File-System Interface

Exercises

13.9 Consider a file system in which a file can be deleted and its disk space reclaimed while links to that file still exist. What problems may occur if a new file is created in the same storage area or with the same absolute path name? How can these problems be avoided?

13.10 The open-file table is used to maintain information about files that are currently open. Should the operating system maintain a separate table for each user or maintain just one table that contains references to files that are currently being accessed by all users? If the same file is being accessed by two different programs or users, should there be separate entries in the open-file table? Explain.

13.11 What are the advantages and disadvantages of providing mandatory locks instead of advisory locks whose use is left to users' discretion?

13.12 Provide examples of applications that typically access files according to the following methods:

- Sequential
- Random

13.13 Some systems automatically open a file when it is referenced for the first time and close the file when the job terminates. Discuss the advantages and disadvantages of this scheme compared with the more traditional one, where the user has to open and close the file explicitly.

13.14 If the operating system knew that a certain application was going to access file data in a sequential manner, how could it exploit this information to improve performance?

13.15 Give an example of an application that could benefit from operating-system support for random access to indexed files.

13.16 Some systems provide file sharing by maintaining a single copy of a file. Other systems maintain several copies, one for each of the users sharing the file. Discuss the relative merits of each approach.