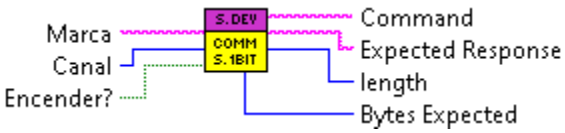
Serial Device.lvclass:READ_ADC_Command.vi



Description:

This Vi Generates the command of Read ADC for each microcontroller

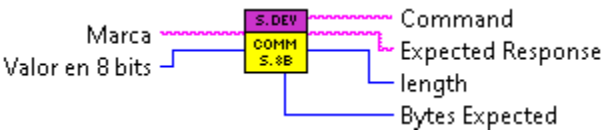
Serial Device.lvclass:SET_1BIT_Command.vi



Description:

This Vi Generates the command of Write 1 Bit for each microcontroller

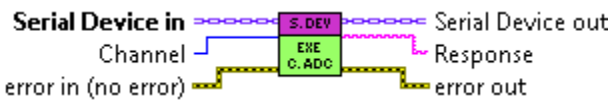
Serial Device.lvclass:SET_8BITS_Command.vi



Description:

This Vi Generates the command of Write 8 Bit for each microcontroller

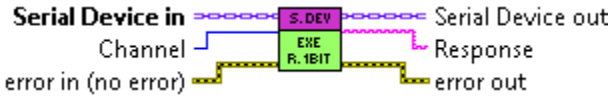
Serial Device.lvclass:Send_ADC.vi



Description:

This Vi Generates the sequece to send and receive the ADC from Microcontroller

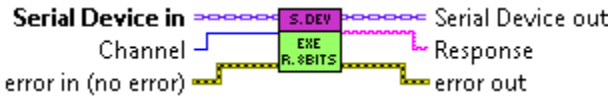
Serial Device.lvclass:Send_Get_1Bit.vi



Description:

This Vi Generates the sequece to send and receive the state of one switch from Microcontroller

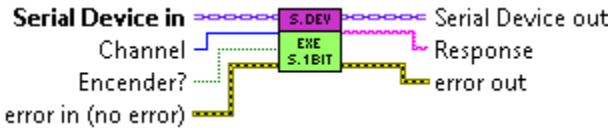
Serial Device.lvclass:Send_Get_8Bits.vi



Description:

This Vi Generates the sequece to send and receive the state of the eight switches from Microcontroller

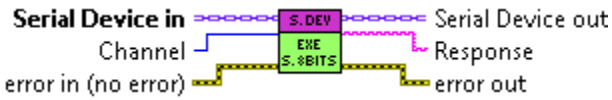
Serial Device.lvclass:Send_SET_1BIT.vi



Description:

This Vi Generates the sequece to send and receive the state of one of the outs from Microcontroller

Serial Device.lvclass:Send_SET_8Bits.vi



Description:

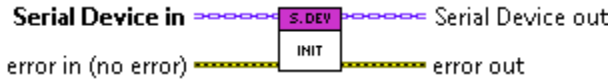
This Vi Generates the sequece to send and receive the state of the outs from Microcontroller

Serial Device.lvclass:Close_Connection.vi

Description:

This Vi close the connection with the Microcontroller. Its used when the interface is closed

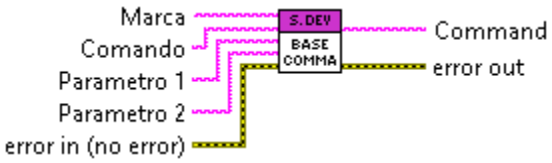
Serial Device.lvclass:Initialize.vi



Description:

This Vi initialize the connection with the Microcontroller.

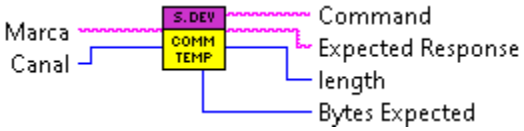
Serial Device.lvclass:Base command.vi



Description:

This Vi is the core command of each template command generator

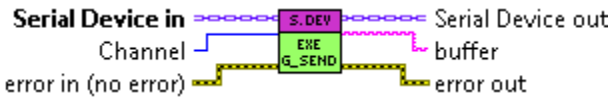
Serial Device.lvclass:Build_G_Command.vit



Description:

Template to generate commands

Serial Device.lvclass:Build_G_Send_Execute_Command.vit



Description:

Template to generate execute commands

3.3.2. NXP.lvclass

NXP.lvclass:Close_Connection.vi

Description:

Close the connection with the NXP MCU

NXP.lvclass:Initialize.vi

Description:

Initialize the connection with the NXP MCU

NXP.lvclass:Ejemplo de aplicacion nxp.vi

Description:

Vi created to probe the nxp module out of the main. "Its not necessary to the develop"

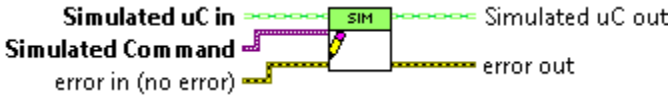
3.3.3. Simulated uC.lvclass

Simulated uC.lvclass:Read Simulated Command.vi

Description:

This Vi read the simulated command in the private date

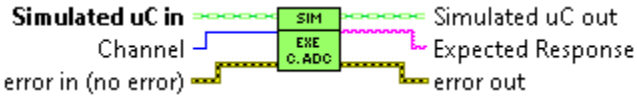
Simulated uC.lvclass:Write Simulated Command.vi



Description:

This Vi write the simulated command in the private date

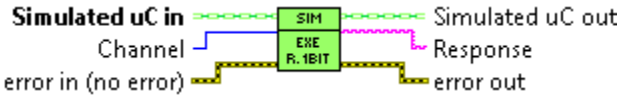
Simulated uC.lvclass:Send_ADC.vi



Description:

This Vi its different than the Send ADC of the father. This Vi Generate the code to obtain the adc precharged data

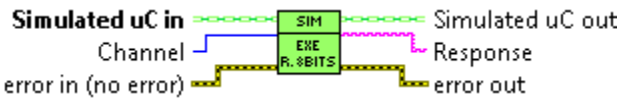
Simulated uC.lvclass:Send_Get_1Bit.vi



Description:

This Vi its different than the Send Get_1BIT of the father. This Vi Generate the code to obtain Switches precharged data

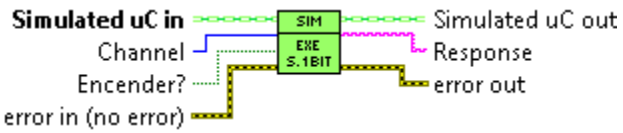
Simulated uC.lvclass:Send_Get_8Bits.vi



Description:

This Vi its different than the Send Get_8BIT of the father. This Vi Generate the code to obtain Switches precharged data

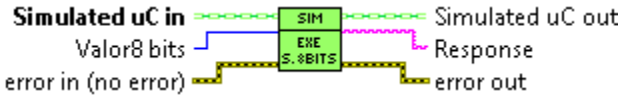
Simulated uC.lvclass:Send_SET_1BIT.vi



Description:

This Vi its different than the Send Set_1BIT of the father. This Vi Generate the code to aquiere out precharged data

Simulated uC.lvclass:Send_SET_8Bits.vi



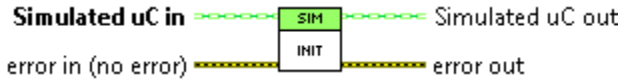
Description:

This Vi its different than the Send Set_8BIT of the father. This Vi Generate the code to aquiere out precharged data

Simulated uC.lvclass:Close_Connection.vi

Description: No description found (add content in VI description)

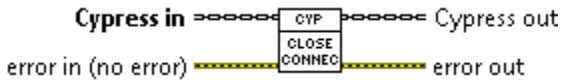
Simulated uC.lvclass:Initialize.vi



Description: No description found (add content in VI description)

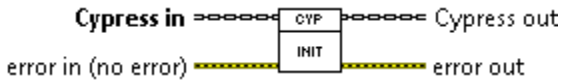
3.3.4. Cypress.lvclass

Cypress.lvclass:Close_Connection.vi



Description: No description found (add content in VI description)

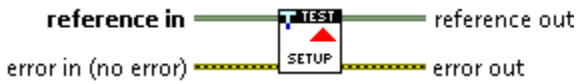
Cypress.lvclass:Initialize.vi



Description: No description found (add content in VI description)

3.3.5. tests_actions.lvclass

tests_actions.lvclass:setUp.vi



Description:

setUp runs prior to the test method during test execution. Use this method to initialize any object data required by your tests.

tests_actions.lvclass:tearDown.vi

Description:

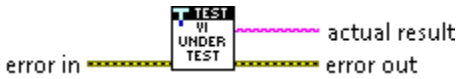
tearDown runs after the test method has completed. Use this method to clean up any operations or references that were opened by setUp or the test method. Unit tests should be independent of other unit tests so this VI should ensure that the next test can run in a 'clean' test environment.

tests_actions.lvclass:testExample.vit

Description:

Template to generate a test vi, this makes easier the job to test

tests_actions.lvclass:temp_VI_UnderTest.vi



Description: No description found (add content in VI description)

tests_actions.lvclass:Test General each Comand Response.vi

Description:

Test of each command of simulated commands and their respective responses

3.3.6. Delacor_lib_QMH_Cloneable Module Admin.lvclass

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Get Close Master Reference.vi

Description:

Specifies whether or not the master VI reference used for launching clones should be closed by the Close Module VI when the cloneable module is shutting down. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Set Close Master Reference.vi

Description:

Specifies whether or not the master VI reference used for launching clones should be closed by the Close Module VI when the cloneable module is shutting down. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Get First.vi

Description:

Specifies whether or not this clone is the first one that was launched. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Set First.vi

Description:

Specifies whether or not this clone is the first one that was launched. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Get Module ID.vi

Description:

The numeric identifier of a running instance of a cloneable module. If the module is running as a singleton, the value will be 0. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Set Module ID.vi

Description:

The numeric identifier of a running instance of a cloneable module. If the module is running as a singleton, the value will be 0. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Cloneable Admin Class—constant.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Cloneable Admin Class—control.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Cloneable Module Admin.lvclass:Delacor_lib_QMH_Reset.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

3.3.7. Delacor_lib_QMH_Module Admin.lvclass

Delacor_lib_QMH_Module Admin.lvclass:Delacor_lib_QMH_Get External Launch.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Module Admin.lvclass:Delacor_lib_QMH_Set External Launch.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Module Admin.lvclass:Delacor_lib_QMH_Admin Class—constant.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Module Admin.lvclass:Delacor_lib_QMH_Admin Class—control.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

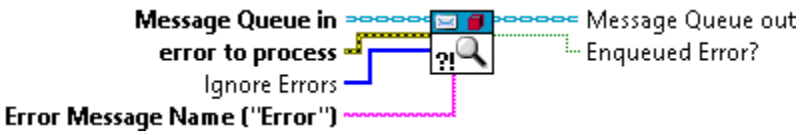
Delacor_lib_QMH_Module Admin.lvclass:Delacor_lib_QMH_Reset.vi

Description:

____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

3.3.8. Delacor_lib_QMH_Message Queue.lvclass

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Check Loop Error.vi



Description:

Check the 'error to process' to see if its code value matches any of the values in the 'Ignore Errors' array. If so, do nothing. If not, send an "Error" message containing the error data to the Message Handling Loop for further processing. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Error Handler - Event Handling Loop.vi

Description:

Process an error that occurred in the Event Handling Loop, either by ignoring it, or generating an "Error" message. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Error Handler - Message Handling Loop.vi

Description:

Process an error that occurred in the Message Handling Loop, either by ignoring it, or generating an "Error" message. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Create Message Queue.vi

Description:

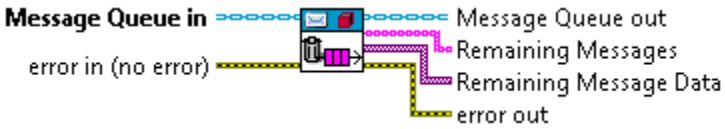
This VI creates and initializes the message queue for a QMH Module. If the message needs to be different for the given module, then create a child class of Message Queue and override the appropriate methods. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Dequeue Message.vi

Description:

This VI pulls messages off the Message Queue. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Flush Messages.vi



Description:

Flush the message queue. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

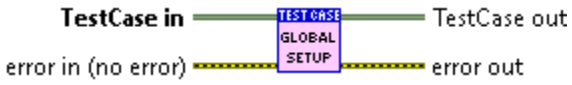
Delacor_lib_QMH_Message Queue.lvclass:Delacor_lib_QMH_Release Message Queue.vi

Description:

Release the message queue. ____ Delacor QMH Palette 5.0.0.7 Copyright (c) 2020, Delacor

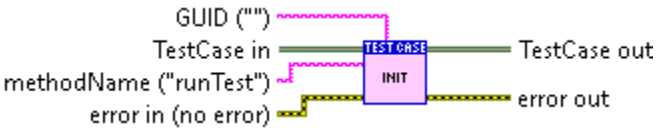
3.3.9. TestCase.lvclass

TestCase.lvclass:globalSetUp.vi



Description: No description found (add content in VI description)

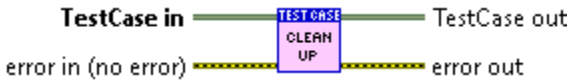
TestCase.lvclass:TestCase_Init.vi



Description:

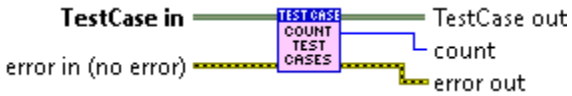
Initialize a TestCase object with methodName. methodName is the test method VI name (without .vi extension). This VI should be called whenever a new TestCase object is needed such as during TestSuite.New method calls.

TestCase.lvclass:CleanUp.vi



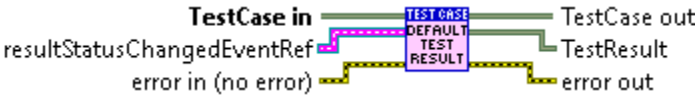
Description: No description found (add content in VI description)

TestCase.lvclass:countTestCases.vi



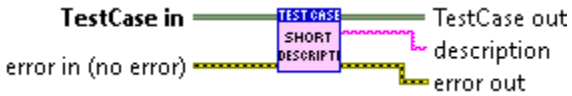
Description: No description found (add content in VI description)

TestCase.lvclass:defaultTestResult.vi



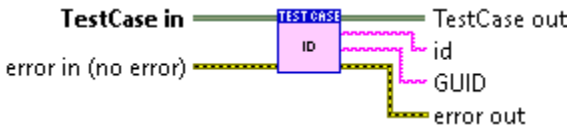
Description: No description found (add content in VI description)

TestCase.lvclass:shortDescription.vi



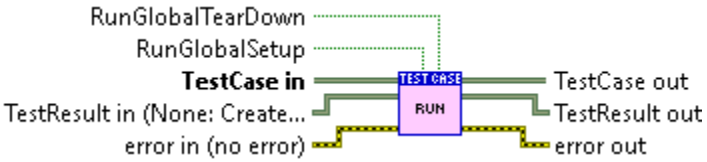
Description: No description found (add content in VI description)

TestCase.lvclass:id.vi



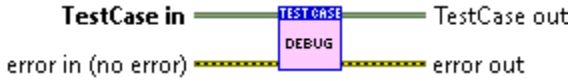
Description: No description found (add content in VI description)

TestCase.lvclass:run.vi



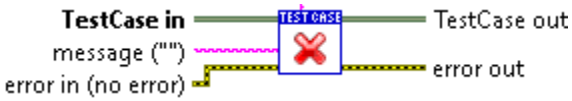
Description: No description found (add content in VI description)

TestCase.lvclass:debug.vi



Description: No description found (add content in VI description)

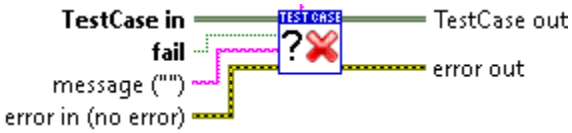
TestCase.lvclass:fail.vi



Description:

Force TestCase in to fail. 'Message' is appended to failure status.

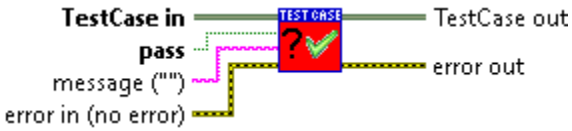
TestCase.lvclass:failIf.vi



Description:

Fail if 'fail' condition is TRUE. On failure, 'message' is appended to failure status.

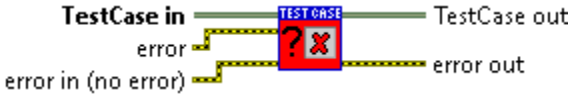
TestCase.lvclass:failUnless.vi



Description:

{Obsolete - kept for compatiblity only} Fail if 'pass' condition is FALSE. On failure, 'message' is appended to failure status.

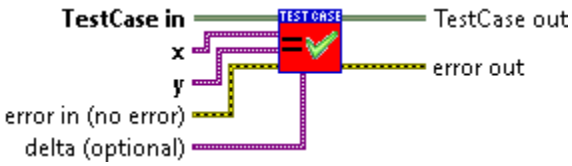
TestCase.lvclass:failUnlessError.vi



Description:

{Obsolete - kept for compatiblity only} Fail if 'error.status'=FALSE. 'error' is the error generated by the task. 'task' is the description of the task failure. 'error in' is for framework errors not related to the test task.

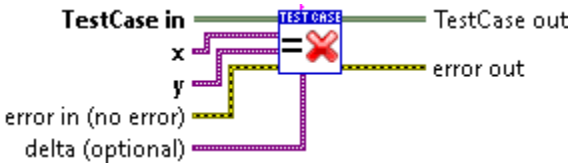
TestCase.lvclass:failUnlessEqual.vi



Description:

{Obsolete - kept for compatiblity only} Fail test if 'x' != 'y'. 'delta (optional)' if specified must be a numeric format and forces 'x', 'y' to be numeric. If 'delta' is not specified, x,y can be any variant data.

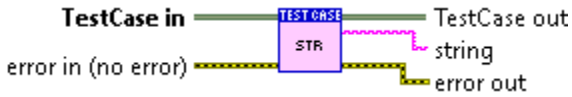
TestCase.lvclass:faillfEqual.vi



Description:

Fail test if 'x' = 'y'. 'delta (optional)' if specified must be a numeric format and forces 'x', 'y' to be numeric. If 'delta' is not specified, x,y can be any variant data.

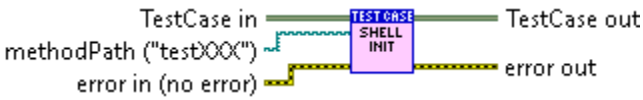
TestCase.lvclass:str.vi



Description:

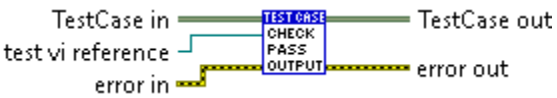
method name[tab]class name

TestCase.lvclass:TestCase_ShellInit.vi



Description: No description found (add content in VI description)

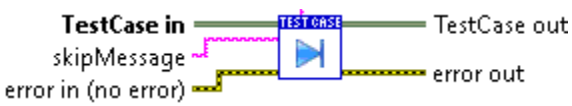
TestCase.lvclass:CheckPassFailOutputs.vi



Description:

Checks for Pass and Fail indicators. If either or both is found then check their status to determine if test passed or failed.

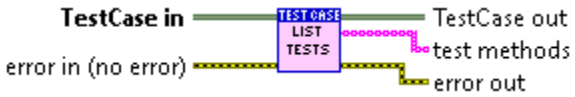
TestCase.lvclass:skip.vi



Description:

If called within a running test, it will signal to the Test Runner that the test was skipped. If called before a test is actually run, it will causes the test to be skipped (and not actually run). skipMessage can be used to document a reason the test was skipped during test execution.

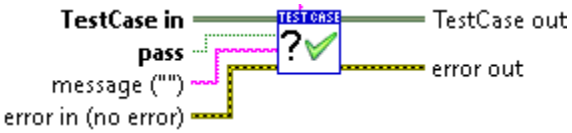
TestCase.lvclass:listAllTestMethods.vi



Description:

List all test methods that are members of the current TestCase class.

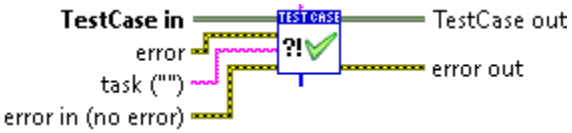
TestCase.lvclass:passIf.vi



Description:

Pass if 'pass' condition is TRUE. On failure, 'message' is appended to failure status.

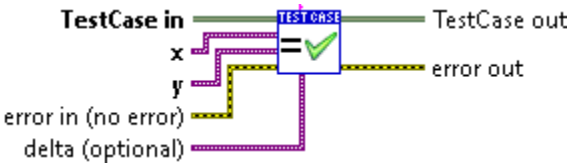
TestCase.lvclass:passIfError.vi



Description:

Pass if 'error.status'=TRUE. 'error' is the error generated by the task. 'task' is the description of the task failure. 'error in' is for framework errors not related to the test task. 'passing error codes' can be used to define specific error codes that will cause the test to pass so that unexpected errors are still raised as test failures. Use this method when you want to test that an expected error is correctly raised.

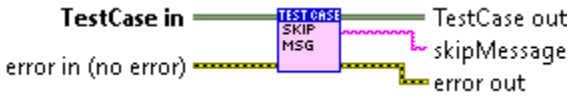
TestCase.lvclass:passIfEqual.vi



Description:

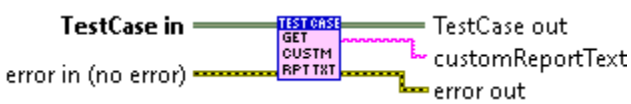
Pass test if 'x' = 'y', 'delta (optional)' if specified must be a numeric format and forces 'x', 'y' to be numeric. If 'delta' is not specified, x,y can be any variant data.

TestCase.lvclass:getSkipMessage.vi



Description: No description found (add content in VI description)

TestCase.lvclass:getCustomReportText.vi



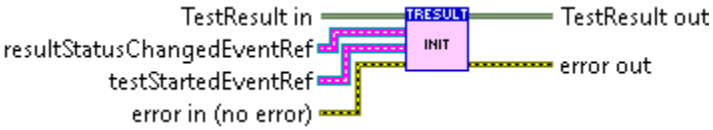
Description: No description found (add content in VI description)

TestCase.lvclass:globalTearDown.vi

Description: No description found (add content in VI description)

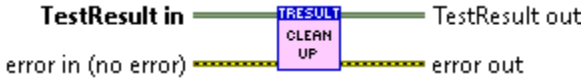
3.3.10. TestResult.lvclass

TestResult.lvclass:TestResult_Init.vi



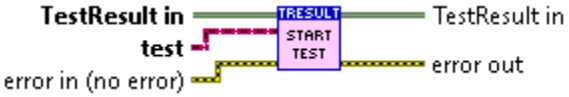
Description: No description found (add content in VI description)

TestResult.lvclass:CleanUp.vi



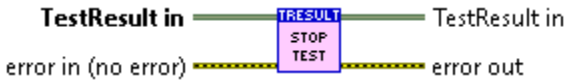
Description: No description found (add content in VI description)

TestResult.lvclass:startTest.vi



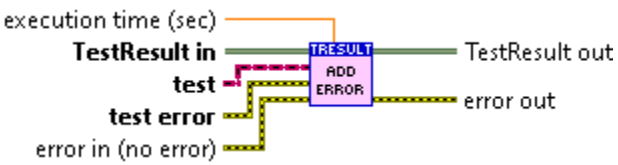
Description: No description found (add content in VI description)

TestResult.lvclass:stopTest.vi



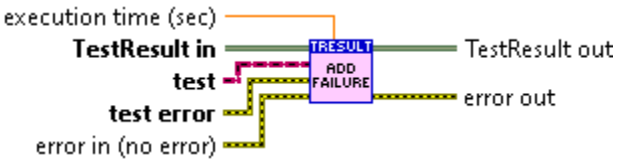
Description: No description found (add content in VI description)

TestResult.lvclass:addError.vi



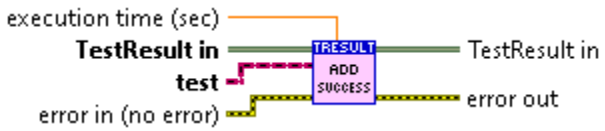
Description: No description found (add content in VI description)

TestResult.lvclass:addFailure.vi



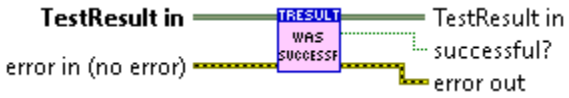
Description: No description found (add content in VI description)

TestResult.lvclass:addSuccess.vi



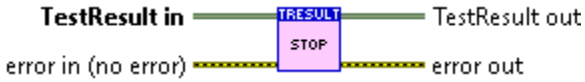
Description: No description found (add content in VI description)

TestResult.lvclass:wasSuccessful.vi



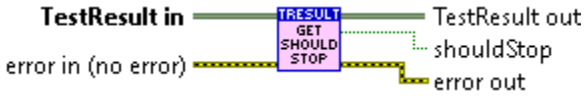
Description: No description found (add content in VI description)

TestResult.lvclass:stop.vi



Description: No description found (add content in VI description)

TestResult.lvclass:getShouldStop.vi

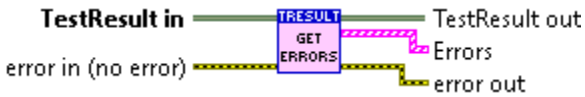


Description: No description found (add content in VI description)

TestResult.lvclass:GetTestsRun.vi

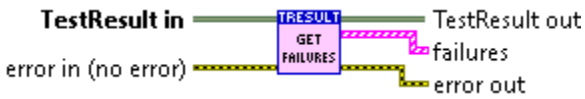
Description: No description found (add content in VI description)

TestResult.lvclass:GetErrors.vi



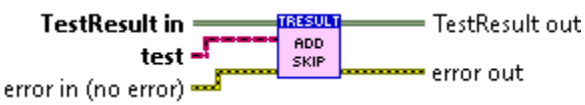
Description: No description found (add content in VI description)

TestResult.lvclass:GetFailures.vi



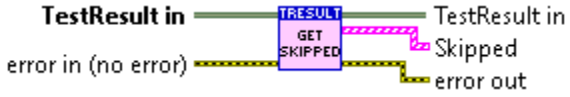
Description: No description found (add content in VI description)

TestResult.lvclass:addSkipped.vi



Description: No description found (add content in VI description)

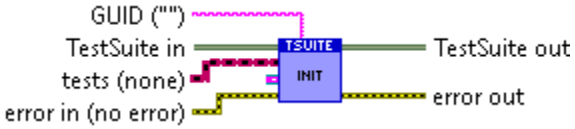
TestResult.lvclass:GetSkipped.vi



Description: No description found (add content in VI description)

3.3.11. TestSuite.lvclass

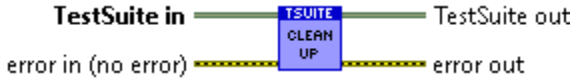
TestSuite.lvclass:TestSuite_Init.vi



Description:

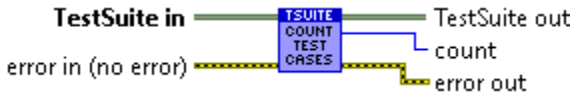
Initialize a TestSuite object with 'tests'. Tests are TestCase and/or TestSuite objects that have been initialized. This method should be called inside of any instance of TestSuite.New method after the TestSuite test objects are created.

TestSuite.lvclass:CleanUp.vi



Description: No description found (add content in VI description)

TestSuite.lvclass:countTestCases.vi



Description: No description found (add content in VI description)

TestSuite.lvclass:addTest.vi

Description:

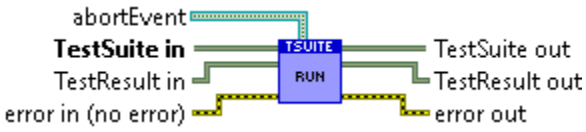
Adds a 'test' to a TestSuite object. 'test' can be a TestCase or TestSuite object.

TestSuite.lvclass:addTests.vi

Description:

Adds 'tests' to testSuite. 'tests' can be testCase or testSuite objects (can be mixed).

TestSuite.lvclass:run.vi



Description: No description found (add content in VI description)

TestSuite.lvclass:GetTests.vi

Description:

Gets the test members of testSuite. 'tests' can be testCase or testSuite objects (can be mixed).

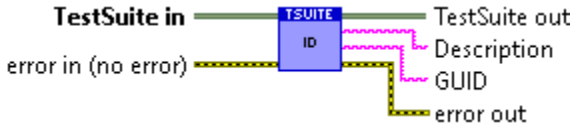
TestSuite.lvclass:CallVirtualConstructorMethod.vi

Description: No description found (add content in VI description)

TestSuite.lvclass:GetDescription.vi

Description: No description found (add content in VI description)

TestSuite.lvclass:id.vi



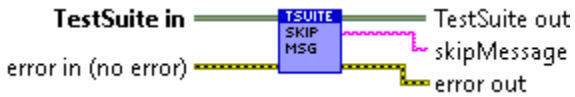
Description: No description found (add content in VI description)

TestSuite.lvclass:skip.vi

Description:

Causes TestSuite to be skipped (and not actually run).

TestSuite.lvclass:getSkipMessage.vi



Description: No description found (add content in VI description)

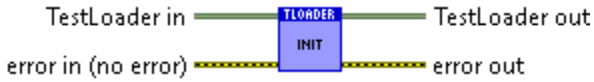
TestSuite.lvclass:SetTests.vi

Description:

Sets the test members of testSuite. 'tests' can be testCase or testSuite objects (can be mixed). Note that this method should only be called after the 'Test Cases' have been created. Expected usage for this method is in TestSuite.setUp where a developer may need to call TestSuite.GetTests to get test objects and potentially modify test data and then call TestSuite.SetTests to replace the test objects. Be careful when using this method to ensure that existing Test object data used by framework is not lost or unexpected results are possible.

3.3.12. TestLoader.lvclass

TestLoader.lvclass:TestLoader_Init.vi

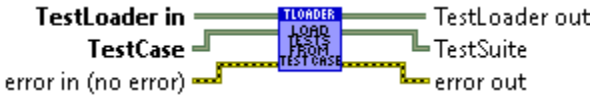


Description: No description found (add content in VI description)

TestLoader.lvclass:CleanUp.vi

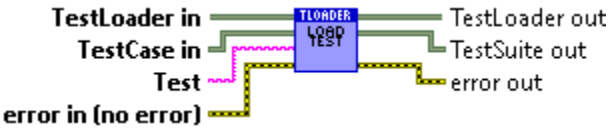
Description: No description found (add content in VI description)

TestLoader.lvclass:loadTestsFromTestCase.vi



Description: No description found (add content in VI description)

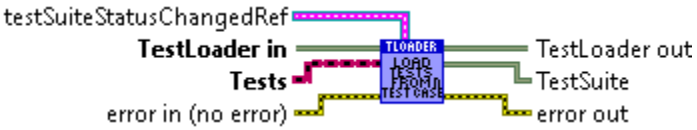
TestLoader.lvclass:loadTest.vi



Description:

This VI runs a specified test method

TestLoader.lvclass:loadTestsFromTestCases.vi



Description: No description found (add content in VI description)

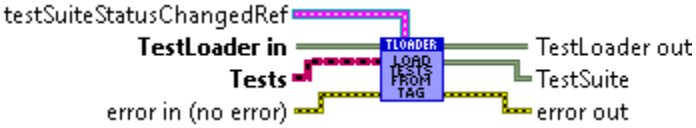
TestLoader.lvclass:getTestsFromTestCase.vi

Description: No description found (add content in VI description)

TestLoader.lvclass:getTestsFromTestCaseByClassPath.vi

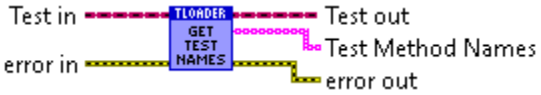
Description: No description found (add content in VI description)

TestLoader.lvclass:loadTestsFromTestTag.vi



Description: No description found (add content in VI description)

TestLoader.lvclass:getTestsFromTestCaseObject.vi



Description: No description found (add content in VI description)

4. Legal Information

4.1. Document creation

This document has been generated using the following tools.

4.1.1. Antidoc

Project website: Antidoc (https://wovalab.gitlab.io/open-source/labview-doc-generator/)

Maintainer website: Wovalab (https://wovalab.com)

4.1.2. Asciidoc for LabVIEW™

Project website: Asciidoc toolkit (https://wovalab.gitlab.io/open-source/asciidoc-toolkit/)

Maintainer website: Wovalab (https://wovalab.com)

- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

4.1.3. Graph Builder

Project website: Graph Builder (https://gitlab.com/cgambini/graph-builder)

BSD 3-Clause License

Copyright (c) 2020, Cyril GAMBINI All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

4.2. Product used in the project

The documented project has been developed with the following products.

4.2.1. DQMH®

Copyright © 2015-2020 by Delacor, LLC. All Rights Reserved.

Find more details on Delacor (https://delacor.com/products/dqmh/) website