

Compiler Support for the Fortran 2003 Standard

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Introduction

This is a standing article in Fortran Forum. The first version appeared in Fortran Forum Volume 26, Number 1, April 2007. The basis for the entries in the list of features was a report by John Reid. The original report can be found at:

<ftp://ftp.nag.co.uk/sc22wg5/N1551-N1600/N1579.pdf>

An updated version of this report was included in Fortran Forum. An electronic version can be found at:

<ftp://ftp.nag.co.uk/sc22wg5/N1601-N1650/N1648.pdf>

If you are a compiler vendor and would like to be included in future versions of this table please email one of us with details and they will be added to the table and published in Fortran Forum.

Acknowledgements for the original Article

An email was sent to the J3 list asking for information about compiler support for the new features of the Fortran 2003 standard. The following people contributed to the original article:

- Bill Long, Cray
- Joost VandeVondele
- Van Snyder
- Tobias Burnus and Brooks Moses, gfortran
- Andy Vaught, g95
- Robert Holmes, NAG

Thanks.

Revision 1

Two new compiler vendors have been added. The information on the Intel compiler has been taken from the release notes that came with release 10 of the compiler. The information on the IBM entry has been taken from their web site. Ian Bush posted an article to comp.lang.fortran regarding this release (IBM XL Fortran Enterprise Edition for AIX, V11.1). Thanks Ian. See

http://publib.boulder.ibm.com/infocenter/comphelp/v9v111/index.jsp?topic=/com.ibm.xlf111.aix.doc/getstart/new_features.htm

for more information.

Intel and IBM were contacted to ask them to verify the information.

- Jim Xia of IBM corrected their entry, thanks Jim.
- Stan Witlock of Intel corrected their entry, thanks Stan.

If there are any errors please notify us and we will correct them in the next version of this article.

Fortran 2003 Features and Compiler Support: Revision 1

	Cray	gfortran	g95	IBM	Intel	NAG
ISO TR 15580 IEEE Arithmetic	Yes	No	Partial	Yes	No	Yes
ISO TR 15581 Allocatable Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Data enhancements and object orientation						
Parameterized derived types	Yes	No	No	No	No	No
Procedure pointers	Yes	No	Yes	Yes	No	No
Finalization	No	No	No	Yes	No	No
Procedures bound by name to a type	Yes	No	No	Yes	No	Yes
The PASS attribute	Yes	No	No	Yes	No	Yes
Procedures bound to a type as operators	Yes	No	No	Yes	No	Yes
Type extension	Yes	No	No	Yes	No	Yes
Overriding a type-bound procedure	Yes	No	No	Yes	No	Yes
Enumerations	Yes	Yes	Yes	Yes	No	Yes
ASSOCIATE construct	Yes	No	No	Yes	No	Yes
Polymorphic entities	Yes	No	No	Yes	No	Yes, 1
SELECT TYPE construct	Yes	No	No	Yes	No	Yes
Deferred bindings and abstract types	No	No	No	Yes	No	Yes
Miscellaneous enhancements						
Structure constructors	Yes	No	Yes	Yes	No	No
The allocate statement	Yes	No	Partial	Yes	No	Yes
Assignment to an allocatable array	Yes, 2	No	No	Yes	Yes, 2	No
Transferring an allocation	Yes	Yes	No	Yes	Yes	No
More control of access from a module	Yes	Yes	No	Yes	Yes, 6	Yes
Renaming operators on the USE statement	Yes	No	Yes	Yes	Yes	No
Pointer assignment	Yes	No	Yes	Yes	Yes	Yes
Pointer INTENT	Yes	Yes	Yes	Yes	Yes	Yes
The VOLATILE attribute	Yes	Yes	Yes	Yes	Yes	Yes
The IMPORT statement	Yes	Yes	Yes	Yes	Yes	Yes
Intrinsic modules	Yes	Yes	Yes	Yes	Yes	Yes
Access to the computing environment	Yes	Yes	Yes	Yes	Yes	Yes
Support for international character sets	No	No	Yes	Yes	No	Partial
Lengths of names and statements	Yes	Yes	question	Yes	Yes	Yes
Binary, octal and hex constants	Yes	No, 3	Yes	Yes	Yes	Yes
Array constructor syntax	Yes	Partial, 4	Yes	Yes	No	Partial, 4
Specification and initialization expressions	Partial	Partial	Yes	Yes	No	No
Complex constants	Yes	Yes	Yes	Yes	Yes	No
Changes to intrinsic functions	Yes	No	Yes	Yes	No	Partial
Controlling IEEE underflow	Yes	No	No	Yes	No	No
Another IEEE class value	Yes	No	No	Yes	No	No
Input/output enhancements						
Derived type input/output	No	No	No	Yes	No	No
Asynchronous input/output	Yes	No	Yes	Yes	Yes	Partial
FLUSH statement	Yes	Yes	Yes	Yes	Yes	No
IOMSG= specifier	Yes	Yes	Yes	Yes	No	Yes
Stream access input/output	Yes	Yes	Yes	Yes	No	Yes
ROUND= specifier	Yes	No	Partial	Yes	No	No
DECIMAL= specifier	Yes	No	Yes	Yes	No	Yes
SIGN= specifier	Yes	No	Yes	Yes	No	Yes
Kind type parameters of integer specifiers	Yes	No	question	Yes	Yes	Yes
Recursive input/output	Yes	Partial	Yes	Yes	Yes	No
Intrinsic function for newline character	Yes	Yes	Yes	Yes	Yes	Yes
Input and output of IEEE exceptional values	Yes	Yes	Yes	Yes	Yes, 7	Yes
Comma after a P edit descriptor	Yes	Yes	Yes	Yes	Yes	Yes
Interoperability with C						
Interoperability of intrinsic types	Yes	Yes - 5	Yes	Yes	Yes	Yes
Interoperability with C pointers	Yes	Yes - 5	Yes	Yes	Yes, 8	Yes
Interoperability of derived types	Yes	Yes - 5	Yes	Yes	Yes	Yes
Interoperability of variables	Yes	Yes - 5	Yes	Yes	Yes	Yes
Interoperability of procedures	Yes	Yes - 5	Yes	Yes	Yes	Yes
Interoperability of global data	Yes	Yes - 5	Yes	Yes	Yes	Yes

Notes

- 1 No unlimited polymorphics
- 2 Optional under flag
- 3 Only integer BOZ supported
- 4 No type spec support
- 5 Only in the Fortran-Experiments branch
- 6 Protected only
- 7 All except NaN Hex
- 8 No procedure pointers