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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-501 Operating System

Lecturer-35

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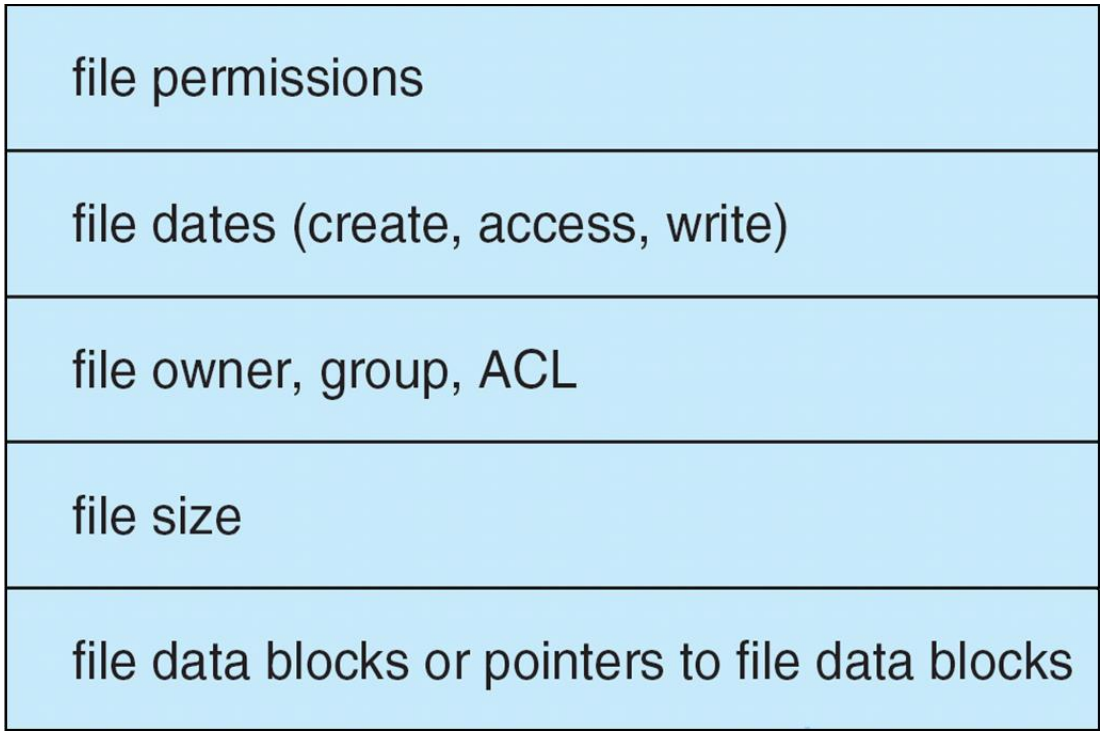
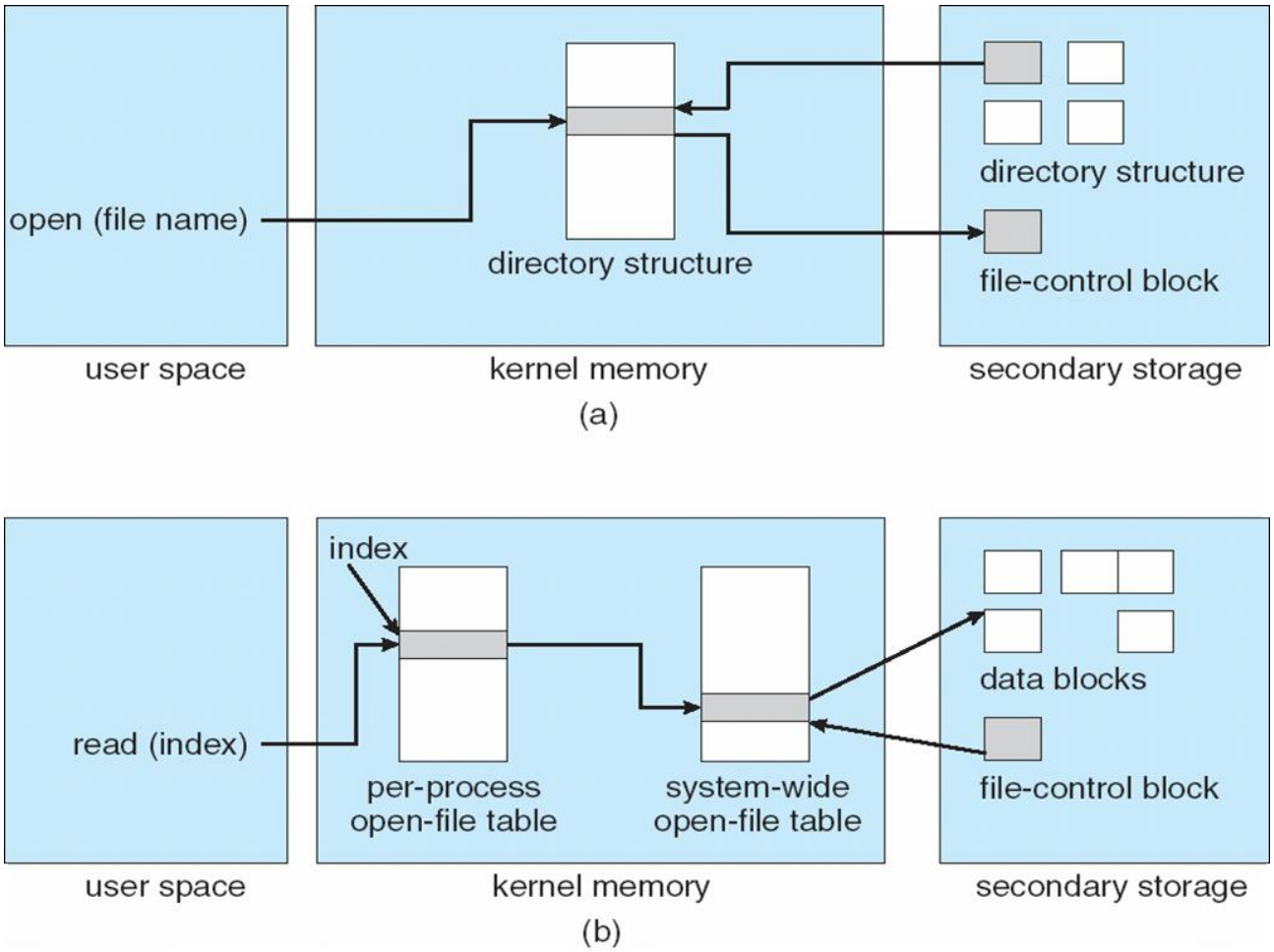
File-System Implementation
Memory File System Structures
Partitions

File-System Implementation

- We have system calls at the API level, but how do we implement their functions?
  - On-disk and in-memory structures
- Boot control block contains info needed by system to boot OS from that volume
  - Needed if volume contains OS, usually first block of volume
- Volume control block (superblock, master file table) contains volume details
  - Total # of blocks, # of free blocks, block size, free block pointers or array
- Directory structure organizes the files
  - Names and inode numbers, master file table
- Per-file File Control Block (FCB) contains many details about the file
  - inode number, permissions, size, dates
  - NFTS stores into in master file table using relational DB structures


file permissions
file dates (create, access, write)
file owner, group, ACL
file size
file data blocks or pointers to file data blocks

Memory File System Structures



Partitions

•Partition can be a volume containing a file system (“cooked”) or raw – just a sequence of blocks with no file system

•Boot block can point to boot volume or boot loader set of blocks that contain enough code to know how to load the kernel from the file system Or a boot management program for multi-os booting

•Root partition contains the OS, other partitions can hold other Oses, other file systems, or be raw

- ➢Mounted at boot time
- ➢Other partitions can mount automatically or manually

•At mount time, file system consistency checked

- •Is all metadata correct?
  - ➢If not, fix it, try again
  - ➢If yes, add to mount table, allow access

MCQ

in which records are accessed from and inserted into file Access is classified as;
a)random access
b)duplicate access
c)direct access
d)sequential access

if the order of operation on two or more files are similar in files, then the operation will be
a)sequential
b)combinational
c)complex
d)simple

each containing a file system or _____, Disks are segmented into one or more partitions.
a) left ‘ripe’
b) made into swap space
c) made into backup space
d) left ‘raw’

the directory protection is handled in Unix _____ to the file protection.

a) none of the mentioned
b) it is not handled at all
c) similar
d) different

In a different level directory structure :

a) the subdirectories do not need protection once the directory is protected
b) the same previous techniques will be used as in the other structure
c) a mechanism for directory protection will have to apply
d) none of the mentioned