ferror

1.2.0

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Chapter 1

Main Page

1.1 Introduction

FERROR is a library to assist with error handling in Fortran projects.

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Version

1.2.0

2 Main Page

Chapter 2

Modules Index

2.1 Modules List

Here is a list of all documented modules with brief descriptions:

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Defines a type for managing errors and warnings	19

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Chapter 4

Module Documentation

4.1 ferror Module Reference

ferror

Data Types

· type errors

Defines a type for managing errors and warnings.

Functions/Subroutines

- pure character(len=:) function, allocatable get_log_filename (this)
 - Gets the name of the error log file.
- subroutine set_log_filename (this, str)

Sets the name of the error log file.

• subroutine report_error (this, fcn, msg, flag)

Reports an error condition to the user.

• subroutine report_warning (this, fcn, msg, flag)

Reports a warning message to the user.

• subroutine log_error (this, fcn, msg, flag)

Writes an error log file.

• pure logical function has_error_occurred (this)

Tests to see if an error has been encountered.

• subroutine reset_error_status (this)

Resets the error status flag to false, and the current error flag to zero.

• pure logical function has_warning_occurred (this)

Tests to see if a warning has been encountered.

• subroutine reset warning status (this)

Resets the warning status flag to false, and the current warning flag to zero.

pure integer function get_error_flag (this)

Gets the current error flag.

pure integer function get_warning_flag (this)

Gets the current warning flag.

pure logical function get_exit_on_error (this)

Gets a logical value determining if the application should be terminated when an error is encountered.

• subroutine set_exit_on_error (this, x)

Sets a logical value determining if the application should be terminated when an error is encountered.

• pure logical function get_suppress_printing (this)

Gets a logical value determining if printing of error and warning messages should be suppressed.

• subroutine set_suppress_printing (this, x)

Sets a logical value determining if printing of error and warning messages should be suppressed.

4.1.1 Detailed Description

ferror

Purpose

Provides a series of error codes and error handling mechanisms.

4.1.2 Function/Subroutine Documentation

4.1.2.1 pure integer function ferror::get_error_flag (class(errors), intent(in) this) [private]

Gets the current error flag.

Parameters

in	this	The errors object.
----	------	--------------------

Returns

The current error flag.

4.1.2.2 pure logical function ferror::get_exit_on_error(class(errors), intent(in) this) [private]

Gets a logical value determining if the application should be terminated when an error is encountered.

Parameters

ir	ì	this	The errors object.
----	---	------	--------------------

Returns

Returns true if the application should be terminated; else, false.

4.1.2.3 pure character(len = :) function, allocatable ferror::get_log_filename (class(errors), intent(in) this)

Gets the name of the error log file.

Parameters

in this The errors of	bject.
-----------------------	--------

Returns

The filename.

4.1.2.4 pure logical function ferror::get_suppress_printing (class(errors), intent(in) this) [private]

Gets a logical value determining if printing of error and warning messages should be suppressed.

Parameters

in this The er	rors object.
----------------	--------------

Returns

True if message printing should be suppressed; else, false to allow printing.

4.1.2.5 pure integer function ferror::get_warning_flag (class(errors), intent(in) this) [private]

Gets the current warning flag.

Parameters

in	this	The errors object.
----	------	--------------------

Returns

The current warning flag.

4.1.2.6 pure logical function ferror::has_error_occurred (class(errors), intent(in) *this*) [private]

Tests to see if an error has been encountered.

Parameters

in	this	The errors object.

Returns

Returns true if an error has been encountered; else, false.

4.1.2.7 pure logical function ferror::has_warning_occurred (class(errors), intent(in) this) [private]

Tests to see if a warning has been encountered.

Parameters

in	this	The errors object.
----	------	--------------------

Returns

Returns true if a warning has been encountered; else, false.

4.1.2.8 subroutine ferror::log_error (class(errors), intent(in) *this*, character(len = *), intent(in) *fcn*, character(len = *), intent(in) *msg*, integer, intent(in) *flag*) [private]

Writes an error log file.

Parameters

in	this	The errors object.	
in	fcn	The name of the function or subroutine in which the error was encountered.	
in	msg	The error message.	
in	flag	The error flag.	

4.1.2.9 subroutine ferror::report_error (class(errors), intent(inout) this, character(len = *), intent(in) fcn, character(len = *), intent(in) msg, integer, intent(in) flag) [private]

Reports an error condition to the user.

Parameters

in, out	this	The errors object.	
in	fcn	The name of the function or subroutine in which the error was encountered.	
in	msg	The error message.	
in	flag	The error flag.	

Remarks

The default behavior prints an error message, appends the supplied information to a log file, and terminates the program.

4.1.2.10 subroutine ferror::report_warning (class(errors), intent(inout) this, character(len = *), intent(in) fcn, character(len = *), intent(in) msg, integer, intent(in) flag) [private]

Reports a warning message to the user.

Parameters

in,out	this	The errors object.	
in	fcn	The name of the function or subroutine from which the warning was issued.	
in	msg	The warning message.	
in	flag	The warning flag.	

Remarks

The default behavior prints the warning message, and returns control back to the calling code.

4.1.2.11 subroutine ferror::reset_error_status (class(errors), intent(inout) this) [private]

Resets the error status flag to false, and the current error flag to zero.

Parameters

in,out	this	The errors object.
--------	------	--------------------

4.1.2.12 subroutine ferror::reset_warning_status (class(errors), intent(inout) this) [private]

Resets the warning status flag to false, and the current warning flag to zero.

Parameters

in,out	this	The errors object.

4.1.2.13 subroutine ferror::set_exit_on_error (class(errors), intent(inout) *this*, logical, intent(in) x) [private]

Sets a logical value determining if the application should be terminated when an error is encountered.

Parameters

in,out	this	The errors object.	
in	X	Set to true if the application should be terminated when an error is reported; else, false.	

4.1.2.14 subroutine ferror::set_log_filename (class(errors), intent(inout) *this*, character(len = :), allocatable *str*) [private]

Sets the name of the error log file.

Parameters

in,out	this	The errors object.
in	str	The filename.

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4.1.2.15 subroutine ferror::set_suppress_printing (class(errors), intent(inout) this, logical, intent(in) x) [private]

Sets a logical value determining if printing of error and warning messages should be suppressed.

Parameters

in,out	this	The errors object.	
in	Х	Set to true if message printing should be suppressed; else, false to allow printing.	

4.2 ferror_c_binding Module Reference

ferror

Data Types

type errorhandler

A C compatible type encapsulating an errors object.

Functions/Subroutines

• subroutine alloc errorhandler (obj)

Initializes a new error handler object.

subroutine get errorhandler (obj, eobj)

Retrieves the errors object from the C compatible data structure.

• subroutine update_errorhandler (eobj, cobj)

Updates the errorhandler object.

• subroutine get_log_filename (err, fname, nfname)

Gets the name of the error log file.

• subroutine set_log_filename (err, fname)

Sets the error log filename.

• subroutine report_error (err, fcn, msg, flag)

Reports an error condition to the user.

• subroutine report_warning (err, fcn, msg, flag)

Reports a warning condition to the user.

• subroutine log_error (err, fcn, msg, flag)

Writes an error log file.

• logical(c bool) function has error occurred (err)

Tests to see if an error has been encountered.

subroutine reset_error_status (err)

Resets the error status flag to false, and the current error flag to zero.

logical(c_bool) function has_warning_occurred (err)

Tests to see if a warning has been encountered.

• subroutine reset_warning_status (err)

Resets the warning status flag to false, and the current warning flag to zero.

integer(c int) function get error flag (err)

Gets the current error flag.

integer(c_int) function get_warning_flag (err)

Gets the current warning flag.

• logical(c_bool) function get_exit_on_error (err)

Gets a logical value determining if the application should be terminated when an error is encountered.

• subroutine set_exit_on_error (err, x)

Sets a logical value determining if the application should be terminated when an error is encountered.

• logical(c_bool) function get_suppress_printing (err)

Gets a logical value determining if printing of error and warning messages should be suppressed.

subroutine set_suppress_printing (err, x)

Sets a logical value determining if printing of error and warning messages should be suppressed.

• character(len=:) function, allocatable cstr_2_fstr (cstr)

Copies a C string (null terminated) to a Fortran string.

• subroutine fstr_2_cstr (fstr, cstr, csize)

Copies a Fortran string into a C string.

4.2.1 Detailed Description

ferror

Purpose

Provides C bindings to the ferror library.

4.2.2 Function/Subroutine Documentation

4.2.2.1 subroutine ferror_c_binding::alloc_errorhandler (type(errorhandler), intent(inout) obj)

Initializes a new error handler object.

Parameters

in	obj	The errorhandler object to allocate.
----	-----	--------------------------------------

4.2.2.2 character(len = :) function, allocatable ferror_c_binding::cstr_2_fstr (character(kind = c_char), dimension(*), intent(in) cstr)

Copies a C string (null terminated) to a Fortran string.

Parameters

in	cstr	The null-terminated C string.
----	------	-------------------------------

Returns

The Fortran copy.

4.2.2.3 subroutine ferror_c_binding::fstr_2_cstr (character(len = *), intent(in) fstr, character(kind = c_char), dimension(*), intent(out) cstr, integer, intent(inout) csize)

Copies a Fortran string into a C string.

Parameters

in	fstr	The Fortran string to copy.	
out	cstr	Γhe null-terminated C string.	
in, out	csize	On input, the size of the character buffer cstr. On output, the actual number of characters (not including the null character) writen to cstr.	

4.2.2.4 integer(c_int) function ferror_c_binding::get_error_flag (type(errorhandler), intent(in) err)

Gets the current error flag.

Parameters

in	err	The errorhandler object.
----	-----	--------------------------

Returns

The current error flag.

4.2.2.5 subroutine ferror_c_binding::get_errorhandler (type(errorhandler), intent(in), target *obj*, class(errors), intent(out), allocatable *eobj*)

Retrieves the errors object from the C compatible data structure.

Parameters

in	obj	The C compatible errorhandler data structure.	
out	eobj	The resulting errors object.	

4.2.2.6 logical(c_bool) function ferror_c_binding::get_exit_on_error (type(errorhandler), intent(in) err)

Gets a logical value determining if the application should be terminated when an error is encountered.

Parameters

in	err	The errorhandler object.
----	-----	--------------------------

Returns

Returns true if the application should be terminated; else, false.

4.2.2.7 subroutine ferror_c_binding::get_log_filename (type(errorhandler), intent(in) *err*, character(kind = c_char), dimension(*), intent(out) *fname*, integer(c_int), intent(inout) *nfname*)

Gets the name of the error log file.

Parameters

in	err	The errorhandler object.	
out	fname	A character buffer where the filename will be written. It is recommended that this be in	
		the neighborhood of 256 elements.	
in,out	nfname	On input, the actual size of the buffer. Be sure to leave room for the null terminator	
		character. On output, the actual numbers of characters written to fname (not including	
		the null character).	

4.2.2.8 logical(c_bool) function ferror_c_binding::get_suppress_printing (type(errorhandler), intent(in) err)

Gets a logical value determining if printing of error and warning messages should be suppressed.

Parameters

in	err	The errorhandler object.
----	-----	--------------------------

Returns

True if message printing should be suppressed; else, false to allow printing.

4.2.2.9 integer(c_int) function ferror_c_binding::get_warning_flag (type(errorhandler), intent(in) err)

Gets the current warning flag.

Parameters

in	err	The errorhandler object.

Returns

The current warning flag.

4.2.2.10 logical(c_bool) function ferror_c_binding::has_error_occurred (type(errorhandler), intent(in) err)

Tests to see if an error has been encountered.

Parameters

in	err	A pointer to the error handler object.
----	-----	--

Returns

Returns true if an error has been encountered; else, false.

4.2.2.11 logical(c_bool) function ferror_c_binding::has_warning_occurred (type(errorhandler), intent(in) err)

Tests to see if a warning has been encountered.

Parameters

in	err	The errorhandler object.
----	-----	--------------------------

Returns

Returns true if a warning has been encountered; else, false.

4.2.2.12 subroutine ferror_c_binding::log_error (type(errorhandler), intent(in) *err*, character(kind = c_char), intent(in) *fcn*, character(kind = c_char), intent(in) *msg*, integer(c_int), intent(in), value *flag*)

Writes an error log file.

Parameters

in	err	The errorhandler object.	
in	fcn	The name of the function or subroutine in which the error was encountered.	
in	msg	The error message.	
in	flag	The error flag.	

4.2.2.13 subroutine ferror_c_binding::report_error (type(errorhandler), intent(inout) err, character(kind = c_char), intent(in) fcn, character(kind = c_char), intent(in) msg, integer(c_int), intent(in), value flag)

Reports an error condition to the user.

Parameters

in,out	err	A pointer to the error handler object.	
in	fcn	The name of the function or subroutine in which the error was encountered.	
in	msg	The error message.	
in	flag	The error flag.	

4.2.2.14 subroutine ferror_c_binding::report_warning (type(errorhandler), intent(inout) err, character(kind = c_char), intent(in) fcn, character(kind = c_char), intent(in) msg, integer(c_int), intent(in), value flag)

Reports a warning condition to the user.

Parameters

in,out	err	The errorhandler object.	
in	fcn	The name of the function or subroutine in which the warning was encountered.	
in	msg	The warning message.	
in	flag	The warning flag.	

4.2.2.15 subroutine ferror_c_binding::reset_error_status (type(errorhandler), intent(inout) err)

Resets the error status flag to false, and the current error flag to zero.

Parameters

in, out err	The errorhandler object.
-------------	--------------------------

4.2.2.16 subroutine ferror_c_binding::reset_warning_status (type(errorhandler), intent(inout) err)

Resets the warning status flag to false, and the current warning flag to zero.

Parameters

in,out	err	The errorhandler object.
--------	-----	--------------------------

4.2.2.17 subroutine ferror_c_binding::set_exit_on_error (type(errorhandler), intent(inout) *err*, logical(c_bool), intent(in), value x)

Sets a logical value determining if the application should be terminated when an error is encountered.

Parameters

in,out	err	The errorhandler object.	
in	X	Set to true if the application should be terminated when an error is reported; else, false.	

4.2.2.18 subroutine ferror_c_binding::set_log_filename (type(errorhandler), intent(inout) *err*, character(kind = c_char), dimension(*), intent(in) *fname*)

Sets the error log filename.

Parameters

in,out	err	The errorhandler object.
in	fname	A null-terminated string containing the filename.

4.2.2.19 subroutine ferror_c_binding::set_suppress_printing (type(errorhandler), intent(inout) *err*, logical(c_bool), intent(in), value x)

Sets a logical value determining if printing of error and warning messages should be suppressed.

Parameters

in,out	err	The errorhandler object.	
in	X	Set to true if message printing should be suppressed; else, false to allow printing.	

4.2.2.20 subroutine ferror_c_binding::update_errorhandler (class(errors), intent(in) *eobj,* type(errorhandler), intent(inout) *cobj*)

Updates the errorhandler object.

Parameters

in	eobj	The errors object.
in,out	cobj	The errorhandler object to update.

Chapter 5

Data Type Documentation

5.1 ferror_c_binding::errorhandler Type Reference

A C compatible type encapsulating an errors object.

Public Attributes

• integer(c_int) n

The size of the errors object, in bytes.

type(c_ptr) ptr

A pointer to the errors object.

5.1.1 Detailed Description

A C compatible type encapsulating an errors object.

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

• /home/jason/Documents/Code/ferror/src/ferror_c_binding.f90

5.2 ferror::errors Type Reference

Defines a type for managing errors and warnings.

Public Member Functions

• procedure, public get_log_filename

Gets the name of the error log file.

· procedure, public set_log_filename

Sets the name of the error log file.

• procedure, public report error

eports an error condition to the user.

• procedure, public report_warning

Reports a warning message to the user.

• procedure, public log_error

Writes an error log file.

• procedure, public has_error_occurred

Tests to see if an error has been encountered.

• procedure, public reset_error_status

Resets the error status flag to false.

• procedure, public has_warning_occurred

Tests to see if a warning has been encountered.

• procedure, public reset_warning_status

Resets the warning status flag to false.

• procedure, public get_error_flag

Gets the current error flag.

• procedure, public get_warning_flag

Gets the current warning flag.

procedure, public get_exit_on_error

Gets a logical value determining if the application should be terminated when an error is encountered.

procedure, public set_exit_on_error

Sets a logical value determining if the application should be terminated when an error is encountered.

• procedure, public get_suppress_printing

Gets a logical value determining if printing of error and warning messages should be suppressed.

• procedure, public set_suppress_printing

Sets a logical value determining if printing of error and warning messages should be suppressed.

Public Attributes

• character(len=256) m_fname = "error_log.txt"

A maximum of 256 character error log filename.

logical m_founderror = .false.

Found an error.

• logical m_foundwarning = .false.

Found a warning.

• integer m_errorflag = 0

The error flag.

• integer m_warningflag = 0

The warning flag.

• logical m_exitonerror = .true.

Terminate the application on error.

• logical m_suppressprinting = .false.

Suppress printing of error and warning messages.

5.2.1 Detailed Description

Defines a type for managing errors and warnings.

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

• /home/jason/Documents/Code/ferror/src/ferror.f90

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