# IEEE P1003.2 Draft 11.2 – September 1991

Copyright © 1991 by the
Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street
New York, NY 10017, USA
All rights reserved as an unpublished work.

This is an unapproved and unpublished IEEE Standards Draft, subject to change. The publication, distribution, or copying of this draft, as well as all derivative works based on this draft, is expressly prohibited except as set forth below.

Permission is hereby granted for IEEE Standards Committee participants to reproduce this document for purposes of IEEE standardization activities only, and subject to the restrictions contained herein.

Permission is hereby also granted for member bodies and technical committees of ISO and IEC to reproduce this document for purposes of developing a national position, subject to the restrictions contained herein.

Permission is hereby also granted to the preceding entities to make limited copies of this document in an electronic form only for the stated activities.

The following restrictions apply to reproducing or transmitting the document in any form: 1) all copies or portions thereof must identify the document's IEEE project number and draft number, and must be accompanied by this entire notice in a prominent location; 2) no portion of this document may be redistributed in any modified or abridged form without the prior approval of the IEEE Standards Department.

Other entities seeking permission to reproduce this document, or any portion thereof, for standardization or other activities, must contact the IEEE Standards Department for the appropriate license.

Use of information contained in this unapproved draft is at your own risk.

IEEE Standards Department
Copyright and Permissions
445 Hoes Lane, P.O. Box 1331
Piscataway, NJ 08855-1331, USA
+1 (908) 562-3800
+1 (908) 562-1571 [FAX]

# Annex A
(normative)

# C Language Development Utilities Option

This annex describes utilities used for the development of C language applications, including compilation or translation of C source code and complex program generators for simple lexical tasks and processing of context-free grammars.

The utilities described in this annex may be provided by the conforming system; however, any system claiming conformance to the **C Language Development Utilities Option** shall provide all of the utilities described here. The utilities described in Section 6 are prerequisites to this annex.

## A.0.1 C Language Development Utilities Option Rationale. *(This subclause is not a part of P1003.2)*

The portions of this standard that concern specific languages—currently C and FORTRAN—have been collected to the rear of the document as Normative Annexes. For purposes of conformance, they are no less a part of the standard than one of the numbered sections. They were grouped as Annexes to illustrate that the base standard is [planned to be] language independent, giving a small degree of separation. The working group also wished to send a message to those groups planning other language bindings: the standard is not C-oriented, and there's plenty of room to add more annexes for your languages as you develop them, right alongside C and FORTRAN.

Copyright © 1991 IEEE. All rights reserved.
This is an unapproved IEEE Standards Draft, subject to change.

## A.1 `c89` — Compile Standard C programs

### A.1.1 Synopsis

`c89` `[−c]` `[−D` *name* `[=`*value*`]]` . . . `[−E]` `[−g]` `[−I` *directory* `]` . . . `[−L` *directory* `]` . . .
`[−o` *outfile* `]` `[−O]` `[−s]` `[−U` *name* `]` . . . *operand* . . .

### A.1.2 Description

The `c89` utility is the interface to the standard C compilation system; it shall accept source code conforming to the C Standard {7}. The system conceptually consists of a compiler and link editor. The files referenced by *operand* s shall be compiled and linked to produce an executable file. (It is unspecified whether the linking occurs entirely within the operation of `c89`; some systems may produce objects that are not fully resolved until the file is executed.)

If the `−c` option is specified, for all pathname operands of the form *file* `.c`, the files

`$(basename` *pathname* `.c).o`

shall be created as the result of successful compilation. If the `−c` option is not specified, it is unspecified whether such `.o` files are created or deleted for the *file* `.c` operands.

If there are no options that prevent link editing (such as `−c` or `−E`), and all operands compile and link without error, the resulting executable file shall be written according to the `−o` *outfile* option (if present) or to the file `a.out`.

The executable file shall be created as specified in 2.9.1.4, except that the file permissions shall be set to

S_IRWXO **|** S_IRWXG **|** S_IRWXU

(see 5.6.1.2 in POSIX.1 {8})and that the bits specified by the *umask* of the process shall be cleared.

### A.1.3 Options

The `c89` utility shall conform to the utility argument syntax guidelines described in 2.10.2, except that:

— The `−l` *library* operands have the format of options, but their position within a list of operands affects the order in which libraries are searched.

— The order of specifying the `−I` and `−L` options is significant. 1

— Conforming applications shall specify each option separately; that is, grouping option letters (e.g., `−cO`) need not be recognized by all implementations.

The following options shall be supported by the implementation:

Copyright © 1991 IEEE. All rights reserved.
This is an unapproved IEEE Standards Draft, subject to change.