

Subject: Database Lec 1: Introduction to database Systems.

What is data? It's unprocessed known facts that can be recorded and have an implicit meaning.

What is Database? It's a collection of related data which is logically coherent with some inherent meaning.

What is Mini-world Unprocessed? Parts of real world data which are stored in database. ex: Students' grades at University.

What is Database Management System (DBMS)?

A software or system used to facilitate the creation and maintenance of a computerized database. "Create and Modify DB"

What is Database System? It's data and DBMS software together. Sometimes, the applications included.

Data Management Approaches:

- 1) Manual approach.
- 2) File-Based approach.
- 3) Database approach.

1) Manual-File handling System:

- The primitive and traditional way.
- Cards and papers used to handle information.
- Works well with small data.
- Events and objects are written on paper.
- Files containing different labeled data.
- Files stored in one or more cabinet.



~~Ad~~

- Insertion and retrieval are done by searching for.  
Cabinet → File → information
- Manual indexing System used to ease data <sup>accessing</sup>

### Limitations:

- Data organization is bad.
- Not Efficient.
- Small scale "limited to small size information"
- Requires intensive human labor
- Prone to error.
- Difficult to update, retrieve, manipulate, duplicate and integrate.
- Cross referencing is difficult.

### 2) File Based:

- Early attempt to computerized the manual file system.
- Decentralized computerized data handling method.

pros: ~~Access to data~~

- Files is a collection of records which contains logically related data.
- Files accessing is more efficient.

cons:

- Every application defines and manages it's own data which leads to data duplication problem.
- Data Redundancy and wasting space.
- Separation and isolation of data.



### 3) Database:-

- It's a shared Corporate resource with no duplication.
- Data independence which means data is separated from application program.
- It has Metadata or Data dictionary which is a self descriptive collection on integrated records.
- Has locally related data Comprised entities and attributes and relations of an organization's information.

### Limitations:-

- It needs professional and specialized person called Database admin.
- Developing and maintaining System needs High Cost.
- Complexity in designing and managing data.
- High impact on the System when failure occurs to the central system.
- Performance may be reduced due to Centralization.
- High effort to transfer data from current system.
- Complex backup and recovery services from User's perspective.