

Compiler Support for the Fortran 2003 Standard

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Introduction

This is a repeating article in Fortran Forum. The first version appeared in Fortran Forum in April 2007. The basis for the entries in the list of features was a report by John Reid. 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 have 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 were 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 Whitlock 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.

Revision 2

Sun has been added and there have been a few corrections and updates to some of the other entries.

- Michael Ingrassia of Sun corrected their entry, thanks Michael.

Revision 3

The entries for Cray, gfortran (11 changes), Intel (18 changes) and NAG (9 changes) have been updated.

Fortran 2003 Features and Compiler Support: Revision 3

Y = Yes, N = No, P = Partial, U = Unconfirmed

	Cray	gfortran	g95	IBM	Intel	NAG	Sun
ISO TR 15580 IEEE Arithmetic	Y	N	P	Y	Y	Y	Y
ISO TR 15581 Allocatable Enhancements	Y	Y	Y	Y	Y	Y	Y
Data enhancements and object orientation	Cray	gfortran	g95	IBM	Intel	NAG	Sun
Parameterized derived types	Y	U	N	N	N	N	N
Procedure pointers	Y	P	Y	Y	Y	Y	N
Finalization	Y	N	N	Y	N	N	N
Procedures bound by name to a type	Y	P	N	Y	N	Y	N
The PASS attribute	Y	P	N	Y	Y	Y	N
Procedures bound to a type as operators	Y	N	N	Y	N	Y	N
Type extension	Y	Y	N	Y	Y, 11	Y	N
Overriding a type-bound procedure	Y	Y	N	Y	N	Y	N
Enumerations	Y	Y	Y	Y	Y	Y	N
ASSOCIATE construct	Y	N	N	Y	Y	Y	N
Polymorphic entities	Y	N	N	Y	N	Y, 1	N
SELECT TYPE construct	Y	N	N	Y	N	Y	N
Deferred bindings and abstract types	Y	P	N	Y	N	Y	N
Miscellaneous enhancements	Cray	gfortran	g95	IBM	Intel	NAG	Sun
Structure constructors	Y	Y	Y	Y	Y	Y	N
The allocate statement	Y	N	P	Y	Y	Y	N
Assignment to an allocatable array	Y	N	N	Y	Y, 2	N	N
Transferring an allocation	Y	Y	N	Y	Y	N	N
More control of access from a module	Y	Y	N	Y	Y, 6	Y	N
Renaming operators on the USE statement	Y	P	Y	Y	Y	Y	Y
Pointer assignment	Y	N	Y	Y	N	Y	N
Pointer INTENT	Y	Y	Y	Y	Y	Y	N
The VOLATILE attribute	Y	Y	Y	Y	Y	Y	Y
The IMPORT statement	Y	Y	Y	Y	Y	Y	N
Intrinsic modules	Y	Y	Y	Y	Y	Y	Y
Access to the computing environment	Y	Y	Y	Y	Y	Y	Y
Support for international character sets	N	Y	Y	P	N	P	N
Lengths of names and statements	Y	Y	U	Y	Y	Y	Y
Binary, octal and hex constants	Y	Y	Y	Y	Y	Y	Y
Array constructor syntax	Y	Y	Y	Y	Y	Y	N
Specification and initialization expressions	Y	P	Y	Y	P	Y	N
Complex constants	Y	Y	Y	Y	Y	Y	Y
Changes to intrinsic functions	Y	P, 9	Y	Y	P	P	N
Controlling IEEE underflow	Y	N	N	Y	Y	N	Y
Another IEEE class value	Y	N	N	Y	Y	N	Y
Input/output enhancements	Cray	gfortran	g95	IBM	Intel	NAG	Sun
Derived type input/output	Y	N	N	Y	N	N	N
Asynchronous input/output	Y	Y, 10	Y	Y	Y	Y	Y
FLUSH statement	Y	Y	Y	Y	Y	Y	Y

	Cray	gfortran	g95	IBM	Intel	NAG	Sun
IOMSG= specifier	Y	Y	Y	Y	Y	Y	Y
Stream access input/output	Y	Y	Y	Y	Y	Y	Y
ROUND= specifier	Y	N	P	Y	Y	N	Y
DECIMAL= specifier	Y	Y	Y	Y	Y	Y	Y
SIGN= specifier	Y	Y	Y	Y	Y	Y	Y
Kind type parameters of integer specifiers	Y	N	U	Y	Y	Y	N
Recursive input/output	Y	P	Y	Y	Y	Y	Y
Intrinsic function for newline character	Y	Y	Y	Y	Y	Y	N
Input and output of IEEE exceptional values	Y	Y	Y	Y	Y, 7	Y	Y
Comma after a P edit descriptor	Y	Y	Y	Y	Y	Y	Y
Interoperability with C	Cray	gfortran	g95	IBM	Intel	NAG	Sun
Interoperability of intrinsic types	Y	Y	Y	Y	Y	Y	Y
Interoperability with C pointers	Y	Y	Y	Y	Y	Y	Y
Interoperability of derived types	Y	Y	Y	Y	Y	Y	Y
Interoperability of variables	Y	Y	Y	Y	Y	Y	Y
Interoperability of procedures	Y	Y	Y	Y	Y	Y	Y
Interoperability of global data	Y	Y	Y	Y	Y	Y	Y
	Cray	gfortran	g95	IBM	Intel	NAG	Sun

Notes

- 1 No unlimited polymorphics
- 6 Protected only
- 7 All except NaN Hex
- 9 kind= of maxloc, minloc, shape missing
- 11 not polymorphic