長庚大學106學年度第二學期 作業系統實務 第一次小考

系級: 姓名: 學號:

1. (30%) Please define the (a) Hard Link and the (b) Symbolic Link.

Answer:

(a) Each directory entry creates a link of a filename to the i-node that describes the file's contents

(b) It is implemented as a file that contains a pathname

2. (30%) Let's do the following operations with the order
   1. Create a file /dir1/file1
   2. Create a hard link /dir2/file2 to /dir1/file1
   3. Create a symbolic link /dir3/file3 to /dir1/file1
   4. Create a symbolic link /dir4/file4 to /dir2/file2

   If /dir1/file1 is then removed, can we get the file by accessing /dir2/file2, /dir3/file3, and /dir4/file4?

Answer:

Yes, /dir2/file2 is a hard link. No, /dir3/file3 is a symbolic link to /dir1/file1 which is removed. Yes, /dir4/file4 is a symbolic link to /dir2/file2.

3. (40%) Using the "Linked Allocation" approach to do the file allocation of a large file might take extremely long latency for a random access to the file. The File-Allocation Table design of the FAT can avoid multiple storage reads of a random access. Please explain the smart design of FAT.

Answer:

Data and pointers are separated. Pointers to data blocks and pointers to pointers are kept in the File Allocation Table (FAT) which is small enough to be loaded into main memory for fast random access. So smart ☺