1. INTRODUCTION TO DATABASE

Database is collection of data which is related by some aspect. Data is collection of facts and figures which can be processed to produce information. Mostly data represents recordable facts. Data aids in producing information which is based on facts.

A database management system stores data, in such a way which is easier to retrieve, manipulate and helps to produce information.So a database is a collection of related data that we can use for

- **Defining** - specifying types of data
- **Constructing** - storing & populating.
- **Manipulating** - querying, updating, reporting.

A DBMS is a collection of software programs that allows a user to define datatypes, structures, constraints, store data permanently, modify and delete operations.

DBMS is basically a software used to add, modify, delete, select data from database.

In simpler words, DBMS is a collection of interrelated data and software programs to access those data.

DISADVANTAGES OF FILE SYSTEM OVER DB

In the early days, File-Processing system is used to store records. It uses various files for storing the records. Drawbacks of using file systems to store data:

- Data redundancy and inconsistency
    - -Multiple file formats, duplication of information in different files
- Difficulty in accessing data
    - Need to write a new program to carry out each new task
- Data isolation — multiple files and formats
- Integrity problems- Hard to add new constraints or change existing ones
- Atomicity problem
    - Failures may leave database in an inconsistent state with partial updates carried Out. E.g. transfer of funds from one account to another should either complete or not happen at all
- Concurrent access anomalies

  - Concurrent accessed needed for performance
- Security problems

Database systems offer solutions to all the above problems

2.PURPOSE OF DATABASE SYSTEM

The typical file processing system is supported by a conventional operating system. The system stores permanent records in various files, and it needs different application programs to extract records from, and add records to, the appropriate files. A file processing system has a number of major disadvantages.

- Data redundancy and inconsistency
- Difficulty in accessing data
- Data isolation – multiple files and formats
- Integrity problems
- Atomicity of updates
- Concurrent access by multiple users
- Security problems

1.Data redundancy and inconsistency: In file processing, every user group maintains its own files for handling its data processing applications.

2. Difficulty in accessing data:File processing environments do not allow needed data to be retrieved in a convenient and efficient manner.

3.Data isolation :Because data are scattered in various files, and files may be in different formats, writing new application programs to retrieve the appropriate data is difficult.

4.Integrity problems:The data values stored in the database must satisfy certain types of consistency constraints. Example: The balance of certain types of bank accounts may never fall below a prescribed amount . Developers enforce these constraints in the system by addition appropriate code in the various application programs

5.Atomicity problems: Atomic means the transaction must happen in its entirety or not at all. It is difficult to ensure atomicity in a conventional file processing system. Example: Consider a program to transfer $50 from account A to account B. If a system failure occurs during the