

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 #6

Topic: order of error numbers **Relevant Sections:** 2.4, 3.1.2.4

In 2.4 Error Numbers, page 23, lines 508-510:

"If more than one error occurs in processing a function call, this part of ISO/IEC 9945 does not define in what order the errors are detected; therefore any one of the possible errors may be returned."

In 3.1.2.4 Errors [Execute a file], page 45, lines 178-182 and page 46, lines 195-196:

"[EACCES] ... [ENOEXEC] The new process image has the appropriate access permissions, but is not in the proper format."

The definition of the error condition corresponding to [ENOEXEC] excludes the possibility that it can co-occur with [EACCES]. Nevertheless, it seems to clearly violate the spirit of the more general requirement, that the order of detection of error conditions not be specified. Is there a conflict here?

Interpretation Response

If an ENOEXEC error can be generated, then the file must have the correct access permissions, so the EACCES error cannot occur. If the file does not have the correct access permissions, then EACCES will occur. There is no conflict.

Rationale for Interpretation

The wording in section 2.4 applies only to errors that can co-occur. The wording in section 3.1.2.4 indeed excludes the possibility that the [ENOEXEC] and [EACCES] errors can co-occur. This simply means that the wording in section 2.4 does not apply to this case. There is no "spirit" of section 2.4 that is violated here. There are several places in the standard where one error condition is explicitly worded so that it cannot co-occur with

another error condition. This is often necessary either to give the caller useful feedback on error conditions or to prevent violations of access restrictions. The purpose of the wording in section 2.4 is to avoid implicit and unnecessary requirements on implementations, and the assumption of such requirements by application writers. The purpose is not to prevent the standard from making explicit, useful requirements.