

IEEE Standards Interpretation for IEEE Std 1003.1™-1990 IEEE Standard for Information Technology--Portable Operating System Interfaces (POSIX®)

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Interpretation Request #23

Topic: pass through of error conditions **Relevant Sections:** 8.2.3.11

(Page 191, lines 406-410) Subclause 8.2.3.11 begins

"If any of the functions above return an error condition, the value of errno shall be set to indicate the error condition."

Does this mean that it would be legitimate to implement `getchar()`, for example, such that it would never return an error indication as long as buffered data were available on `stdin`?

More generally, must each stream-using function recognize an error whenever an underlying function would do so?

This interpretation is important to the assertion writers for 1003.3.1, because it will determine whether certain assertions are extended and/or conditional.

Interpretation Response

(This interpretation also applies to 2003.1-1992)

Interpretation Number 11 of IEEE Std 1003.1-1988/INT, 1992 Edition, is completely applicable to IEEE Std 1003.1-1990. It states:

Section 8.2.3.11 applies to all functions specified in 8.2.3.1 through 8.2.3.10 in the following manner:

(1) The functions are required to return error indications for those errors specified by the C Standard.

(2) The functions are allowed, but not required, to return error indications for conditions not specified by the C Standard (the standard does not specify the value of `errno` in such situations).

(3) If the functions return an error condition, and if the error condition is one that would be detected by the underlying function, the functions are required to set `errno` to the value corresponding to that error condition that is specified for the underlying function.

Assertion 6 for `fflush()` (IEEE Std 2003.1-1992, subclause 8.1.11.4) is inconsistent with IEEE Std 1003.1-1990 in that it requires that `fflush()` detect an error under conditions where the C Standard does not require that an error be detected. It would be legitimate to implement `getchar()` such that no errors were returned while buffered data were available (regardless of the status of the underlying file descriptor) because there is no occasion to detect a read error while data is merely being accessed from the buffer.

Rationale for Interpretation

Interpretation Number 11 of IEEE Std 1003.1-1988/INT, 1992 Edition was originally constrained to apply only to IEEE Std 1003.1-1988 because the interpretations working group thought that the then-unpublished IEEE Std 1003.1-1990 might contain wording that would create new requirements as to error reporting for C library interfaces.

Since the changes to 8.2.3.11 between 1003.1-1988 and 1003.1-1990 merely clarify the relevant requirements without changing them, the already-adopted Interpretation #11 applies to 1003.1-1990 and to 2003.1-1993.