ferror

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1.1 Introduction

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

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2.1 Modules List

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3.1 Data Types List

Here are the data types with brief descriptions:

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.

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

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 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.

4.1.2.5 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.

4.1.2.6 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.

4.1.2.7 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.

4.1.2.8 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.

4.1.2.9 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.

4.1.2.10 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.

4.1.2.11 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.

4.1.2.12 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.

4.1.2.13 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.

4.2 ferror_c_binding Module Reference

ferror

Functions/Subroutines

- type(c_ptr) function alloc_error_handler ()
  Initializes a pointer to a new error handler object.
- subroutine free_error_handler (ptr)
  Cleans up an error handler object.
- subroutine get_error_log_fname (err, fname, nfname)
  Gets the name of the error log file.
- subroutine set_error_log_fname (err, fname)
  Sets the error log filename.
- subroutine register_error (err, fcn, msg, flag)
  Reports an error condition to the user.
- subroutine register_warning (err, fcn, msg, flag)
  Reports a warning condition to the user.
- subroutine write_error_log (err, fcn, msg, flag)
  Writes an error log file.
- logical(c_bool) function error_occurred (err)

Tests to see if an error has been encountered.

- subroutine reset_error (err)

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

- logical(c_bool) function warning_occurred (err)

  Tests to see if a warning has been encountered.

- subroutine reset_warning (err)

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

- integer(c_int) function get_error_code (err)

  Gets the current error flag.

- integer(c_int) function get_warning_code (err)

  Gets the current warning flag.

- logical(c_bool) function get_exit_behavior (err)

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

- subroutine set_exit_behavior (err, x)

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

- 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 type(c_ptr) function ferror_c_binding::alloc_error_handler ( )

Initializes a pointer to a new error handler object.

Returns

The pointer to the newly created error handler object.

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 logical(c_bool) function ferror_c_binding::error_occurred (type(c_ptr), intent(in), value *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.

4.2.2.4 subroutine ferror_c_binding::free_error_handler (type(c_ptr), intent(in) *ptr*)

Cleans up an error handler object.

Parameters

in	*ptr*	The pointer to the error handler object.

4.2.2.5 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*	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`.

4.2.2.6 integer(c_int) function ferror_c_binding::get_error_code (type(c_ptr), intent(in), value *err*)

Gets the current error flag.

Parameters

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

Returns

The current error flag.

4.2.2.7 subroutine ferror_c_binding::get_error_log_fname (type(c_ptr), intent(in), value *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*	A pointer to the error handler 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_exit_behavior (type(c_ptr), intent(in), value *err*)

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

Parameters

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

Returns

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

4.2.2.9 integer(c_int) function ferror_c_binding::get_warning_code (type(c_ptr), intent(in), value *err*)

Gets the current warning flag.

Parameters

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

Returns

The current warning flag.

4.2.2.10 subroutine ferror_c_binding::register_error (type(c_ptr), intent(in), value *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	*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.

4.2.2.11 subroutine ferror_c_binding::register_warning (type(c_ptr), intent(in), value *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	*err*	A pointer to the error handler 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.

4.2.2.12 subroutine ferror_c_binding::reset_error (type(c_ptr), intent(in), value *err*)

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

Parameters

in	*err*	The error handler object.

4.2.2.13 subroutine ferror_c_binding::reset_warning (type(c_ptr), intent(in), value *err*)

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

Parameters

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

4.2.2.14 subroutine ferror_c_binding::set_error_log_fname (type(c_ptr), intent(in), value *err,* character(kind = c_char), dimension(*), intent(in) *fname*)

Sets the error log filename.

Parameters

in,out	*err*	A pointer to the error handler object.
in	*fname*	A null-terminated string containing the filename.

4.2.2.15 subroutine ferror_c_binding::set_exit_behavior (type(c_ptr), intent(in), value *err,* logical(c_bool), intent(in) *x*)

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

Parameters

in	*err*	A pointer to the error handler object.
in	*x*	Set to true if the application should be terminated when an error is reported; else, false.

4.2.2.16 logical(c_bool) function ferror_c_binding::warning_occurred (type(c_ptr), intent(in), value *err*)

Tests to see if a warning has been encountered.

Parameters

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

Returns

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

4.2.2.17 subroutine ferror_c_binding::write_error_log (type(c_ptr), intent(in), value *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*	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.

Chapter 5

Data Type Documentation

5.1 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.

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.

5.1.1 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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