ferror

1.2.0

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FE	RROF	R is a library to assist with error handling in Fortran projects.	

Version

Author

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• 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.

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**

in 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 object.
----	------	--------------------

# 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 errors 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.

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 <i>this</i>	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.

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

# **Parameters**

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.

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	X	Set to true if message printing should be suppressed; else, false to allow printing.	Ī

# 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 <a href="mailto:get\_log\_filename">get\_log\_filename</a> (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.

in	obj	The errorhandler object to allocate.
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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.
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# 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	he Fortran string to copy.	
out	cstr	The 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.

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.

i	n	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**

j	in	err	The errorhandler object.	1
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# 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.

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.	

#### **Parameters**

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 <i>err</i>	The errorhandler object.
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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,ou	t 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.		

# 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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