

## 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 #11

**Topic:** pipe as a file & characteristics **Relevant Sections:** 2.2.2.59, 2.2.2.27, 5.6.1

In 2.2.2.59 pipe, page 17, lines 276-280:

"An object accessed by one of the pair of file descriptors created by the pipe() function. Once created, the file descriptors can be used to manipulated it, and it behaves identically to a FIFO special file when accessed in this way. It has no name in the file hierarchy."

In 2.2.2.27 file, page 14, lines 162-165:

"An object that can be written to, or read from, or both. A file has certain attributes, including access permissions and type. File types include regular file, character special file, block special file, FIFO special file, and directory. Other types of file may be defined by the implementation."

In 5.6.1 File Characteristics: Header and Data Structure, page 101, lines 648-650:

"The structure members st\_mode, st\_ino, st\_dev, st\_uid, st\_gid, st\_atime, st\_ctime, and st\_mtime shall have meaningful values for all file types defined in this part of ISO/IEC 9945."

In 6.1.1.2 Description [Pipes], page 113, lines 22-23:

"Upon successful completion, the pipe() function shall mark for update the st\_atime, st\_ctime, and st\_mtime fields of the pipe."

Is a pipe a file? Is pipe a file type defined in POSIX.1? Does POSIX.1 specify that the fields of the stat structure have meaningful values for pipes? The description of the pipe() function does not specify the setting of the st\_uid or st\_gid fields.

**Interpretation Response**

A pipe is an object that behaves identically to a FIFO special file when accessed via file descriptors. The standard does not specify to what extent a pipe “is” a file, and the behaviour of the pipe in respect of “other” file operations is unspecified. The standard specifies that `stat()` returns a structure that contains meaningful values for `st_atime`, `st_ctime`, and `st_mtime` for a pipe. The values of other fields returned by `stat()` are not specified for a pipe.

**Rationale for Interpretation**

A pipe does not support all semantics of a file, yet it is not the intention to preclude its implementation as a file on disk.