

# What's New in Version 6

Version 6 is the first major update to Flint in a decade. It mainly addresses new capabilities in Fortran 2003 (F03) and Fortran 2008 (F08). It maps well to the state-of-the-art in compilation, primarily non-object-oriented compatibility. Changes made are:

## Language Additions

- VALUE statement and attribute
- VOLATILE statement and attribute
- Pointer objects can now have the INTENT attribute
- Symbol names up to 63 characters
- Statements up to 256 lines (16,000 character limit for Flint)
- Square brackets [ ] are permitted to delimit array constructors in addition to previous standard / /
- Binary, Octal, and Hex (BOZ) constants to intrinsic functions INT, REAL, DBLE, and CMPLX

## Intrinsics

- ISO\_C\_BINDING
- ISO\_FORTRAN\_ENV
- IEEE\_ARITHMETIC
- IEEE\_EXCEPTIONS
- IEEE\_FEATURES
- BIND statement and attribute
- Language binding can be specified in FUNCTION, SUBROUTINE, and ENTRY statements
- INTRINSIC and NON-INTRINSIC can be specified for modules in USE statements
- GET\_COMMAND, GET\_COMMAND\_ARGUMENT, COMMAND\_ARGUMENT\_COUNT, and
- GET\_ENVIRONMENT\_VARIABLE intrinsics
- F08 COMPILER\_OPTIONS and COMPILER\_VERSION intrinsic functions
- KIND= argument may be supplied to ACHAR, IACHAR, ICHAR, LEN, and LEN\_TRIM

## I/O

- FLUSH statement
- WAIT statement (with ASYNCHRONOUS/ASYNCH and DONE extensions from IBM)
- ASYNCHRONOUS statement and attribute
- The following I/O specifiers have been added or updated to the F03 standard: ACCESS, ASYNCHRONOUS (along with ASYNCH alias, an IBM extension), BLANK, DECIMAL, DELIM, ENCODING, ID, IOMSG, PAD, PENDING, POS, RECORDTYPE (DEC, HP, Intel extension) ROUND, SIGN, SIZE, and STREAM
- F08 I/O specifier NEWUNIT
- Any KIND is permissible with integer specifiers (SIZE, NEXTREC, etc.)
- Intrinsic functions IS\_IOSTAT\_END, IS\_IOSTAT\_EOR
- Comma after a P-edit descriptor is optional when followed by a repeat
- NEW\_LINE intrinsic function
- SELECTED\_CHAR\_KIND intrinsic function
- F08 extension to SELECTED\_REAL\_KIND intrinsic function

## Other Additions/Improvements

- A new command line switch `-o "message_format"` (use single quotes on \*nix) to change the format of Flint's analysis messages, suitable for interfacing to IDE/ editor
- 14 new error messages for a total of 1017 unique Fortran checks
- Minor bug fixes
- Various operational enhancements

## User Interface Changes to Note

- Separator for cross reference (xref) content selection is now `'.'` instead of `'_'`; see Section 8.4 of `flintman.pdf`. Prior versions of Flint retain the old syntax.