

IEEE Standards Interpretations for IEEE Std 1003.1c™-1995 IEEE Standard for Information Technology--Portable Operating System Interface (POSIX(R)) - System Application Program Interface (API) Amendment 2: Threads Extension (C Language)

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Interpretation Request #48

Topic: open O_EXCL, mq_open O_EXCL **Relevant Sections:** 5.3.1.2 p 119 ll 225- , 15.2.1.2 p 322 ll 124-

These two sections represent yet another case where the word “process” should have been changed to “thread”. The description of O_EXCL says that the open shall fail if the file exists, and that “The check for the existence of the file and the creation of the file if it does not exist shall be atomic with respect to other processes [...]”. Solution proposed by the submitter (optional): Clearly, in the context of POSIX threads, this guarantee is of no value should multiple threads within the same process be attempting to open a file with O_EXCL.

It should guarantee that “The check [...] shall be atomic with respect to other threads [...]”. Although we haven’t found a lot of these errors since the release of 1003.1-1996, it seems counterproductive to deal with each separately. I would like to suggest a grep of the entire POSIX 1003.1 document source for the word “process”, followed by an attempt by “someone” (the interpretations group, perhaps) to determine whether each match is valid or should be changed.

Interpretation Response

The standards states that this is atomic with respect to processes executing open() or mq_open() , however this is a defect in the standard and concerns have been raised about this which are being referred to the sponsor. The interpretation committee believes that the intent of the working and balloting groups was to require this to be atomic with respect to the thread and not the process.

Rationale for Interpretation

None.