Disk Management

Contents of Lecture:

- Introduction
- Disk formatting
- File system
- DOS FAT allocation table
- Directory
- DBMS

Introduction:

- Involves
  - ✓ Preparing disk for data storage (disk formatting).
  - ✓ Managing allocated and free disk space.
  - ✓ Managing disk I/O Buffer (part of main memory).
  - ✓ ……
- Done by System Software :
  - ✓ Operating Systems-File Manager
    - Is a part of OS that is responsible for managing files, keeping tracks of files.
  - ✓ Database Management System (DBMS)

Disk formatting:

- Disk formatting is the process of preparing a disk for data storage
- Disk formatting has two type:
  - ✓ **Physical format(low level format):**
    - Specify how many bytes of data space of all sectors. Such as 256, 512, and 1,024 bytes.
  - ✓ **Logical format(high level format) includes**
    - Is to **partition** the disk into one or more groups of cylinders.
    - Is **logical formatting**, or creation of a file system.

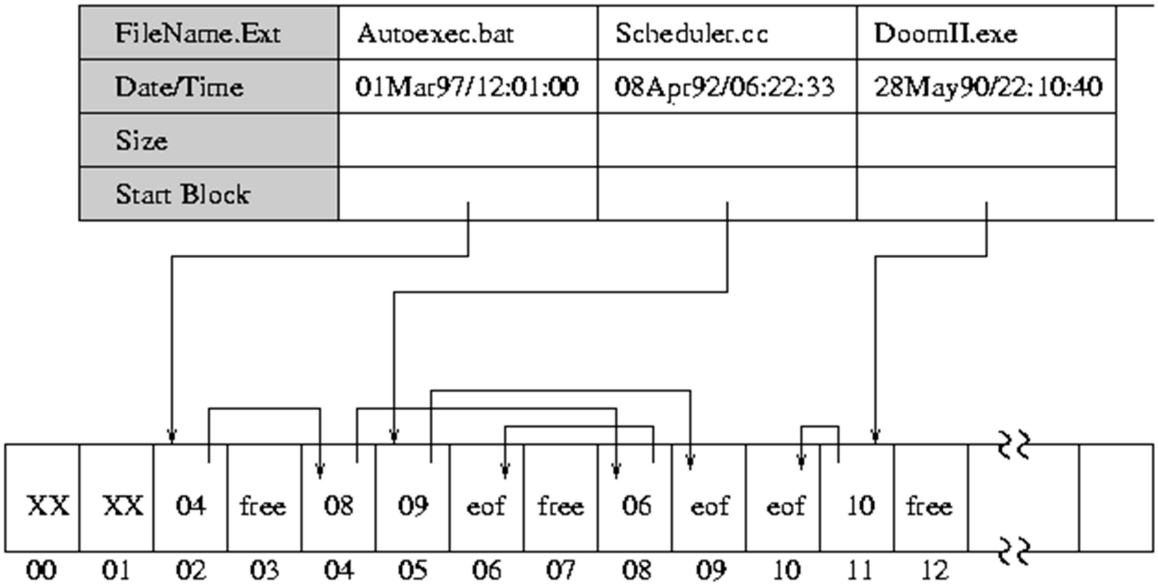
File system:

- Is data structures used by OS to perform file management task.
- These data structures may include maps of free and allocated space (a **FAT** or inodes) and an initial empty **directory**.
- Examples of file systems:
  - ✓ FAT(File Allocation Table)
  - ✓ NTFS (New Technology File System)
  - ✓ Linux Ext2,Ext3

DOS FAT allocation table:

- A single File Allocation Table (FAT) that combines free list info and file allocation info.
- In file descriptor/Directory, keep pointer to first block.
- A FAT table entry contains either:
  - ✓ The block number of the next block in the file
  - ✓ A distinguished "end of file" (eof) value
  - ✓ A distinguished "free" value.

MS/DOS Directory Entires



File Access Table (FAT)

Directory:

- Records information such as name, location, size, and type for all files on that volume.(File of records)
- Operations that are to be performed on a directory:
  - ✓ Create a file.
  - ✓ Delete a file.
  - ✓ List a directory.
  - ✓ Rename a file

DBMS:

- Operating systems give special programs the ability to use a disk partition as a large sequential array of logical blocks, without any file-system data structures.
- This array is sometimes called the raw disk,
- Some database systems prefer raw I/O because it enables them to control the exact disk location where each database record is stored.