

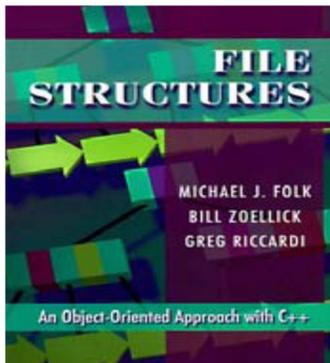
Introduction To File Management & Organization

Contents of Lecture:

- ❖ Data processing
- ❖ File and Computer Storage
- ❖ File Structures
- ❖ File Organization
- ❖ File Management
- ❖ File Managers

References for course:

- ❖ File Structures, An Object-Oriented Approach with C++, by Michael J. Folk, Bill Zoellick and Greg Riccardi

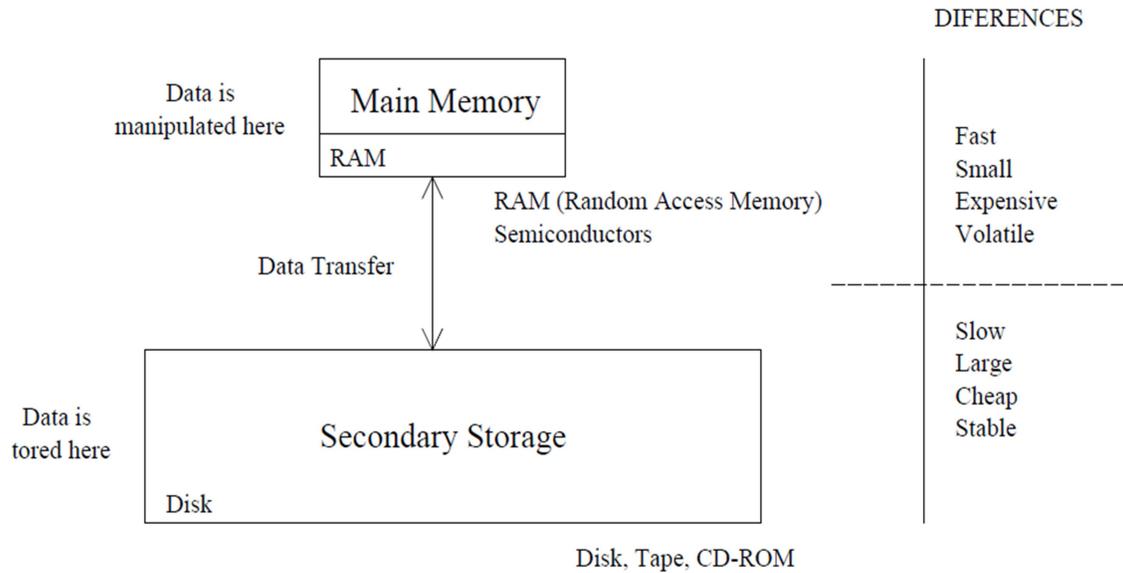


Data processing:

- ❖ **Storage of data:** Data is saved within the files, and then the files are saved in storage devices, that are either primary storage devices (RAM) or Secondary storage devices (Hard disk).
- ❖ **Organization of data:** Deal with how can we organize files at Primary and Secondary storage?
- ❖ **Access of data:** We can use Sequential or Direct Access.
- ❖ **Processing of data:** The processing of data after storage, organization and accessing

File and Computer Storage:

- ❖ File is a collection of data placed under secondary or non-volatile storage.
- ❖ Secondary storage Examples: hard disk, magnetic tape, optical media.....
- ❖ Computer Storage can be secondary storage or main memory.



- ❖ Semiconductor RAM is about 100,000 times faster, but it is expensive And volatile
- ❖ File is large and cheap, but access to files is very slow!
- ❖ **Why is file storage so slow?**
 - ✓ File storage systems have many moving parts. In contrast, semiconductor memory has no moving parts.

Why do we need files?

- ❖ Files are the only suitable way to store sizable amounts of certain types of information: pictures, music, and video are some examples.
- ❖ Most operating systems are too complex and large to be fully loaded into memory.
- ❖ Databases are everywhere.
- ❖ Data backup and archiving.

File Structures:

A file has two Structures:

1. **logical structure(Logical file):**

The logical structure of a file is how programmers see it (text, image, data file,).

2. **physical structure(physical file):**

The physical structure of a file is how it stored on the secondary storage is.

File Organization:

- ❖ Logical file Organization methods: Heap, indexing, hash....
- ❖ physical file Organization methods
 - ✓ Organizing Track by sectors
 - ✓ Organizing Track by Blocks
- ❖ File Organization methods must provides
 - ✓ Fast Access Time
 - ✓ good space Utilization

File Management:

File Management Involves techniques for:

- ❖ Preparing/formatting storage media to store data.
- ❖ Allocating storage space and addressing.
- ❖ Managing free spaces.

File Managers:

Files are managed by System Software:

- ❖ OS (Operating System)
- ❖ DBMS (Data Base Management System)

File Management and Organization objectives:

- ❖ To get the information from the disk with as few disk accesses as possible.
- ❖ To group related information so that we can get requested info with only one trip to the disk