

pFUnit

Generated by Doxygen 1.7.6

Fri Dec 20 2013 21:30:51

Contents

1	pFUnit 2 - Documentation - Version 0.0 (2013-1220-1 MLR)	1
1.1	Overview	1
1.2	Contents	1
1.3	See Also	2
1.4	Copyright	2
2	Installation	3
2.1	Installing pFUnit	3
2.2	Prerequisites	3
2.3	Obtaining pFUnit	4
2.4	Manifest - What's in the directory?	4
2.5	Configuration	5
2.6	Building pFUnit	5
2.6.1	Building pFUnit for testing serial codes (Non-MPI)	5
2.6.2	Building pFUnit for testing parallel codes (MPI)	6
2.6.3	Cleaning	6
2.6.4	Documentation	7
2.7	Installation	7
2.7.1	Installation - Serial	7
2.7.2	Installation - MPI	7
2.7.3	Installation - DEFAULT DIRECTORY	8
3	Usage	9

3.1	Usage	9
3.1.1	Usage - Configuration	9
3.1.2	Usage - Hello World	9
3.1.3	Usage - Preprocessor	10
4	Development	11
5	Feedback & Support	13
5.1	Feedback	13
5.2	Support	13
6	FAQ and Tips	15
6.1	FAQ	15
6.1.1	Zero Tests Run	15
6.1.2	Some Tests Are Not Running	15
6.2	Tips	16
6.2.1	Environment Modules	16
6.2.2	Compile Time Errors	16
6.2.3	Intermediate files used by pFUnit	16
7	Platform Specific Notes	17
7.1	Mac OSX	17
7.2	Windows/CYGWIN	17
8	Acknowledgments	19
9	Known Installations & Versions	21
10	TODO	23
11	The Preprocessor - pFUnitParser	25
11.1	Using The Preprocessor	25
11.1.1	Configuration - testSuites.inc	26
11.1.2	Invocation	26
11.1.3	Preprocessor Input File (.pf)	26

11.1.4 Directives	27
11.1.4.1 @Test	27
11.1.4.2 @MPITest	27
11.1.4.3 @Assert	28
11.1.4.4 @Parameters	29
11.1.4.5 @TestCase	29
12 @Assert Preprocessor Directives	31
12.1 @Assert Preprocessor Directives	32
12.1.1 @assertEqual	32
12.1.2 @assertTrue	32
12.1.3 @assertFalse	32
12.1.4 @assertLessThan	32
12.1.5 @assertLessThanOrEqual	32
12.1.6 @assertGreaterThan	32
12.1.7 @assertGreaterThanOrEqual	32
12.1.8 @assertIsMemberOf	32
12.1.9 @assertContains	32
12.1.10 @assertAny	32
12.1.11 @assertAll	32
12.1.12 @assertNotAll	32
12.1.13 @assertNone	32
12.1.14 @assertIsPermutationOf	32
12.1.15 @assertExceptionRaised	32
12.1.16 @assertSameShape	32
12.1.17 @assertIsNaN	32
12.1.18 @assertIsFinite	32
13 Revision Notes	33
14 Data Type Index	35
14.1 Class Hierarchy	35

15 Data Type Index	39
15.1 Data Types List	39
16 Data Type Documentation	43
16.1 pFUnitParser::Action Class Reference	43
16.2 add_mod Module Reference	44
16.3 addComplex_mod Module Reference	44
16.4 CodeUtilities::ArrayDescription Class Reference	44
16.5 Assert_mod Module Reference	45
16.5.1 Detailed Description	45
16.6 AssertBasic_mod Module Reference	46
16.6.1 Detailed Description	46
16.7 AssertInteger_mod Module Reference	47
16.7.1 Detailed Description	47
16.8 GenerateRealArrayNewSignature::AssertRealArrayArgument Class - Reference	48
16.9 pFUnitParser::AtAfter Class Reference	48
16.10 pFUnitParser::AtAssert Class Reference	49
16.11 pFUnitParser::AtBefore Class Reference	50
16.12 pFUnitParser::AtBegin Class Reference	50
16.13 pFUnitParser::AtMpiTest Class Reference	51
16.14 pFUnitParser::AtParameters Class Reference	52
16.15 pFUnitParser::AtSuite Class Reference	52
16.16 pFUnitParser::AtTest Class Reference	53
16.17 pFUnitParser::AtTestCase Class Reference	54
16.18 BaseTestRunner_mod Module Reference	54
16.18.1 Detailed Description	55
16.19 BeforeAfter_mod Module Reference	55
16.20 BrokenSetUpCase_mod Module Reference	55
16.21 BrokenTestCase_mod Module Reference	56
16.22 GenerateRealArrayNewSignature::constraintASSETEQUAL Class Reference	56

16.22.1 Constructor & Destructor Documentation	57
16.22.1.1 __init__	57
16.22.2 Member Data Documentation	57
16.22.2.1 name1	57
16.22.2.2 tolerance	57
16.23 mods::pre::pre2::dataString Class Reference	57
16.24 DebugListener_mod Module Reference	58
16.24.1 Detailed Description	59
16.25 CodeUtilities::declaration Class Reference	59
16.26 DynamicTestCase_mod Module Reference	60
16.26.1 Detailed Description	60
16.27 Exception_mod Module Reference	60
16.28 Fixture_mod Module Reference	61
16.29 FixtureTestCase_mod Module Reference	61
16.30 CodeUtilities::fortranSubroutineSignature Class Reference	62
16.31 Halo_mod Module Reference	62
16.32 mods::pre::pre_If::IfDirective Class Reference	63
16.33 CodeUtilities::implementation Class Reference	63
16.34 CodeUtilities::interfaceBlock Class Reference	64
16.35 mods::pre::pre_If::interval Class Reference	64
16.36 GenerateRealArrayNewSignature::IsWithinTolerance Class Reference	64
16.37 Test_RestrictSphericalCoordinates_mod::LatLonCase Type Reference	65
16.38 LinearInterpolator_mod Module Reference	65
16.39 MakeInfinity_mod Module Reference	66
16.39.1 Detailed Description	66
16.40 MakeNaN_mod Module Reference	66
16.40.1 Detailed Description	67
16.41 MockCall_mod Module Reference	67
16.41.1 Detailed Description	67
16.42 MockListener_mod Module Reference	68
16.43 testParser::MockParser Class Reference	68

16.44MockRepository_mod Module Reference	69
16.44.1 Detailed Description	69
16.45MockSUT_mod Module Reference	69
16.46testParser::MockWriter Class Reference	70
16.47CodeUtilities::module Class Reference	70
16.48MpiContext_mod Module Reference	71
16.48.1 Detailed Description	71
16.49MpiStubs_mod Module Reference	72
16.49.1 Detailed Description	72
16.50MpiTestCase_mod Module Reference	73
16.50.1 Detailed Description	73
16.51MpiTestMethod_mod Module Reference	74
16.51.1 Detailed Description	74
16.52ParallelContext_mod Module Reference	74
16.52.1 Detailed Description	75
16.53ParallelException_mod Module Reference	75
16.53.1 Detailed Description	75
16.54ParameterizedTestCase_mod Module Reference	76
16.54.1 Detailed Description	76
16.55Params_mod Module Reference	77
16.55.1 Detailed Description	77
16.56pFUnitParser::Parser Class Reference	78
16.57Test_Parameters_mod::peCase Type Reference	78
16.58pFUnit Module Reference	79
16.58.1 Detailed Description	79
16.59pFUnit_mod Module Reference	79
16.59.1 Detailed Description	79
16.60PrivateException_mod Module Reference	80
16.60.1 Detailed Description	80
16.61mods::pre::pre2::procDirective Class Reference	81
16.61.1 Member Function/Subroutine Documentation	82

16.61.1.1 addTokenRE	82
16.62RemoteProxyTestCase_mod Module Reference	82
16.62.1 Detailed Description	82
16.63mods::pre::pre_Repeat::RepeatDirective Class Reference	83
16.64ResultPrinter_mod Module Reference	83
16.64.1 Detailed Description	84
16.65RobustRunner_mod Module Reference	84
16.65.1 Detailed Description	85
16.66robustTestSuite_mod Module Reference	85
16.67CodeUtilities::routineUnit Class Reference	85
16.68SerialContext_mod Module Reference	86
16.68.1 Detailed Description	87
16.69SimpleTestCase_mod Module Reference	87
16.70SourceLocation_mod Module Reference	88
16.70.1 Detailed Description	88
16.71SphericalCoordinates_mod Module Reference	88
16.72TestListener_mod::startTest Interface Reference	89
16.73StringConversionUtilities_mod Module Reference	89
16.73.1 Detailed Description	89
16.74SubsetRunner_mod Module Reference	90
16.74.1 Detailed Description	90
16.75SurrogateTestCase_mod Module Reference	91
16.75.1 Detailed Description	91
16.76SUT_mod Module Reference	91
16.77Test_Assert_mod Module Reference	92
16.78Test_AssertBasic_mod Module Reference	92
16.79Test_AssertComplex_mod Module Reference	92
16.80Test_AssertInteger_mod Module Reference	93
16.81Test_AssertReal_mod Module Reference	93
16.82Test_Exception_mod Module Reference	94
16.83Test_FixtureTestCase_mod Module Reference	95

16.84	Test_LinearInterpolator_mod::Test_LinearInterpolator Type Reference	95
16.85	Test_LinearInterpolator_mod Module Reference	96
16.86	Test_MockCall_mod Module Reference	96
16.87	Test_MockRepository_mod Module Reference	96
16.88	Test_mod Module Reference	97
16.88.1	Detailed Description	97
16.89	Test_MpiContext_mod Module Reference	97
16.90	Test_MpiException_mod Module Reference	98
16.91	Test_MpiTestCase_mod Module Reference	98
16.92	Test_Parameters_mod::Test_Parameters Interface Reference	99
16.93	Test_Parameters_mod Module Reference	99
16.94	Test_RestrictSphericalCoordinates_mod::Test_RestrictSpherical- Coordinates Interface Reference	100
16.95	Test_RestrictSphericalCoordinates_mod Module Reference	100
16.96	Test_RobustRunner_mod Module Reference	101
16.97	Test_SimpleTestCase_mod Module Reference	101
16.98	Test_StringConversionUtilities_mod Module Reference	101
16.99	Test_TestMethod_mod Module Reference	102
16.100	Test_TestResult_mod Module Reference	102
16.101	Test_TestSuite_mod Module Reference	102
16.102	Test_UnixProcess_mod Module Reference	103
16.103	TestCase_mod Module Reference	103
16.103.1	Detailed Description	104
16.104	TestFailure_mod Module Reference	104
16.104.1	Detailed Description	104
16.105	nodes::pre::pre_if::TestIfDirective Class Reference	105
16.106	nodes::pre::interleavedp::TestInterleaved Class Reference	105
16.107	TestListener_mod Module Reference	106
16.107.1	Detailed Description	106
16.108	TestMethod_mod Module Reference	107
16.108.1	Detailed Description	107

16.109	<code>nodes::pre::parseArgs::TestParseArgs</code> Class Reference	107
16.110	<code>testParser::TestParseLine</code> Class Reference	108
16.110.1	Member Function/Subroutine Documentation	108
16.110.1.1	<code>testAtMpiTest</code>	108
16.110.1.2	<code>testAtTest</code>	108
16.110.1.3	<code>testMatchAtAfter</code>	109
16.110.1.4	<code>testMatchAtAssertEqual</code>	109
16.110.1.5	<code>testMatchAtAssertOther</code>	109
16.110.1.6	<code>testMatchAtBefore</code>	109
16.110.1.7	<code>testMatchAtSuite</code>	109
16.110.1.8	<code>testMatchAtTestCase</code>	109
16.111	<code>nodes::pre::pre_Repeat::TestRepeatDirective</code> Class Reference	109
16.112	<code>TestResult_mod</code> Module Reference	110
16.112.1	Detailed Description	110
16.113	<code>TestRunner_mod</code> Module Reference	111
16.113.1	Detailed Description	111
16.114	<code>TestSuite_mod</code> Module Reference	112
16.114.1	Detailed Description	112
16.115	<code>ThrowFundamentalTypes_mod</code> Module Reference	112
16.115.1	Detailed Description	113
16.116	<code>UnixPipeInterfaces_mod</code> Module Reference	113
16.116.1	Detailed Description	114
16.117	<code>UnixProcess_mod</code> Module Reference	114
16.117.1	Detailed Description	114
16.118	<code>GenerateRealArrayNewSignature::VECTOR_NORM</code> Class Reference	115

Chapter 1

pFUnit 2 - Documentation - Version 0.0 (2013-1220-1 MLR)

1.1 Overview

pFUnit is a unit testing framework enabling JUnit-like testing of serial and MPI-parallel software written in Fortran. It makes use of modern Fortran programming techniques, including object oriented programming, offering a convenient, lightweight mechanism for Fortran developers to create and run software tests that specify the desired behavior for a given piece of code. The framework was originally created by developers from NASA and NGC TASC. The project is hosted at [sourceforge/projects/pfunit](https://sourceforge.net/projects/pfunit).

If you are using **pFUnit**, please leave a note/topic at [Applications of pFUnit](#), or send a note to **Tom Clune**, Ph.D., Chief, Software Systems Support Office Code 610.3, NASA Goddard Space Flight Center.

Please refer revisions and comments about the documentation to **Mike Rilee**, Ph.D., Rilee Systems Technologies.

1.2 Contents

- [Installation](#)
- [Usage](#)
- [Development](#)
- [Feedback & Support](#)
- [FAQ and Tips](#)

- [Platform Specific Notes](#)
- [Acknowledgments](#)
- [Known Installations & Versions](#)
- [TODO](#)
- [The Preprocessor - pFUnitParser](#)
- [Revision Notes](#)

1.3 See Also

- [sourceforge/projects/pfunit](#)
- [NASA Modeling Guru](#)
- [JUnit.org](#)

1.4 Copyright

Copyright 2005,2013 United States Government as represented by the Administrator of the National Aeronautics and Space Administration. All Rights Reserved.

Chapter 2

Installation

2.1 Installing pFUnit

Comentatry for the page.

- [Prerequisites](#)
- [Obtaining pFUnit](#)
- [Manifest - What's in the directory?](#)
- [Configuration](#)
- [Building pFUnit](#)
 - [Building pFUnit for testing serial codes \(Non-MPI\)](#)
 - [Building pFUnit for testing parallel codes \(MPI\)](#)
 - [Cleaning](#)
 - [Documentation](#)
- [Installation](#)

2.2 Prerequisites

The development work for [pFUnit](#) has mostly been carried out on a mixture of systems, including high-end computers, Apple Mac OSX, and linux-based systems. A preliminary Windows/CYGWIN port has been contributed by a user. Full use of the system depends on the following being available.

- Fortran 2003+ (Tested with Intel 13.1+, NAG 5.3, GCC 4.8.1., IBM's XLF)
- The Message Passing Interface (MPI)
- GNU Make
- Python

Doxygen is used to generate documentation.

The system routinely undergoes regression testing with GNU, Intel, and NAG fortran compilers and OpenMPI.

2.3 Obtaining pFUnit

The best way to obtain pFUnit is to clone the git repository from SourceForge as follows.

```
# Read Only Access
git clone git://git.code.sf.net/p/pfunit/code pFUnit
```

This will create the directory pFUnit in the current working directory.

You may also visit the project page at SourceForge and download the source tarfile "pFUnit.tar.gz" there.

<http://sourceforge.net/projects/pfunit/> or <http://sourceforge.net/projects/pfunit/files/latest/download>

Extracting this tarfile via a command like

```
'$ tar xzf ./pFUnit.tar.gz'
```

will place the pFUnit files into the current working directory.

For other ways to acquire the code visit

<https://sourceforge.net/p/pfunit/code/ci/master/tree/>

or contact the pFUnit team.

2.4 Manifest - What's in the directory?

In the top level of the pFUnit distribution you will see the following files.

COPYRIGHT - Contains information pertaining to the use and distribution of pFUnit.

Examples - Contains examples of how to use pFUnit once it is installed.

GNUmakefile - The top level makefile for building and installing pFUnit.

bin - Executables used to construct and perform unit tests.

include - Files to be included into makefiles or source, including use code.

source - Source code and scripts of the [pFUnit](#) library and framework.

tests - Source code for unit testing [pFUnit](#) itself.

tools - Tools used to help develop, build, and install [pFUnit](#).

2.5 Configuration

Little needs to be done to configure [pFUnit](#) for the build, however there are several environment variables on which the package depends.

'F90_VENDOR' - is set to include the correct makefile in /include, i.e. GNU, Intel, NAG, or PGI. Case insensitive file systems may cause some confusion from time-to-time.

'F90' - is set to the Fortran compiler being used: e.g. ifort for Intel, gfortran for GNU.

'COMPILER' - is set according to 'F90_VENDOR' and is automatically set in the top level makefile.

For MPI-based unit testing, your setup may require the following as well.

'MPIF90'

```
$ export MPIF90=mpif90
```

As a convenience for working with multiple MPI configurations, you may also set the following.

'MPIRUN'

```
$ export MPIRUN=/some.path/mpirun
```

'DOXYGEN' - To generate documentation, set DOXYGEN to the desired executable. NOTE: Doxygen Version 1.8.5 does not respect CamelCase names from Fortran source code by currently converting all to lowercase. It does this to get HTML links correct for references in the source code that also do not respect the CamelCase convention. The Fortran standard specifies case insensitivity. Doxygen 1.7.x seems to better respect CamelCase.

```
$ export DOXYGEN=/opt/local/share/doxygen/doxygen-1.7.6/bin/doxygen
```

2.6 Building pFUnit

2.6.1 Building pFUnit for testing serial codes (Non-MPI)

1. Change to the directory into which [pFUnit](#) has been placed. 2. Set the environment variables (in bash):

```
$ export F90=gfortran-mp-4.8
$ export F90_VENDOR=GNU
```

3. To build **pFUnit** for unit testing of serial codes, execute make. The unit tests for **pFUnit** itself will run automatically.

```
$ make tests
```

3.1 Occasionally on the first run through, one will get a spurious (runtime) error, for example in the unix process component.

Re-execute "make tests" to check again.

4. At this point the **pFUnit** object library is in the source directory, along with a large number of Fortran module files.

2.6.2 Building pFUnit for testing parallel codes (MPI)

To build **pFUnit** for unit testing MPI-based codes, be sure that the environment is properly set up for the MPI implementation you are using. Depending on your local environment, you may need execute the build within a batch or other job queing system, e.g. an interactive batch job under PBS. The steps for building **pFUnit** start out the same as for the serial case above, but add MPI=YES to the environment to switch on MPI support. The MPI-based unit tests for **pFUnit** itself will run automatically. Again, occasionally a spurious (runtime) error may appear on the first execution.

3. Execute make as follows.

```
$ make tests MPI=YES
```

4. At this point an MPI-enabled **pFUnit** object library is in the source directory, along with a large number of Fortran module files.

Also, one may get some harmless "no symbols" warnings when the **pFUnit** library is constructed.

2.6.3 Cleaning

To clean the **pFUnit** build directory for the space or to rebuild there are two options.

1. Make clean to remove object files and other intermediate products.

```
$ make clean
```

2. Make distclean to remove libraries and other more final products.

```
$ make distclean
```

3. Some directories support a 'make src_clean' to remove intermediate products in subdirectories.

2.6.4 Documentation

A start at documentation for [pFUnit](#) is in the documentation directory. [Doxygen](#) is our primary documentation tool. To make the documentation, which will be generated in the documentation directory, please invoke the following.

```
$ make documentation
```

Or to make a reference manual.

```
$ make documentation/pFUnit2-ReferenceManual.pdf
```

To select a specific version of Doxygen, please set the DOXYGEN environment variable as in [Configuration](#). You may wish to do this if your code uses CamelCase names as current versions of Doxygen (1.8.5) do not respect this convention for Fortran.

2.7 Installation

2.7.1 Installation - Serial

To install [pFUnit](#) for regular use, set `INSTALL_DIR` to the location in which to place [pFUnit](#). This can be done on the make command line. For example, after compiling [pFUnit](#) for serial use (MPI absent or MPI=NO), please try.

```
$ # In the top of the pFUnit build directory.  
$ make install INSTALL_DIR=/opt/pfunit/pfunit-serial
```

Note: you may need special privileges to install in some locations, e.g. via `sudo`.

To test the installation set `PFUNIT` to `INSTALL_DIR`, then change the working directory to Examples in [pFUnit](#) distribution and execute "buildIt," which will run a number of examples. These include some expected failures.

```
$ # In the top pFUnit build directory...  
$ export PFUNIT=/opt/pfunit/pfunit-serial  
$ pushd Examples  
$ ./buildIt
```

2.7.2 Installation - MPI

For installing an MPI-enabled [pFUnit](#) library, change to the top of the distribution and execute make with `MPI=YES`. You may need to "make distclean" first. After compilation and [pFUnit](#) passes its self-tests, then installation proceeds as for the serial case above.

```
$ make install INSTALL_DIR=/opt/pfunit/pfunit-parallel
```

To test, set PFUNIT and go into Examples/MPI_Halo directory.

```
$ # In the top pFUnit build directory...
$ export PFUNIT=/opt/pfunit/pfunit-parallel
$ # The variable MPIF90 must be set to the appropriate build script.
$ export MPIF90=mpif90
$ cd Examples/MPI_Halo/Semi-Automatic
$ make
```

This will compile and run a set of parallel examples that includes intentional failures.

2.7.3 Installation - DEFAULT DIRECTORY

If INSTALL_DIR is not set, "make install" will attempt to install [pFUnit](#) into the top build directory. This will create directories such as lib and mod in the top level of the build directory and will overwrite the include/base.mk with include/base-install.mk. If this is not desired, then "make develop" will put back the original base.mk, which is the file to be used for development and building [pFUnit](#). In general, we recommend installing to a directory that is not also the build directory.

Chapter 3

Usage

- [Usage - Configuration](#)
- [Usage - Hello World](#)
- [Usage - Preprocessor](#)

3.1 Usage

3.1.1 Usage - Configuration

For regular use, after installation, the same compiler/MPI development configuration that was used to build [pFUnit](#) should be used. Once the environment variables and paths associated with the environment are set, to configure [pFUnit](#), please set the following.

'PFUNIT' - set to the directory into which [pFUnit](#) was installed.

'F90_VENDOR' - set to Intel, GNU, NAG, or PGI accordingly.

3.1.2 Usage - Hello World

For an example of a simple usage of [pFUnit](#), see `Examples/Simple/Semi--Automatic/tests`.

The simplest way to write a test is to write a preprocessor input file (extension ".pf"), which is a Fortran free format file with preprocessor directives added. An example from "helloWorld.pf" follows.

```
! from helloWorld.pf
@test
subroutine testHelloWorld()
```

```
use pfunit_mod
implicit none
@assertEqual("Hello World!", "Hello World!")
end subroutine testHelloWorld
```

One then instructs the preprocessor to construct a suite to execute these tests via the "testSuites.inc" file as follows.

```
! from testSuites.inc
ADD_TEST_SUITE(helloWorld_suite)
```

At this point, one can invoke the preprocessor to generate a Fortran file that when compiled and linked with [pFUnit](#) will execute the tests. For more information please see [The Preprocessor - pFUnitParser](#) or try out the examples in Example/Simple.

3.1.3 Usage - Preprocessor

Please see [The Preprocessor - pFUnitParser](#).

Chapter 4

Development

Generally [pFUnit](#) development is performed in the build directory structure. Care should be taken to make clean or distclean in between configuration changes. As stated in - [Installation](#), it is best to set `INSTALL_DIR` and "make install" [pFUnit](#) to another directory that can be placed in a user's paths.

Chapter 5

Feedback & Support

- [Feedback](#)
- [Support](#)

5.1 Feedback

Feedback is welcome, please use the facilities at [sourceforge/projects/pfunit](#) to share your views.

Open a [ticket](#) for bugs, features, and patch recommendations.

If you use [pFUnit](#), please let us know by leaving a note in our [Applications of pFUnit](#) forum, or email [Tom Clune](#), Ph.D., NASA Goddard Space Flight Center. - Letting us know about your application helps us seek support for [pFUnit](#)'s continued development and improvement.

5.2 Support

Please open a [ticket](#) for bugs, features, and patch recommendations. For longer term needs or considerations, please visit our [discussion forums](#) or contact - [Tom Clune](#), Ph.D., NASA Goddard Space Flight Center.

You may also find some help at [FAQ and Tips](#).

[pFUnit](#) supports the software development of several weather and climate simulations efforts. We constantly seek to improve and correct [pFUnit](#) for our users' benefit, granting priority to the needs of our major users. Please share with us information about your application on our [Applications of pFUnit](#) forum.

Chapter 6

FAQ and Tips

- [FAQ](#)
 - [Zero Tests Run](#)
 - [Some Tests Are Not Running](#)
- [Tips](#)
 - [Environment Modules](#)
 - [Compile Time Errors](#)
 - [Intermediate files used by pFUnit](#)

6.1 FAQ

6.1.1 Zero Tests Run

Symptom: The system under test compiles and runs fine, but reports zero tests run.

Solutions:

- There is no `testSuites.inc` file. Please add a `testSuites.inc` that lists the suites to add via `ADD_TEST_SUITE (the_suite_to_add)`, one to a line.
- There is no `-DUSE_MPI` passed to the compiler during the build. Please add to the compiler invocation. Please see [Some Tests Are Not Running](#).

6.1.2 Some Tests Are Not Running

Symptom: The system under test compiles and runs fine, but reports that some tests don't run.

Solutions:

- There is no `-DUSE_MPI` passed to the compiler during the build. Please add as in the following example.

```
% $PFUNIT/bin/pFUnitParser.py test_pio.pf test_pio.F90
% mpif90 -DUSE_MPI $PFUNIT/include/driver.F90 \
%      -I$PFUNIT/mod -L$PFUNIT/lib -lpfunit test_pio.F90

% mpirun -np 8 ./a.out

.
Time:          0.004 seconds

OK
```

6.2 Tips

6.2.1 Environment Modules

Though not strictly required, the Environment Modules package can be a convenient way to package, maintain, and switch between environments. This can be particularly important for [pFUnit](#), which must be built using the same tool suite being used for development, e.g. compilers, linkers, etc. [To do: A sample [pFUnit](#) modulefile is provided in the OTHER directory.]

6.2.2 Compile Time Errors

Compile time errors like "'include [...]include/.mk" not found' likely signify that you are not executing make in the top level directory during a build. Alternatively, during regular usage after installation, PFUNIT has not been set.

During building, if you wish to compile in a subdirectory within the [pFUnit](#) hierarchy, please try setting the COMPILER environment variable on the make command line. For example:

```
$ make all COMPILER=Intel
```

6.2.3 Intermediate files used by pFUnit

If you wish to see the intermediate files, use the target `.PRECIOUS` in the makefile to keep them from being deleted. For example:

```
# In GNUmakefile
.PRECIOUS: %_cpp.F90
```

Chapter 7

Platform Specific Notes

7.1 Mac OSX

The MacPorts package management system is a convenient way to install and maintain many packages, including gcc which includes gfortran.

7.2 Windows/CYGWIN

User contributed code for Windows/CYGWIN has been added, but is currently not tested and supported by the [pFUnit](#) team. At this writing, 2013-1031, serial Examples and MPI are not known to be supported. Please contact us if you wish to either contribute or otherwise discuss this port.

Chapter 8

Acknowledgments

Thanks to the following for their review and comments: B. Van Aartsen, T. Clune.

Windows/CYGWIN contributions from E. Lezar.

Other acknowledgments: S.P. Santos (NCAR), M. Hambley (UK Met).

The design of **pFUnit** is strongly influenced by **JUnit**.

Initial **pFUnit** 2 documentation by Michael Rilee (Rilee Systems Technologies).

Chapter 9

Known Installations & Versions

TBD

Chapter 10

TODO

- Make other directory.
- Make Environment Modules example in other directory.
- Other build systems, e.g. CMake.

Chapter 11

The Preprocessor - pFUnitParser

Overview of Preprocessor (pFUnitParser.py)

- Using The Preprocessor
 - Configuration - testSuites.inc
 - Invocation
 - Preprocessor Input File (.pf)
 - Directives
 - * @Test
 - * @MPITest
 - * @Assert (or Preprocessor Directives)
 - * @Parameters
 - * @TestCase

//

11.1 Using The Preprocessor

How to write tests using the ".pf" files. We expect this to be the main way people write pFUnit-based tests. Please see the Examples directory for a wide range of examples. The .pf files themselves are generally to be found in an example's semi-automatic/tests subdirectory.

11.1.1 Configuration - testSuites.inc

The include file "testSuites.inc" tells the preprocessor to generate code for TestSuites listed therein. The suite names are based on the TestCases provided in the preprocessor input file or the name of the preprocessor input file (.pf) itself. For example, if no module is defined in a .pf file, i.e. the preprocessor will define the module, one can set up a "testSuites.inc" as follows.

```
! To load "exampleTestsNoModule.pf".
ADD_TEST_SUITE(exampleTestsNoModule_suite)
```

For a .pf file that contains a module associated with a test suite the syntax is as follows.

```
! To load "exampleTests.pf" implementing the module exampleTests_mod.
ADD_TEST_SUITE(exampleTests_mod_suite)
```

11.1.2 Invocation

To run the preprocessor on a preprocessor input file "exampleTests.pf", invoke:

```
$ ${PFUNIT}/bin/pFUnitParser.py exampleTests.pf exampleTests.F90
```

A convenient GNUmakefile rule is as follows.

```
%.F90: %.pf
    ${PFUNIT}/bin/pFUnitParser.py $< $@
```

11.1.3 Preprocessor Input File (.pf)

The preprocessor input file is a Fortran free format file that contains subroutines, including those implementing the suite of tests, or a module with the tests, TestCases, and support for parameters. The preprocessor reads and parses this file producing a fortran file implementing the tests, automating some boilerplate code. Embedded "@" directives inform the preprocessor about information needed to generate the test suite. If the .pf file does not implement a module providing a test suite, the preprocessor will use the name of .pf file referred to by "testSuites.inc". Currently only one test suite per .pf file is allowed, a limitation of the current implementation of the parser.

Many example .pf files may be found in the examples' semi-automatic/tests subdirectories in the Examples directory.

Below we present the most commonly used directives first, but in a .pf file using all of these capabilities, the most common order is as follows.

- [@Parameters](#)
- [@TestCase](#)
- [@Test](#) or [@MPITest](#)
- [@Assert](#)

11.1.4 Directives

Preprocessor "@" directives, which in keeping with Fortran style are not case sensitive, instruct the preprocessor how to interpret parts of the code relevant to the generation of the test suite. The most important directives follow.

11.1.4.1 @Test

This directive is used to indicate a test routine to the preprocessor, which then includes it in the test suite. There may be multiple tests in the .pf file, each annotated by the directive. For example, from Examples/Fixture:

```
@Test
  subroutine testBracketInterior(this)
    class (Test_LinearInterpolator), intent(inout) :: this
    @assertEqual([3,4], this%interpolator%getBracket(at=4.))
  end subroutine testBracketInterior

@Test
  subroutine testInterpolateAtNode(this)
    class (Test_LinearInterpolator), intent(inout) :: this
    @assertEqual(2., this%interpolator%interpolate(at=3.))
  end subroutine testInterpolateAtNode
```

11.1.4.2 @MPITest

This directive indicates an MPI parallel test to the preprocessor, which then includes it in an MPI enabled test suite. The directive takes a single argument, the requested number of MPI processes to run. The syntax, exemplified by one of the tests from Examples/MPI_Halo:

```
@mpiTest( npes=[1,2,3])
subroutine testHaloInterior(this)
  use Halo_mod
  use pfunit_mod
  implicit none
  class (MpiTestMethod) :: this

  integer, parameter :: N = 2
  real :: a(N,0:N+1)
  integer :: p

  p = this%getProcessRank()
  a(:,1:N) = p
  a(:,0) = -1
  a(:,N+1) = -1

  call haloFill(a, this%getMpiCommunicator())

  @assertEqual(real(p), a(1,1))
```

```
@assertEqual(real(p), a(2,1))
@assertEqual(real(p), a(1,2))
@assertEqual(real(p), a(2,2))

end subroutine testHaloInterior
```

11.1.4.3 @Assert

The directives are expanded into calls to similarly named [pFUnit](#) library routines. The syntax for the directives follows the pattern for below.

```
@assertEqual(expected,found,'An identifying or explanatory message.')
```

The preprocessor will automatically add information about source location (file & line number) to the call emitted to the test suite code. It also adds the check for exceptions.

For more information about directives, please refer to the following.

- [@assertEqual](#)
- [@assertTrue](#)
- [@assertFalse](#)
- [@assertLessThan](#)
- [@assertLessThanOrEqual](#)
- [@assertGreaterThan](#)
- [@assertGreaterThanOrEqual](#)
- [@assertIsMemberOf](#)
- [@assertContains](#)
- [@assertAny](#)
- [@assertAll](#)
- [@assertNotAll](#)
- [@assertNone](#)
- [@assertIsPermutationOf](#)
- [@assertExceptionRaised](#)
- [@assertSameShape](#)
- [@assertIsNaN](#)
- [@assertIsFinite](#)

11.1.4.4 @Parameters

The directive indicates the declaration of the parameterized type used to generate the iteration over the multiple parameter values. It also identifies the names of the parameters to be iterated over. The preprocessor extracts type information from the declaration of the parameter type collection that immediately follows the directive. This directive will set up the iteration. To define the parameter values per iteration the `getParameters` method of the abstract `ParameterizedTest` must be implemented. For example:

```
@Parameters = [p1,p2]
type, extends(AbstractTestParameter) :: exampleCase
  integer :: i
  real :: x
end type exampleCase
```

11.1.4.5 @TestCase

This directive identifies to the preprocessor the `TestCase` declaration. The type declared at this point extends `TestCase` (or its extension), which includes setting methods such as the following: `setUp`, `tearDown`, `runMethod`, `userMethod`. For the extension `MPITestCase`, as with `ParameterizedTestCase`, you have the option (requirement if parameters are used) to set `getParameters` and `getParameterString`. For example:

```
@TestCase
type, extends(MPITestCase) :: Test_Parameters
  integer :: p1, p2
  procedure(runMethod), pointer :: userMethod => null()
contains
  procedure, nopass :: getParameters
  procedure :: getParameterString => getParameterString_
  procedure :: runMethod
end type Test_Parameters
```


Chapter 12

@Assert Preprocessor Directives

- @assertEqual
- @assertTrue
- @assertFalse
- @assertLessThan
- @assertLessThanOrEqualTo
- @assertGreaterThan
- @assertGreaterThanOrEqualTo
- @assertIsMemberOf
- @assertContains
- @assertAny
- @assertAll
- @assertNotAll
- @assertNone
- @assertIsPermutationOf
- @assertExceptionRaised
- @assertSameShape
- @assertIsNaN
- @assertIsFinite

12.1 @Assert Preprocessor Directives

12.1.1 @assertEqual

12.1.2 @assertTrue

12.1.3 @assertFalse

12.1.4 @assertLessThan

12.1.5 @assertLessThanOrEqual

12.1.6 @assertGreaterThan

12.1.7 @assertGreaterThanOrEqual

12.1.8 @assertIsMemberOf

12.1.9 @assertContains

12.1.10 @assertAny

12.1.11 @assertAll

12.1.12 @assertNotAll

12.1.13 @assertNone

12.1.14 @assertIsPermutationOf

12.1.15 @assertExceptionRaised

12.1.16 @assertSameShape

12.1.17 @assertIsNaN

12.1.18 @assertIsFinite

Chapter 13

Revision Notes

- 2013-1212. Initial draft of Doxygen version. MLR
- 2013-1107. Minor edits. MLR
- 2013-1031. Added user contributed code for Windows/CYGWIN & IBM's XLF. MLR
- 2013-0830-1359. Minor corrections and added MPIF90 to 6.2. MLR
- 2013-0806-1345. Corrected git reference. Was using old URL. MLR
- 2013-0805. Initial draft. MLR

Chapter 14

Data Type Index

14.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

pFUnitParser::Action	43
pFUnitParser::AtAfter	48
pFUnitParser::AtAssert	49
pFUnitParser::AtBefore	50
pFUnitParser::AtBegin	50
pFUnitParser::AtMpiTest	51
pFUnitParser::AtParameters	52
pFUnitParser::AtSuite	52
pFUnitParser::AtTest	53
pFUnitParser::AtTestCase	54
add_mod	44
addComplex_mod	44
CodeUtilities::ArrayDescription	44
Assert_mod	45
AssertBasic_mod	46
AssertInteger_mod	47
GenerateRealArrayNewSignature::AssertRealArrayArgument	48
BaseTestRunner_mod	54
BeforeAfter_mod	55
BrokenSetUpCase_mod	55
BrokenTestCase_mod	56
mods::pre::pre2::dataString	57
DebugListener_mod	58
CodeUtilities::declaration	59
DynamicTestCase_mod	60

Exception_mod	60
Fixture_mod	61
FixtureTestCase_mod	61
CodeUtilities::fortranSubroutineSignature	62
Halo_mod	62
CodeUtilities::implementation	63
CodeUtilities::interfaceBlock	64
mods::pre::pre_If::interval	64
Test_RestrictSphericalCoordinates_mod::LatLonCase	65
LinearInterpolator_mod	65
MakeInfinity_mod	66
MakeNaN_mod	66
MockCall_mod	67
MockListener_mod	68
testParser::MockParser	68
MockRepository_mod	69
MockSUT_mod	69
testParser::MockWriter	70
CodeUtilities::module	70
MpiContext_mod	71
MpiStubs_mod	72
MpiTestCase_mod	73
MpiTestMethod_mod	74
ParallelContext_mod	74
ParallelException_mod	75
ParameterizedTestCase_mod	76
Params_mod	77
pUnitParser::Parser	78
Test_Parameters_mod::peCase	78
pUnit	79
pUnit_mod	79
PrivateException_mod	80
mods::pre::pre2::procDirective	81
mods::pre::pre_If::IfDirective	63
mods::pre::pre_Repeat::RepeatDirective	83
RemoteProxyTestCase_mod	82
ResultPrinter_mod	83
RobustRunner_mod	84
robustTestSuite_mod	85
CodeUtilities::routineUnit	85
GenerateRealArrayNewSignature::constraintASSETEQUAL	56
GenerateRealArrayNewSignature::IsWithinTolerance	64
GenerateRealArrayNewSignature::VECTOR_NORM	115
SerialContext_mod	86
SimpleTestCase_mod	87

SourceLocation_mod	88
SphericalCoordinates_mod	88
TestListener_mod::startTest	89
StringConversionUtilities_mod	89
SubsetRunner_mod	90
SurrogateTestCase_mod	91
SUT_mod	91
Test_Assert_mod	92
Test_AssertBasic_mod	92
Test_AssertComplex_mod	92
Test_AssertInteger_mod	93
Test_AssertReal_mod	93
Test_Exception_mod	94
Test_FixtureTestCase_mod	95
Test_LinearInterpolator_mod::Test_LinearInterpolator	95
Test_LinearInterpolator_mod	96
Test_MockCall_mod	96
Test_MockRepository_mod	96
Test_mod	97
Test_MpiContext_mod	97
Test_MpiException_mod	98
Test_MpiTestCase_mod	98
Test_Parameters_mod::Test_Parameters	99
Test_Parameters_mod	99
Test_RestrictSphericalCoordinates_mod::Test_RestrictSphericalCoordinates	100
Test_RestrictSphericalCoordinates_mod	100
Test_RobustRunner_mod	101
Test_SimpleTestCase_mod	101
Test_StringConversionUtilities_mod	101
Test_TestMethod_mod	102
Test_TestResult_mod	102
Test_TestSuite_mod	102
Test_UnixProcess_mod	103
TestCase_mod	103
TestFailure_mod	104
mods::pre::pre_If::TestIfDirective	105
mods::pre::interleavedp::TestInterleaved	105
TestListener_mod	106
TestMethod_mod	107
mods::pre::parseArgs::TestParseArgs	107
testParser::TestParseLine	108
mods::pre::pre_Repeat::TestRepeatDirective	109
TestResult_mod	110
TestRunner_mod	111
TestSuite_mod	112
ThrowFundamentalTypes_mod	112

UnixPipeInterfaces_mod	113
UnixProcess_mod	114

Chapter 15

Data Type Index

15.1 Data Types List

Here are the data types with brief descriptions:

pUnitParser::Action	43
add_mod	44
addComplex_mod	44
CodeUtilities::ArrayDescription	44
Assert_mod	
<BriefDescription>	45
AssertBasic_mod	
<BriefDescription>	46
AssertInteger_mod	
<BriefDescription>	47
GenerateRealArrayNewSignature::AssertRealArrayArgument	48
pUnitParser::AtAfter	48
pUnitParser::AtAssert	49
pUnitParser::AtBefore	50
pUnitParser::AtBegin	50
pUnitParser::AtMpiTest	51
pUnitParser::AtParameters	52
pUnitParser::AtSuite	52
pUnitParser::AtTest	53
pUnitParser::AtTestCase	54
BaseTestRunner_mod	
<BriefDescription>	54
BeforeAfter_mod	55
BrokenSetUpCase_mod	55
BrokenTestCase_mod	56

GenerateRealArrayNewSignature::constraintASERTEQUAL	56
mods::pre::pre2::dataString	57
DebugListener_mod	
<BriefDescription>	58
CodeUtilities::declaration	59
DynamicTestCase_mod	
<BriefDescription>	60
Exception_mod	60
Fixture_mod	61
FixtureTestCase_mod	61
CodeUtilities::fortranSubroutineSignature	62
Halo_mod	62
mods::pre::pre_If::IfDirective	63
CodeUtilities::implementation	63
CodeUtilities::interfaceBlock	64
mods::pre::pre_If::interval	64
GenerateRealArrayNewSignature::IsWithinTolerance	64
Test_RestrictSphericalCoordinates_mod::LatLonCase	65
LinearInterpolator_mod	65
MakeInfinity_mod	
<BriefDescription>	66
MakeNaN_mod	
<BriefDescription>	66
MockCall_mod	
<BriefDescription>	67
MockListener_mod	68
testParser::MockParser	68
MockRepository_mod	
<BriefDescription>	69
MockSUT_mod	69
testParser::MockWriter	70
CodeUtilities::module	70
MpiContext_mod	
<BriefDescription>	71
MpiStubs_mod	
<BriefDescription>	72
MpiTestCase_mod	
<BriefDescription>	73
MpiTestMethod_mod	
<BriefDescription>	74
ParallelContext_mod	
<BriefDescription>	74
ParallelException_mod	
<BriefDescription>	75
ParameterizedTestCase_mod	
<BriefDescription>	76

Params_mod	
<BriefDescription>	77
pUnitParser::Parser	78
Test_Parameters_mod::peCase	78
pUnit	
<BriefDescription>	79
pUnit_mod	
<BriefDescription>	79
PrivateException_mod	
<BriefDescription>	80
mods::pre::pre2::procDirective	81
RemoteProxyTestCase_mod	
<BriefDescription>	82
mods::pre::pre_Repeat::RepeatDirective	83
ResultPrinter_mod	
<BriefDescription>	83
RobustRunner_mod	
<BriefDescription>	84
robustTestSuite_mod	85
CodeUtilities::routineUnit	85
SerialContext_mod	
<BriefDescription>	86
SimpleTestCase_mod	87
SourceLocation_mod	
<BriefDescription>	88
SphericalCoordinates_mod	88
TestListener_mod::startTest	89
StringConversionUtilities_mod	
<BriefDescription>	89
SubsetRunner_mod	
<BriefDescription>	90
SurrogateTestCase_mod	
<BriefDescription>	91
SUT_mod	91
Test_Assert_mod	92
Test_AssertBasic_mod	92
Test_AssertComplex_mod	92
Test_AssertInteger_mod	93
Test_AssertReal_mod	93
Test_Exception_mod	94
Test_FixtureTestCase_mod	95
Test_LinearInterpolator_mod::Test_LinearInterpolator	95
Test_LinearInterpolator_mod	96
Test_MockCall_mod	96
Test_MockRepository_mod	96

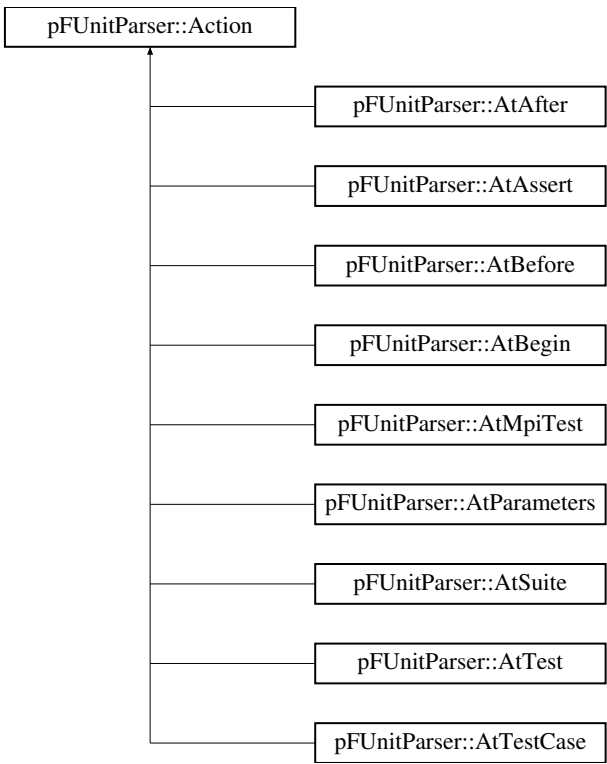
Test_mod	
<BriefDescription>	97
Test_MpiContext_mod	97
Test_MpiException_mod	98
Test_MpiTestCase_mod	98
Test_Parameters_mod::Test_Parameters	99
Test_Parameters_mod	99
Test_RestrictSphericalCoordinates_mod::Test_RestrictSphericalCoordinates	100
Test_RestrictSphericalCoordinates_mod	100
Test_RobustRunner_mod	101
Test_SimpleTestCase_mod	101
Test_StringConversionUtilities_mod	101
Test_TestMethod_mod	102
Test_TestResult_mod	102
Test_TestSuite_mod	102
Test_UnixProcess_mod	103
TestCase_mod	
<BriefDescription>	103
TestFailure_mod	
<BriefDescription>	104
mods::pre::pre_If::TestIfDirective	105
mods::pre::interleavedp::TestInterleaved	105
TestListener_mod	
<BriefDescription>	106
TestMethod_mod	
<BriefDescription>	107
mods::pre::parseArgs::TestParseArgs	107
testParser::TestParseLine	108
mods::pre::pre_Repeat::TestRepeatDirective	109
TestResult_mod	
<BriefDescription> Note: A possible extension point for user-specialized TestResults	110
TestRunner_mod	
<BriefDescription>	111
TestSuite_mod	
<BriefDescription>	112
ThrowFundamentalTypes_mod	
<BriefDescription>	112
UnixPipeInterfaces_mod	
<BriefDescription>	113
UnixProcess_mod	
<BriefDescription>	114
GenerateRealArrayNewSignature::VECTOR_NORM	115

Chapter 16

Data Type Documentation

16.1 pFUnitParser::Action Class Reference

Inheritance diagram for pFUnitParser::Action:



Public Member Functions

- def **apply**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.2 add_mod Module Reference

Public Member Functions

- real function **add** (x, y)
- real function **add** (x, y)
- real function **add** (x, y)

The documentation for this module was generated from the following files:

- Robust/Semi-Automatic/src/add.F90
- Simple/Semi-Automatic/src/add.F90
- Simple_Windows/Semi-Automatic/src/add.F90

16.3 addComplex_mod Module Reference

Public Member Functions

- complex function, dimension(size(z0)) **add** (z0, z1)
- complex function, dimension(size(z0)) **add** (z0, z1)

The documentation for this module was generated from the following files:

- Semi-Automatic/src/addComplex.F90
- Windows/Semi-Automatic/src/addComplex.F90

16.4 CodeUtilities::ArrayDescription Class Reference

Public Member Functions

- def **__init__**

- def **NAME**
- def **DECLARE**
- def **DECLARESCALAR**
- def **KIND**
- def **RANK**
- def **FTYPE**
- def **EXPANDSHAPE**
- def **FailureMessageFork**

Public Attributes

- **fType**
- **kind**
- **rank**

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.5 Assert_mod Module Reference

<BriefDescription>

16.5.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- Assert.F90

16.6 AssertBasic_mod Module Reference

<BriefDescription>

Data Types

- interface **assertEqual**
- interface **assertExceptionRaised**
- interface **assertFalse**
- interface **assertIsFinite**
- interface **assertIsNaN**
- interface **assertTrue**
- interface **fail**
- type **UnusableArgument**

Public Member Functions

- subroutine **assertExceptionRaisedMessage** (message)
- subroutine, public **assertSameShape** (shapeA, shapeB, message, location)
- logical function, public **conformable** (shapeA, shapeB)
- logical function, public **nonConformable** (shapeA, shapeB)
- subroutine, public **assertAny** (conditions, message, location)
- subroutine, public **assertAll** (conditions, message, location)
- subroutine, public **assertNone** (conditions, message, location)
- subroutine, public **assertNotAll** (conditions, message, location)
- subroutine **assertIsNaN_double** (x, message, location)
- subroutine **assertIsFinite_single** (x, message, location)
- subroutine **assertIsFinite_double** (x, message, location)

16.6.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- AssertBasic.F90

16.7 AssertInteger_mod Module Reference

<BriefDescription>

Data Types

- interface **assertEqual**
- interface **assertGreaterThan**
- interface **assertGreaterThanOrEqual**
- interface **assertLessThan**
- interface **assertLessThanOrEqual**
- interface **locationOfFirstNonzero**

Public Member Functions

- subroutine **assertEqualInteger1D1D_** (expected, found, message, location)
- subroutine **assertEqualInteger0D1D_** (expected, found, message, location)
- subroutine **assertEqualInteger2D2D_** (expected, found, message, location)
- subroutine **assertEqualInteger0D2D_** (expected, found, message, location)
- subroutine **assertLessThan_** (a, b, message, location)

16.7.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- AssertInteger.F90

16.8 **GenerateRealArrayNewSignature::AssertRealArrayArgument** Class Reference

Public Member Functions

- def `__init__`
- def `updateDescriptions`
- def `getExpectedDescription`
- def `getFoundDescription`
- def `getTolerance`

Public Attributes

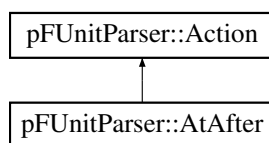
- `expectedFType`
- `expectedPrecision`
- `expectedRank`
- `foundFType`
- `foundPrecision`
- `foundRank`
- `tolerance`
- `expectedDescription`
- `foundDescription`

The documentation for this class was generated from the following file:

- GenerateRealArrayNewSignature.py

16.9 **pFUnitParser::AtAfter** Class Reference

Inheritance diagram for pFUnitParser::AtAfter:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

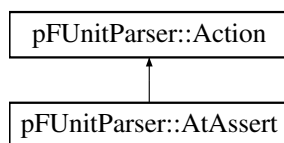
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.10 pFUnitParser::AtAssert Class Reference

Inheritance diagram for pFUnitParser::AtAssert:



Public Member Functions

- def **__init__**
- def **match**
- def **appendSourceLocation**
- def **action**

Public Attributes

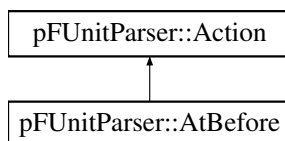
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.11 pFUnitParser::AtBefore Class Reference

Inheritance diagram for pFUnitParser::AtBefore:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

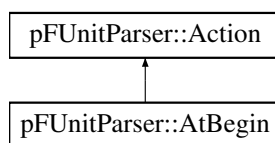
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.12 pFUnitParser::AtBegin Class Reference

Inheritance diagram for pFUnitParser::AtBegin:



Public Member Functions

- def `__init__`
- def `match`
- def `action`

Public Attributes

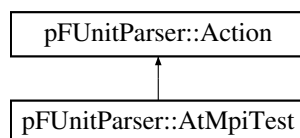
- `parser`

The documentation for this class was generated from the following file:

- `pUnitParser.py`

16.13 pUnitParser::AtMpiTest Class Reference

Inheritance diagram for `pUnitParser::AtMpiTest`:



Public Member Functions

- def `__init__`
- def `match`
- def `action`

Public Attributes

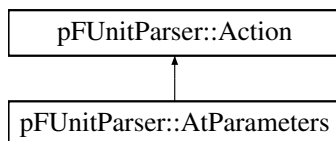
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.14 pFUnitParser::AtParameters Class Reference

Inheritance diagram for pFUnitParser::AtParameters:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

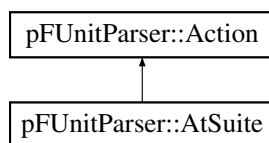
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.15 pFUnitParser::AtSuite Class Reference

Inheritance diagram for pFUnitParser::AtSuite:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

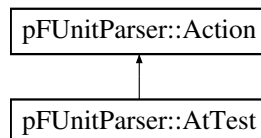
- **parser**

The documentation for this class was generated from the following file:

- pUnitParser.py

16.16 pUnitParser::AtTest Class Reference

Inheritance diagram for pUnitParser::AtTest:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

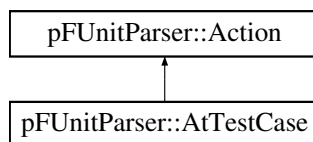
- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.17 pFUnitParser::AtTestCase Class Reference

Inheritance diagram for pFUnitParser::AtTestCase:



Public Member Functions

- def **__init__**
- def **match**
- def **action**

Public Attributes

- **parser**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.18 BaseTestRunner_mod Module Reference

<BriefDescription>

Data Types

- type **BaseTestRunner**
- interface **run**

16.18.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- BaseTestRunner.F90

16.19 BeforeAfter_mod Module Reference

Public Member Functions

- subroutine **first** (this)
- subroutine **last** (this)
- subroutine **succeeds** (this)
- subroutine **fails** (this)

Public Attributes

- integer **countStart** = 0
- integer **countComplete** = 0

The documentation for this module was generated from the following file:

- beforeAfter.pf

16.20 BrokenSetUpCase_mod Module Reference

Data Types

- type **BrokenSetUpCase**

Public Member Functions

- type(BrokenSetUpCase) function, pointer, public **newBrokenSetUpCase** ()

The documentation for this module was generated from the following file:

- BrokenSetUpCase.F90

16.21 BrokenTestCase_mod Module Reference

Data Types

- type **BrokenTestCase**

Public Member Functions

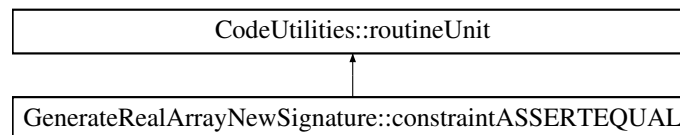
- subroutine **tearDown** (this)

The documentation for this module was generated from the following file:

- BrokenTestCase.F90

16.22 GenerateRealArrayNewSignature::constraintASERTEQUAL Class Reference

Inheritance diagram for GenerateRealArrayNewSignature::constraintASERTEQUAL:



Public Member Functions

- def `__init__`

This next line actually generates the text of the code.

Public Attributes

- **expectedDescr**
- **foundDescr**
- **name**
- [name1](#)

Add in the extra module procedures...

- [tolerance](#)

If you need another kind of code generator, perhaps conditioned on eDesc., fDesc., or tol, then that logic would go here...

16.22.1 Constructor & Destructor Documentation

16.22.1.1 **def GenerateRealArrayNewSignature::constraintASSERTEQUAL::__init__ (self, expectedDescr, foundDescr, tolerance)**

This next line actually generates the text of the code.

16.22.2 Member Data Documentation

16.22.2.1 **GenerateRealArrayNewSignature::constraintASSERTEQUAL::name1**

Add in the extra module procedures...

If needed... Kluge. Need to make makeSubroutineNames and load the extra interface entries there.

16.22.2.2 **GenerateRealArrayNewSignature::constraintASSERTEQUAL::tolerance**

If you need another kind of code generator, perhaps conditioned on eDesc., fDesc., or tol, then that logic would go here...

E.g. to implement assertEqual(Logical(...))

The documentation for this class was generated from the following file:

- GenerateRealArrayNewSignature.py

16.23 mods::pre::pre2::dataString Class Reference

Public Member Functions

- def **__init__**
- def **insert**
- def **getLength**
- def **getPosition**
- def **setPosition**
- def **getItem**
- def **getDataAtPosition**
- def **getData**
- def **getSlice**
- def **getSliceForward**
- def **removeSlice**
- def **getCurrentData**
- def **insertAtCurrent**
- def **append**
- def **advanceAndGetNextData**
- def **validPosition**
- def **findToEnd**
- def **match**
- def **matchToEnd**
- def **searchToEnd**
- def **searchToPosition**
- def **finditerToEnd**
- def **finditerToPosition**

Public Attributes

- **data**
- **position**

The documentation for this class was generated from the following file:

- pre2.py

16.24 DebugListener_mod Module Reference

<BriefDescription>

Data Types

- type **DebugListener**

Public Member Functions

- subroutine **startTest** (this, testName)

16.24.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- DebugListener.F90

16.25 CodeUtilities::declaration Class Reference

Public Member Functions

- def **__init__**
- def **generate**

Public Attributes

- **simpleDeclaration**
- **fullDeclaration**
- **name**

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.26 DynamicTestCase_mod Module Reference

<BriefDescription>

Data Types

- interface **delete**
- type **DynamicTestCase**
- interface **testmethod**

Public Member Functions

- type(DynamicTestCase) function, pointer, public **newDynamicTestCase** (test-Method, name)

16.26.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- DynamicTestCase.F90

16.27 Exception_mod Module Reference

Data Types

- interface **anyExceptions**
- interface **catch**
- interface **getNumExceptions**
- interface **throw**

Public Member Functions

- subroutine, public **initializeGlobalExceptionList** ()
- type(Exception) function, public **catchAny** (preserve)
- type(Exception) function, dimension(:), allocatable, public **getExceptions** ()
- logical function, public **noExceptions** ()
- logical function, public **anyErrors** ()
- subroutine, public **gatherExceptions** (context)
- subroutine, public **clearAll** ()

The documentation for this module was generated from the following file:

- Exception.F90

16.28 Fixture_mod Module Reference

Public Member Functions

- subroutine **mySetup** ()
- subroutine **myTearDown** ()
- subroutine **testRead** ()
- subroutine **testEOF** ()
- subroutine **mySetup** ()
- subroutine **myTearDown** ()
- subroutine **testRead** ()
- subroutine **testEOF** ()

The documentation for this module was generated from the following files:

- Semi-Automatic/tests/fixtureTests.pf
- Windows/Semi-Automatic/tests/fixtureTests.pf

16.29 FixtureTestCase_mod Module Reference

Data Types

- interface **delete**
- type **FixtureTestCase**

Public Member Functions

- type(FixtureTestCase) function, public **newFixtureTestCase** ()
- subroutine, public **simpleTestMethod** (this)
- subroutine, public **methodA** (this)
- subroutine, public **methodB** (this)

The documentation for this module was generated from the following file:

- FixtureTestCase.F90

16.30 CodeUtilities::fortranSubroutineSignature Class Reference

Public Member Functions

- def **__init__**
- def **setReturnFType**
- def **addArg**
- def **generateInterfaceEntry**
- def **generateImplementationSignature**
- def **generateImplementationClose**

Public Attributes

- **name**
- **ArgumentToFType**
- **ReturnFType**
- **SubroutineType**

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.31 Halo_mod Module Reference

Public Member Functions

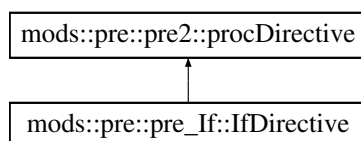
- subroutine **haloFill** (array, communicator)

The documentation for this module was generated from the following file:

- Halo.F90

16.32 mods::pre::pre_If::IfDirective Class Reference

Inheritance diagram for mods::pre::pre_If::IfDirective:



Public Member Functions

- def **evaluate**

Public Attributes

- **startPosition**
- **newPosition**

The documentation for this class was generated from the following file:

- pre_If.py

16.33 CodeUtilities::implementation Class Reference

Public Member Functions

- def **__init__**
- def **generate**

Public Attributes

- **name**
- **source**

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.34 CodeUtilities::interfaceBlock Class Reference

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.35 mods::pre::pre_If::interval Class Reference

Public Member Functions

- def **__init__**
- def **getInterval**
- def **setInterval**
- def **getStart**
- def **getEnd**

Public Attributes

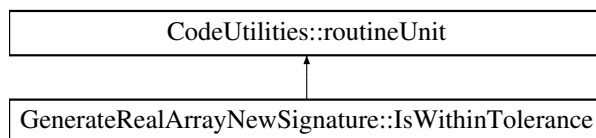
- **start**
- **end**
- **interval**

The documentation for this class was generated from the following file:

- pre_If.py

16.36 GenerateRealArrayNewSignature::IsWithinTolerance Class - Reference

Inheritance diagram for GenerateRealArrayNewSignature::IsWithinTolerance:



Public Member Functions

- def `__init__`

Public Attributes

- **rank**
- **precision**
- **name**
- **fType**
- **declaration**
- **declarations**

The documentation for this class was generated from the following file:

- GenerateRealArrayNewSignature.py

16.37 Test_RestrictSphericalCoordinates_mod::LatLonCase Type - Reference

Public Attributes

- real **lat**
- real **lon**
- real **restrictedLat**
- real **restrictedLon**

The documentation for this type was generated from the following file:

- Test_RestrictedSphericalCoordinates.pf

16.38 LinearInterpolator_mod Module Reference

Data Types

- interface **LinearInterpolator**
- type **Node**

The documentation for this module was generated from the following file:

- LinearInterpolator.F90

16.39 MakeInfinity_mod Module Reference

<BriefDescription>

Public Member Functions

- real(r32) function, public **makeInf_32** ()
- real(r64) function, public **makeInf_64** ()

16.39.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- MakeInfinity.F90

16.40 MakeNaN_mod Module Reference

<BriefDescription>

Public Member Functions

- real(r32) function, public **makeNaN_32** ()
- real(r64) function, public **makeNaN_64** ()

16.40.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- MakeNaN.F90

16.41 MockCall_mod Module Reference

<BriefDescription>

Data Types

- type **MockCall**

Public Member Functions

- type(MockCall) function, public **newMockCall** (name)

16.41.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- MockCall.F90

16.42 MockListener_mod Module Reference

Data Types

- type **MockListener**

Public Member Functions

- subroutine **startTest** (this, testName)

The documentation for this module was generated from the following file:

- MockListener.F90

16.43 testParser::MockParser Class Reference

Public Member Functions

- def **__init__**
- def **nextLine**

Public Attributes

- **line**
- **outputFile**
- **outLines**
- **tests**
- **mpitests**

The documentation for this class was generated from the following file:

- testParser.py

16.44 MockRepository_mod Module Reference

<BriefDescription>

Data Types

- type **MockRepository**

Public Member Functions

- type(MockRepository) function, pointer, public **newMockRepository** ()
- subroutine **expectCall** (this, obj, method)

16.44.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- MockRepository.F90

16.45 MockSUT_mod Module Reference

Data Types

- type **MockSUT**

Public Member Functions

- type(MockSUT) function, allocatable, public **newMockSUT** (repository)
- subroutine **method1** (this)

The documentation for this module was generated from the following file:

- Test_MockRepository.F90

16.46 testParser::MockWriter Class Reference

Public Member Functions

- def **__init__**
- def **write**

Public Attributes

- **parser**

The documentation for this class was generated from the following file:

- testParser.py

16.47 CodeUtilities::module Class Reference

Public Member Functions

- def **__init__**
- def **generate**
- def **addDeclaration**
- def **addImplementation**
- def **addRoutineUnit**
- def **addInterfaceBlock**
- def **getName**
- def **setFileName**
- def **getFileName**

Public Attributes

- **name**
- **declarations**
- **implementations**
- **generation**
- **fileName**

The documentation for this class was generated from the following file:

- `CodeUtilities.py`

16.48 `MpiContext_mod` Module Reference

<BriefDescription>

Data Types

- type **MpiContext**
- interface **newMpiContext**

Public Member Functions

- subroutine **barrier** (this)
- integer function **getMpiCommunicator** (this)

16.48.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `MpiContext.F90`

16.49 MpiStubs_mod Module Reference

<BriefDescription>

Public Member Functions

- subroutine, public **MPI_Comm_rank** (comm, rank, ier)
- subroutine, public **MPI_Comm_size** (comm, size, ier)
- subroutine, public **MPI_Comm_dup** (comm, newComm, ier)
- subroutine, public **MPI_Comm_group** (comm, group, ier)
- subroutine, public **MPI_Group_range_incl** (group, n, ranges, newGroups, ier)
- subroutine, public **MPI_Comm_create** (comm, group, newComm, ier)

Public Attributes

- integer, parameter, public **MPI_COMM_WORLD** = -1
- integer, parameter, public **MPI_COMM_NULL** = -1
- integer, parameter, public **MPI_COMM_SUCCESS** = 0

16.49.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `MpiStubs.F90`

16.50 `MpiTestCase_mod` Module Reference

<BriefDescription>

Data Types

- type **`MpiTestCase`**
- interface **`runMethod`**

Public Member Functions

- recursive subroutine **`runBare`** (this)
- subroutine **`setUp`** (this)

16.50.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `MpiTestCase.F90`

16.51 `MpiTestMethod_mod` Module Reference

<BriefDescription>

Data Types

- interface **mpiMethod**
- type **MpiTestMethod**
- interface **newMpiTestMethod**

16.51.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `MpiTestMethod.F90`

16.52 `ParallelContext_mod` Module Reference

<BriefDescription>

Data Types

- interface **gatherInteger**
- interface **gatherLogical**
- interface **gatherString**
- interface **getNumProcesses**
- type **ParallelContext**
- interface **processRank**
- interface **sum**

16.52.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- ParallelContext.F90

16.53 ParallelException_mod Module Reference

<BriefDescription>

Data Types

- interface **anyExceptions**
- interface **getNumExceptions**

Public Member Functions

- subroutine, public **gather** (context)

16.53.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `ParallelException.F90`

16.54 `ParameterizedTestCase_mod` Module Reference

<BriefDescription>

Data Types

- type **`AbstractTestParameter`**
- interface **`getParameterString`**
- type **`ParameterizedTestCase`**

Public Attributes

- integer, parameter, public **`MAX_LEN_LABEL`** = 32

16.54.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- `ParameterizedTestCase.F90`

16.55 Params_mod Module Reference

<BriefDescription>

Public Attributes

- integer, parameter **R32** = selected_real_kind(p=6)
- integer, parameter **R64** = selected_real_kind(p=14)
- integer, parameter **C32** = selected_real_kind(p=6)
- integer, parameter **C64** = selected_real_kind(p=14)
- integer, parameter **NEQP** = 0
- integer, parameter **EQP** = 1
- integer, parameter **GTP** = 2
- integer, parameter **GEP** = 3
- integer, parameter **LTP** = 4
- integer, parameter **LEP** = 5
- integer, parameter **RELEQP** = 6

16.55.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- Params.F90

16.56 pFUnitParser::Parser Class Reference

Public Member Functions

- def **__init__**
- def **run**
- def **nextLine**
- def **makeSuite**
- def **final**

Public Attributes

- **inputFile**
- **outputFile**
- **moduleName**
- **suiteName**
- **testCase**
- **setUp**
- **tearDown**
- **defaultName**
- **fileName**
- **lineNumber**
- **parameters**
- **parameterType**
- **tests**
- **mpitests**
- **actions**

The documentation for this class was generated from the following file:

- pFUnitParser.py

16.57 Test_Parameters_mod::peCase Type Reference

Public Attributes

- integer **p1**
- integer **p2**

The documentation for this type was generated from the following file:

- parameterizedTests.pf

16.58 pFUnit Module Reference

<BriefDescription>

16.58.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- pFUnitPackage.F90

16.59 pFUnit_mod Module Reference

<BriefDescription>

Public Member Functions

- subroutine, public **initialize** (useMpi)
- subroutine, public **finalize** ()

16.59.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- pFUnit.F90

16.60 PrivateException_mod Module Reference

<BriefDescription>

Data Types

- type **Exception**
- type **ExceptionList**
- interface **newException**

Public Member Functions

- type(ExceptionList) function, public **newExceptionList** ()
- logical function **noExceptions** (this)

Public Attributes

- integer, parameter, public **MAXLEN_MESSAGE** = 80*15
- integer, parameter, public **MAXLEN_FILE_NAME** = 80
- character(len=*), parameter, public **NULL_MESSAGE** = "

16.60.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

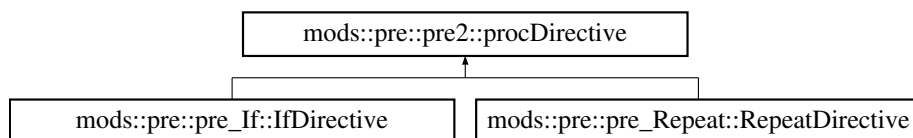
<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- Exception.F90

16.61 mods::pre::pre2::procDirective Class Reference

Inheritance diagram for mods::pre::pre2::procDirective:

**Public Member Functions**

- def `__init__`
- def `getLength`
- def `match`
- def `evaluate`
- def `getNewPosition`
- def `addTokenRE`
- def `searchTokenToEnd`
- def `searchTokenToPosition`
- def `finditerTokenToPosition`
- def `makeTokenErrorMessage`

Public Attributes

- `name`
- `newPosition`
- `tokens`
- `TokenREs`

16.61.1 Member Function/Subroutine Documentation

16.61.1.1 `def mods::pre::pre2::procDirective::addTokenRE (self, args, key, defaultToken, prefix = r' ' ' (?i) [\t] * ' ' , postfix = ' ')`

Add a token/create an RE with a prefix that by default ignores preceding whitespace. Stores the RE in a dictionary for this directive.

The documentation for this class was generated from the following file:

- pre2.py

16.62 RemoteProxyTestCase_mod Module Reference

<BriefDescription>

Data Types

- interface **RemoteProxyTestCase**

16.62.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

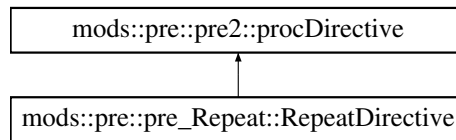
<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- RemoteProxyTestCase.F90

16.63 mods::pre::pre_Repeat::RepeatDirective Class Reference

Inheritance diagram for mods::pre::pre_Repeat::RepeatDirective:



Public Member Functions

- def **evaluate**

Public Attributes

- **startPosition**
- **newPosition**

The documentation for this class was generated from the following file:

- pre_Repeat.py

16.64 ResultPrinter_mod Module Reference

<BriefDescription>

Data Types

- type **ResultPrinter**

Public Member Functions

- type(ResultPrinter) function, public **newResultPrinter** (unit)
- subroutine **addError** (this, testName, exceptions)
- subroutine **startTest** (this, testName)
- subroutine **printHeader** (this, runTime)

16.64.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- ResultPrinter.F90

16.65 RobustRunner_mod Module Reference

<BriefDescription>

Data Types

- interface **RobustRunner**
- type **TestCaseMonitor**

Public Member Functions

- type(RobustRunner) function **newRobustRunner_unit** (remoteRunCommand, unit)
- subroutine **runWithResult** (this, aTest, context, result)
- subroutine **launchRemoteRunner** (this, numSkip)
- subroutine **startTest** (this, testName)
- subroutine **addError** (this, testName, exceptions)
- type(TestResult) function **createTestResult** (this)

16.65.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- RobustRunner.F90

16.66 robustTestSuite_mod Module Reference

Public Member Functions

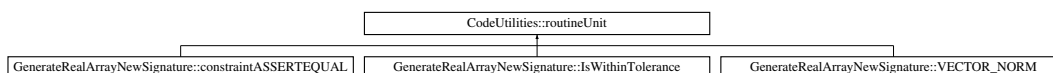
- type(TestSuite) function, public **suite** ()
- subroutine **testRunSucceeds** ()
- subroutine **testRunStops** ()

The documentation for this module was generated from the following file:

- robustTestSuite.F90

16.67 CodeUtilities::routineUnit Class Reference

Inheritance diagram for CodeUtilities::routineUnit:



Public Member Functions

- def **__init__**
- def **setName**
- def **getName**
- def **setDeclaration**
- def **addDeclaration**
- def **setImplementation**
- def **getDeclaration**
- def **getDeclarations**
- def **getImplementation**
- def **clearDeclarations**

Public Attributes

- **name**
- **declaration**
- **declarations**
- **implementation**

The documentation for this class was generated from the following file:

- CodeUtilities.py

16.68 SerialContext_mod Module Reference

<BriefDescription>

Data Types

- type **SerialContext**

Public Member Functions

- type(SerialContext) function, public **newSerialContext** ()

Public Attributes

- type(SerialContext), parameter, public **THE_SERIAL_CONTEXT** = SerialContext(1)

16.68.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- SerialContext.F90

16.69 SimpleTestCase_mod Module Reference

Data Types

- interface **method**
- type **SimpleTestCase**

Public Member Functions

- type(TestSuite) function, public **suite** ()
- type(SimpleTestCase) function, public **newSimpleTestCase** (name, user-Method)
- subroutine, public **method1** (this)
- subroutine, public **method2** (this)
- subroutine, public **methodWith2Exceptions** (this)
- subroutine **delete_** (this)

The documentation for this module was generated from the following file:

- SimpleTestCase.F90

16.70 SourceLocation_mod Module Reference

<BriefDescription>

Data Types

- type **SourceLocation**

Public Attributes

- character(len=MAXLEN_FILE_NAME), parameter, public **UNKNOWN_FILE_NAME** = '<unknown file>'
- integer, parameter, public **UNKNOWN_LINE_NUMBER** = -1
- type(SourceLocation), parameter, public **UNKNOWN_SOURCE_LOCATION** = SourceLocation()

16.70.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- SourceLocation.F90

16.71 SphericalCoordinates_mod Module Reference

Data Types

- interface **SphericalCoordinates**

The documentation for this module was generated from the following file:

- SphericalCoordinates.F90

16.72 TestListener_mod::startTest Interface Reference

The documentation for this interface was generated from the following file:

- TestListener.F90

16.73 StringConversionUtilities_mod Module Reference

<BriefDescription>

Data Types

- interface **toString**

Public Member Functions

- character(len=len_trim(a)+1+len_trim(b)) function, public **appendWithSpace** (a, b)
- character(len=:) function, allocatable, public **nullTerminate** (string)
- character(len=:) function, allocatable, public **unlessScalar** (vShape, string)

Public Attributes

- integer, parameter, public **MAXLEN_STRING** = 80

16.73.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- StringConversionUtilities.F90

16.74 SubsetRunner_mod Module Reference

<BriefDescription>

Data Types

- interface **SubsetRunner**

Public Member Functions

- subroutine **addFailure** (this, testName, exceptions)
- subroutine **startTest** (this, testName)

16.74.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- SubsetRunner.F90

16.75 SurrogateTestCase_mod Module Reference

<BriefDescription>

Data Types

- interface **getName**
- interface **runBare**
- interface **setName**
- type **SurrogateTestCase**

16.75.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- SurrogateTestCase.F90

16.76 SUT_mod Module Reference

Data Types

- type **SUT**

The documentation for this module was generated from the following file:

- Test_MockRepository.F90

16.77 Test_Assert_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testAssertEqualStringDiffer1st** ()

The documentation for this module was generated from the following file:

- Test_Assert.F90

16.78 Test_AssertBasic_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testAssertTrueF** ()
- subroutine **testAssertIsFinite** ()

The documentation for this module was generated from the following file:

- Test_AssertBasic.F90

16.79 Test_AssertComplex_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testEquals_C_complexScalar** ()
- subroutine **testEquals_C_0D1D** ()
- subroutine **testEquals_C_1D_nonConformable1** ()
- subroutine **testEquals_C_2D_SingleElementDifferent** ()
- subroutine **testEquals_C_MultiD_SingleElementDifferent** ()
- subroutine **testEquals_C_MultiD_SingleElementDifferent1**
- subroutine **testEquals_C_MultiD_SingleElementDifferent2**
- subroutine **testEquals_C_MultiD_SingleElementDifferent3**
- subroutine **testEquals_C_MultiD_SingleElementDifferent4**
- subroutine **testEquals_C_MultiD_SingleElementDifferent5**
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff1** ()

- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff2** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff3** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff4** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff5** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff6** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff7** ()
- subroutine **testEquals_C_MultiDMultiPrec_SingleEltDiff8** ()
- subroutine **testEquals_ScalarWithTolerance** ()
- subroutine **testEquals_C_MultiDWithTolerance** ()
- subroutine **testEquals_C_MultiDWithTolerance1** ()
- subroutine **testEquals_C_MultiDWithTolerance64** ()
- subroutine **testEquals_C_MultiDWithTolerance64_1** ()
- subroutine **testEquals_C_MultiDWithTolerance64_2** ()
- subroutine **testEquals_C_MultiDSourceLocation** ()
- subroutine **testEquals_4DPComplex_DifferenceReport** ()
- subroutine **assertCatch** (string, location)

The documentation for this module was generated from the following file:

- Test_AssertComplex.F90

16.80 Test_AssertInteger_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testAssertEqual_equal** ()

The documentation for this module was generated from the following file:

- Test_AssertInteger.F90

16.81 Test_AssertReal_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testEquals_0D1D** ()
- subroutine **testEquals_1D_nonConformable1** ()
- subroutine **testEquals_2D_SingleElementDifferent** ()

- subroutine **testEquals_MultiD_SingleElementDifferent** ()
- subroutine **testEquals_MultiD_SingleElementDifferent1**
- subroutine **testEquals_MultiD_SingleElementDifferent2**
- subroutine **testEquals_MultiD_SingleElementDifferent3**
- subroutine **testEquals_MultiD_SingleElementDifferent4**
- subroutine **testEquals_MultiD_SingleElementDifferent5**
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff1** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff2** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff3** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff4** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff5** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff6** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff7** ()
- subroutine **testEquals_MultiDMultiPrec_SingleEltDiff8** ()
- subroutine **testEquals_ScalarWithTolerance** ()
- subroutine **testEquals_ScalarWithToleranceNoMsg** ()
- subroutine **testEquals_VectorWithToleranceNoMsg** ()
- subroutine **testEquals_MultiDWithTolerance** ()
- subroutine **testEquals_MultiDWithTolerance1** ()
- subroutine **testEquals_MultiDWithTolerance64** ()
- subroutine **testEquals_MultiDWithTolerance64_1** ()
- subroutine **testEquals_MultiDWithTolerance64_2** ()
- subroutine **testEquals_MultiDSourceLocation** ()
- subroutine **testEquals_ScalarAndLocation** ()
- subroutine **testEquals_ScalarInfinity_equal** ()
- subroutine **testEquals_ScalarInfinity_unequal_A** ()
- subroutine **testEquals_ScalarInfinity_unequal_B** ()
- subroutine **testEquals_ScalarInfinity_unequal_C** ()
- subroutine **assertCatch** (string, location)

The documentation for this module was generated from the following file:

- Test_AssertReal.F90

16.82 Test_Exception_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testGetNumExceptions** ()

- subroutine **testCatchSucceed** ()
- subroutine **testGetLineNumber** ()
- subroutine **testGetFileName** ()

The documentation for this module was generated from the following file:

- Test_Exception.F90

16.83 Test_FixtureTestCase_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testRunWithFixture** ()
- subroutine **testBrokenTestCase** ()
- subroutine **testBrokenSetUpCase** ()

The documentation for this module was generated from the following file:

- Test_FixtureTestCase.F90

16.84 Test_LinearInterpolator_mod::Test_LinearInterpolator Type - Reference

Public Member Functions

- type([Test_LinearInterpolator](#)) function **newTest_LinearInterpolator** (name, userMethod)
- procedure **setUp**
- procedure **tearDown**
- procedure **runMethod**

Public Attributes

- type(LinearInterpolator) **interpolator**
- procedure(runMethod), pointer **userMethod** = > null()

The documentation for this type was generated from the following file:

- Test_LinearInterpolator.pf

16.85 Test_LinearInterpolator_mod Module Reference

Data Types

- type [Test_LinearInterpolator](#)

Public Member Functions

- type([Test_LinearInterpolator](#)) function **newTest_LinearInterpolator** (name, userMethod)
- subroutine **setUp** (this)
- subroutine **tearDown** (this)
- subroutine **runMethod** (this)
- subroutine **testBracketAtNode** (this)
- subroutine **testBracketInterior** (this)
- subroutine **testInterpolateAtNode** (this)
- subroutine **testInterpolateConstant** (this)

The documentation for this module was generated from the following file:

- Test_LinearInterpolator.pf

16.86 Test_MockCall_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testExpectOneIntegerArgument**
- subroutine **testFailExpectOneIntegerArgument**

The documentation for this module was generated from the following file:

- Test_MockCall.F90

16.87 Test_MockRepository_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()

- subroutine **testNoAction** ()

The documentation for this module was generated from the following file:

- Test_MockRepository.F90

16.88 Test_mod Module Reference

<BriefDescription>

Data Types

- interface **countTestCases**
- interface **run**
- type **Test**

16.88.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- Test.F90

16.89 Test_MpiContext_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()

- subroutine **testNumProcesses1** (context)

The documentation for this module was generated from the following file:

- Test_MpiContext.F90

16.90 Test_MpiException_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **test_anyExceptions_none** (this)
- subroutine **test_getNumExceptions** (this)
- subroutine **test_gather** (this)

The documentation for this module was generated from the following file:

- Test_MpiException.F90

16.91 Test_MpiTestCase_mod Module Reference

Data Types

- interface **method**
- type **Test_MpiTestCase**

Public Member Functions

- type(TestSuite) function, public **suite** ()
- type(Test_MpiTestCase) function, public **newTest_MpiTestCase** (name, user-Method, numProcesses)
- subroutine **testRunOn2Processors** (this)
- subroutine **brokenProcess1** (this)
- subroutine **brokenOnProcess2** (this)
- subroutine **testFailOn1** (this)
- subroutine **testFailOn2** (this)
- subroutine **testTooFewProcs** (this)
- recursive subroutine **runMethod** (this)

The documentation for this module was generated from the following file:

- Test_MpiTestCase.F90

16.92 Test_Parameters_mod::Test_Parameters Interface Reference

Public Member Functions

- procedure, nopass **getParameters**
- procedure **getParameterString** => getParameterString__
- procedure **runMethod**
- type([Test_Parameters](#)) function **newTest** (name, method, npe, p1, p2)

Public Attributes

- integer **p1**
- integer **p2**
- procedure(runMethod), pointer **userMethod** = > null()

The documentation for this interface was generated from the following file:

- parameterizedTests.pf

16.93 Test_Parameters_mod Module Reference

Data Types

- type [peCase](#)
- interface [Test_Parameters](#)

Public Member Functions

- type([Test_Parameters](#)) function **newTest** (name, method, npe, p1, p2)
- type([peCase](#)) function, dimension(:), allocatable **getParameters** ()
- character(:) function, allocatable **getParameterString__** (this)
- subroutine **runMethod** (this)
- subroutine, public **testParamBroken** (this)

The documentation for this module was generated from the following file:

- parameterizedTests.pf

16.94 Test_RestrictSphericalCoordinates_mod::Test_RestrictSphericalCoordinates Interface Reference

Public Member Functions

- procedure, nopass **getParameters**
- procedure **getParameterString**
- procedure **runMethod**
- type([Test_RestrictSphericalCoordinates](#)) function **newTest** (name, method, lat, lon, restrictedLat, restrictedLon)

Public Attributes

- real **lat**
- real **lon**
- real **restrictedLat**
- real **restrictedLon**
- type(SphericalCoordinates) **unrestricted**
- type(SphericalCoordinates) **restricted**
- procedure(runMethod), pointer **userMethod** = > null()

The documentation for this interface was generated from the following file:

- Test_RestrictedSphericalCoordinates.pf

16.95 Test_RestrictSphericalCoordinates_mod Module Reference

Data Types

- type [LatLonCase](#)
- interface [Test_RestrictSphericalCoordinates](#)

Public Member Functions

- type([Test_RestrictSphericalCoordinates](#)) function **newTest** (name, method, lat, lon, restrictedLat, restrictedLon)
- type([LatLonCase](#)) function, dimension(:), allocatable **getParameters** ()
- subroutine **testRestrict** (this)
- character(:) function, allocatable **getParameterString** (this)
- subroutine **runMethod** (this)

The documentation for this module was generated from the following file:

- Test_RestrictedSphericalCoordinates.pf

16.96 Test_RobustRunner_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testRunVariety** ()

The documentation for this module was generated from the following file:

- Test_RobustRunner.F90

16.97 Test_SimpleTestCase_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- type(TestSuite) function **internalSuite** ()
- subroutine **testWorks** ()
- subroutine **testFails** ()
- subroutine **testRunSuite** ()

The documentation for this module was generated from the following file:

- Test_SimpleTestCase.F90

16.98 Test_StringConversionUtilities_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testToStringInteger1D** ()

The documentation for this module was generated from the following file:

- Test_StringConversionUtilities.F90

16.99 Test_TestMethod_mod Module Reference

Public Member Functions

- type(**TestSuite**) function, public **suite** ()
- subroutine **testMethodWasRun** ()
- subroutine **testWasRun** ()

The documentation for this module was generated from the following file:

- Test_TestMethod.F90

16.100 Test_TestResult_mod Module Reference

Public Member Functions

- type(**TestSuite**) function, public **suite** ()
- subroutine **testGetNumRun** ()
- subroutine **testGetNumFailed** ()
- subroutine **testAddListenerEnd** ()
- subroutine **testAddListenerStart** ()
- subroutine **testAddListenerFailure** ()

The documentation for this module was generated from the following file:

- Test_TestResult.F90

16.101 Test_TestSuite_mod Module Reference

Data Types

- type **Verbose**

Public Member Functions

- type(**TestSuite**) function, public **suite** ()
- subroutine **testCountTestCases** ()
- subroutine **testCountTestCasesNestedA** ()
- subroutine **testCountTestCasesNestedB** ()

- subroutine **testCountTestCasesNestedC** ()
- subroutine **testGetTestCases** ()
- subroutine **myTestMethod** ()

The documentation for this module was generated from the following file:

- Test_TestSuite.F90

16.102 Test_UnixProcess_mod Module Reference

Public Member Functions

- type(TestSuite) function, public **suite** ()
- subroutine **testIsActive** ()

The documentation for this module was generated from the following file:

- Test_UnixProcess.F90

16.103 TestCase_mod Module Reference

<BriefDescription>

Data Types

- type **ConcreteSurrogate**
- interface **runMethod**
- type **TestCase**
- type **TestCaseReference**

Public Member Functions

- recursive subroutine **runBare** (this)
- recursive subroutine **runBare_surrogate** (this)

16.103.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestCase.F90

16.104 TestFailure_mod Module Reference

<BriefDescription>

Data Types

- type **TestFailure**

16.104.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestFailure.F90

16.105 mods::pre::pre_If::TestIfDirective Class Reference

Public Member Functions

- def **testTokenNotFound1**
- def **testNoTest**
- def **testIfTestFalse**
- def **testIfTestTrue1**
- def **testIfTestTrue2**
- def **testIfClearTokens**
- def **testIfClearTokensUntilEnd1**

The documentation for this class was generated from the following file:

- pre_If.py

16.106 mods::pre::interleavedp::TestInterleaved Class Reference

Public Member Functions

- def **test_InOrder**
- def **test_NumberMismatch**
- def **test_OrderMismatch1**
- def **test_OrderMismatch2**
- def **test_OrderMismatch3**
- def **test_ElseMid1**
- def **test_ElseMid2**
- def **test_ElseMid3**
- def **test_ElseMid4**
- def **test_ElseMid5**
- def **test_ElseMid6**
- def **test_ElseMid7**
- def **test_ElseMid8**

- def **test_ElseMid9**
- def **test_ElseMid10**

The documentation for this class was generated from the following file:

- interleavedp.py

16.107 TestListener_mod Module Reference

<BriefDescription>

Data Types

- interface **addFailure**
- interface **endTest**
- type **ListenerPointer**
- interface [startTest](#)
- type **TestListener**

16.107.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestListener.F90

16.108 TestMethod_mod Module Reference

<BriefDescription>

Data Types

- interface **empty**
- interface **newTestMethod**
- type **TestMethod**

16.108.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestMethod.F90

16.109 mods::pre::parseArgs::TestParseArgs Class Reference

Public Member Functions

- def **test_ParseArgs_OneArgWithBrackets1**
- def **test_ParseArgs_OneArgWithBrackets2**
- def **test_ParseArgs_OneArgWithBrackets3**
- def **test_ParseArgs_OneArgWithBrackets4**
- def **test_ParseArgs_OneArgWithBrackets5**
- def **test_ParseArgs_OneArgWithBrackets6**
- def **test_ParseArgs_OneArgWithBrackets7**

- def **test_ParseArgs_oneArg**
- def **test_ParseArgs_twoArgs1**
- def **test_ParseArgs_twoArgs2**
- def **test_ParseArgs_oneArgArray1**
- def **test_ParseArgs_TwoArgArray**
- def **test_ParseArgs_ThreeArgs**

The documentation for this class was generated from the following file:

- `parseArgs.py`

16.110 testParser::TestParseLine Class Reference

Public Member Functions

- def **testCppSetLineAndFile**
- def **testGetSubroutineName**
- def **testGetTypeNames**
- def [testAtTest](#)
- def [testAtMpiTest](#)
- def [testMatchAtTestCase](#)
- def [testMatchAtAssertEqual](#)
- def [testMatchAtAssertOther](#)
- def [testMatchAtBefore](#)
- def [testMatchAtAfter](#)
- def [testMatchAtSuite](#)

16.110.1 Member Function/Subroutine Documentation

16.110.1.1 def testParser::TestParseLine::testAtMpiTest (*self*)

Check that a line starting with '@mpitest' is detected as an annotation and that optional parameters are collected.

16.110.1.2 def testParser::TestParseLine::testAtTest (*self*)

Check that a line starting with '@test' is detected as an annotation.

16.110.1.3 def testParser::TestParseLine::testMatchAtAfter (self)

Check that a line starting with '@after*' ...

16.110.1.4 def testParser::TestParseLine::testMatchAtAssertEqual (self)

Check that a line starting with '@assertEqual' is detected as an annotation.

16.110.1.5 def testParser::TestParseLine::testMatchAtAssertOther (self)

Check that a line starting with '@assert*' is detected as an annotation.

16.110.1.6 def testParser::TestParseLine::testMatchAtBefore (self)

Check that a line starting with '@before*' ...

16.110.1.7 def testParser::TestParseLine::testMatchAtSuite (self)

Check that a line starting with '@suite changes the suite name ...

16.110.1.8 def testParser::TestParseLine::testMatchAtTestCase (self)

Check that a line starting with '@testcase' is detected as an annotation.

The documentation for this class was generated from the following file:

- testParser.py

16.111 mods::pre::pre_Repeat::TestRepeatDirective Class Reference**Public Member Functions**

- def test_copyBlock1
- def test_copyBlock2

- def **test_copyBlock2Vars**
- def **test_copyBlock2VarsMulti**
- def **test_copyBlock2VarsMultiWithStrings**
- def **test_copyNaiveRecursion**
- def **test_copyNaiveRecursion1**
- def **test_copyFunction1**

The documentation for this class was generated from the following file:

- pre_Repeat.py

16.112 TestResult_mod Module Reference

<BriefDescription> Note: A possible extension point for user-specialized TestResults.

Data Types

- type **TestResult**

Public Member Functions

- type(TestResult) function, pointer, public **newTestResult** ()
- subroutine **addError** (this, aTest, exceptions)
- integer function **failureCount** (this)
- subroutine **addListener** (this, listener)

16.112.1 Detailed Description

<BriefDescription> Note: A possible extension point for user-specialized TestResults.

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestResult.F90

16.113 TestRunner_mod Module Reference

<BriefDescription>

Data Types

- interface **newTestRunner**
- type **TestRunner**

Public Member Functions

- type(TestRunner) function **newTestRunner_unit** (unit)
- subroutine **run** (this, aTest, context)
- subroutine **startTest** (this, testName)

16.113.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestRunner.F90

16.114 TestSuite_mod Module Reference

<BriefDescription>

Data Types

- interface **newTestSuite**
- type **TestReference**
- type **TestSuite**

Public Member Functions

- recursive subroutine **addTest** (this, aTest)

16.114.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- TestSuite.F90

16.115 ThrowFundamentalTypes_mod Module Reference

<BriefDescription>

Data Types

- interface **throwDifferentValues**
- interface **throwDifferentValuesWithLocation**

Public Member Functions

- subroutine, public **throwNonConformable** (shapeExpected, shapeFound, location)
- character(len=MAXLEN_SHAPE) function, public **locationFormat** (iLocation)

16.115.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- ThrowFundamentalTypes.F90

16.116 UnixPipeInterfaces_mod Module Reference

<BriefDescription>

Data Types

- interface **fgets**
- interface **free**
- interface **getdelim**
- interface **getline**
- interface **pclose**
- interface **popen**

Public Attributes

- integer(C_INT), parameter, public **CLOSE_FAILED** = -1

16.116.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- UnixPipeInterfaces.F90

16.117 UnixProcess_mod Module Reference

<BriefDescription>

Data Types

- interface **UnixProcess**

Public Member Functions

- character(len=:) function, allocatable **makeCommand** (baseCommand, runIn-Background)
- logical function **isActive** (this)
- character(len=:) function, allocatable **getDelim** (this, delimiter)
- integer function **getPid** (this)

16.117.1 Detailed Description

<BriefDescription>

Author

Tom Clune, NASA/GSFC

Date

07 Nov 2013

Note

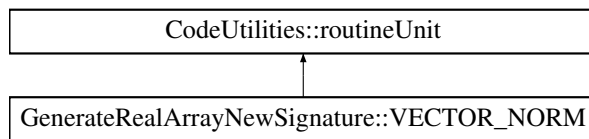
<A note here.> <Or starting here...>

The documentation for this module was generated from the following file:

- UnixProcess.F90

16.118 GenerateRealArrayNewSignature::VECTOR_NORM Class - Reference

Inheritance diagram for GenerateRealArrayNewSignature::VECTOR_NORM:



Public Member Functions

- `def __init__`

Public Attributes

- **rank**
- **fType**
- **precision**
- **name**
- **declaration**
- **declarations**

The documentation for this class was generated from the following file:

- GenerateRealArrayNewSignature.py