

Lawrence Berkeley National Laboratory

Recent Work

Title

=FOR-WORD=>. FORTRAN NEWSLETTER

Permalink

<https://escholarship.org/uc/item/46p4r3f9>

Author

Lawrence Berkeley National Laboratory

Publication Date

1978-10-01

DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

X3J3 Adopts "Core Fortran" Proposal

The following proposal was adopted by X3J3 at its meeting in August 1978:

Proposal: The first draft version of "Core Fortran" will consist of Fortran 77 modified by making the following changes. It is designed to be a complete language providing all of the essential features of Fortran 77. It is intended to allow modules, designed either by X3J3 or by others, to be appended to the language in as natural a manner as possible.

The general philosophy governing this core design is that the core should be comprehensive, containing virtually all of the generally useful features of Fortran and that it should form a practical, general-purpose programming language. Modules would be used largely for special-purpose language features that entail high implementation costs or are used primarily in special purpose application areas. The number of such modules should remain small in order to minimize problems of program portability. Three examples might be (1) a module providing comprehensive array processing facilities, (2) one providing data base management facilities, and (3) one providing features of Fortran 77, and possibly certain other isolated special-purpose features, not contained in the core.

Another goal is to produce a more elegant language by moving redundant features and including features which lend themselves to modern programming practices.

The additions below are listed with corresponding Fortran 77 features to show that the core language will have at least the same functional capabilities as Fortran 77. They are intended as a general guideline for X3J3; they are not hard and fast rules.

<u>To be Added to Core Fortran</u>	<u>To be Moved to Fortran 77 Module</u>
------------------------------------	---

- | | |
|---|---|
| 1. Free form source | 1. Column 6 for continuation and C for comment |
| 2. Larger character set | |
| 3. Longer names | |
| ----- | |
| 4. Simple data structures | 2. EQUIVALENCE |
| | 3. COMMON and BLOCK DATA |
| 5. Some array processing statements (e.g., subarray notation) | 4. Passing an array element or substring to a dummy array |
| 6. Global data definition | |

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

(Provides equivalent functionality but eliminates notions of storage association which have led to bad programming practices.)

- | | |
|--|--|
| 7. Control structures (looping and case) | 5. Arithmetic IF |
| | 6. Computed GO TO |
| | 7. Alternate RETURN |
| 8. Internal procedures | 8. ASSIGN and assigned GO TO |
| | 9. Statement functions (if internal procedures have arguments) |

- | | |
|---|----------------------|
| 9. A length for REAL (number of digits) | 10. DOUBLE PRECISION |
|---|----------------------|

Redundancies: The following items already have equivalent facilities in Fortran 77.

- | |
|--|
| 11. ERR= and END= specifiers (IOSTAT provides duplicate functionality) |
| 12. H, X, and D edit descriptors (TRC and character constants in output lists provide same capabilities as H and X; double precision would no longer be in the core) |
| 13. Specific names for intrinsics (generics suffice) |
| 14. Association of ENTRY names (bad idea in the first place) |

Enhancements: The additions below are intended to promote good programming practices or may be needed by proposed modules.

- | |
|---|
| 10. Subprogram linkage (e.g., keyword parameters) |
| 11. Bit data type |

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Also at the August meeting, X3J3 adopted a proposal (subject to further refinement) for internal subroutines and functions, with arguments.

* * * * *

* * * * *

X3J3 to Study Variant Program Form for On-line Terminals

At its meeting in August 1978, X3J3 discussed the need for a variant source program form to be used when entering Fortran programs at an on-line terminal. There was general agreement that a specification in this area is needed, on a shorter time scale than that anticipated for the next full revision of Fortran. A working group of X3J3 was assigned to prepare a technical report on this subject.

Closer Liaison With CODASYL Established

Work is continuing on the development of a Fortran data base language standard related to the CODASYL data base model. Recent meetings of the CODASYL Fortran Data Base Language Committee have been held in conjunction with X3J3 meetings. Beginning with the October meeting, an even stronger liaison was developed, with the establishment of a joint technical committee. This committee is a technical working group under X3J3, and includes members from both X3J3 and the CODASYL FDBL Committee.

Concepts Relating to Fortran 77

(Continued from For-Word, Volume 4, Number 2, page 6.)

11. The comma between list items in a format specification may be omitted between a P edit descriptor and an immediately following list item that is an F, E, D, or G edit descriptor, even if the latter includes a repeat count. However, if the following list item is a format specification (i.e., is enclosed in parentheses), the comma must not be omitted even if the format specification consists entirely of an F, E, D, or G edit descriptor enclosed in parentheses.

Future Meetings of X3J3

Meetings are open to the public, but facilities are limited. Non-members wishing to attend should inquire of Martin Greenfield, MS844a, Honeywell Information Systems, 300 Concord Road, Billerica MA 01821 (phone 617-667-3111, ext 2912).

January 8 - 11, 1979, Austin TX

March 13 - 16, 1979, Baltimore MD

May 8 - 11, 1979, Boulder CO

July 31 - Aug 3, 1979, Santa Fe NM

Note that the locations (but not the dates) of the May and July meetings have been changed. Beginning in March 1979, X3J3 meetings will be scheduled Tuesday through Friday. Subcommittee meetings may be scheduled on Monday.

X3J3 Meets With IFIP WG 2.5 and SIGNUM (whereabouts of R2D2 not known)

A portion of the October meeting of X3J3 was held in conjunction with a conference sponsored by ACM-SIGNUM (Special Interest Group for Numerical Mathematics) with the cooperation of Jet Propulsion Laboratory and Working Group 2.5 of the International Federation for Information Processing (IFIP). X3J3 members travelled to Pasadena, where they exchanged tutorials and participated in joint discussion of numerical methods as related to portability and standardization.

A focus of discussion was the need for specifying, within a program, parameters such as the number of bits of precision in a floating point number. The numerical mathematics groups are working toward an agreement upon the parameters that are needed and on how they might be used, and X3J3 is concerned with the process whereby they might be added to the Fortran language. Several techniques, including global constants, reserved names, "constant" generic functions (having a value that depends only upon argument type), and inquiry statements, were suggested. The typical user would probably not use these quantities directly, but would be strongly affected by their availability in a portable, efficient manner to the packaged software he uses. (The increasing use of software packages was noted.)

Topics Scheduled for Next X3J3 Meeting

Report on London meeting of Fortran "experts" under ISO (November 27 - 30, 1978)

Tutorial on Department of Energy proposals for Fortran extension

Report on Fortran features needed for data base manipulation

Tutorial on Fortran extensions for array processing

Proposal on Internal Procedures

Report on Procedure Interface (extended CALL)

Report on Data Structures

Proposal on length for REAL data

Proposal for Bit String data

Proposal on Source Form for On-line Terminals

Proposal for NAMELIST

Report on multi-file files within Fortran 77

Report on Fortran 77 Concepts

Proposal to adopt text for Fortran 77 portion of Core Fortran (obtained by mark-up of X3.9-1978) as basis text, to which features replacing those "moved to Fortran 77 module" can be added.

