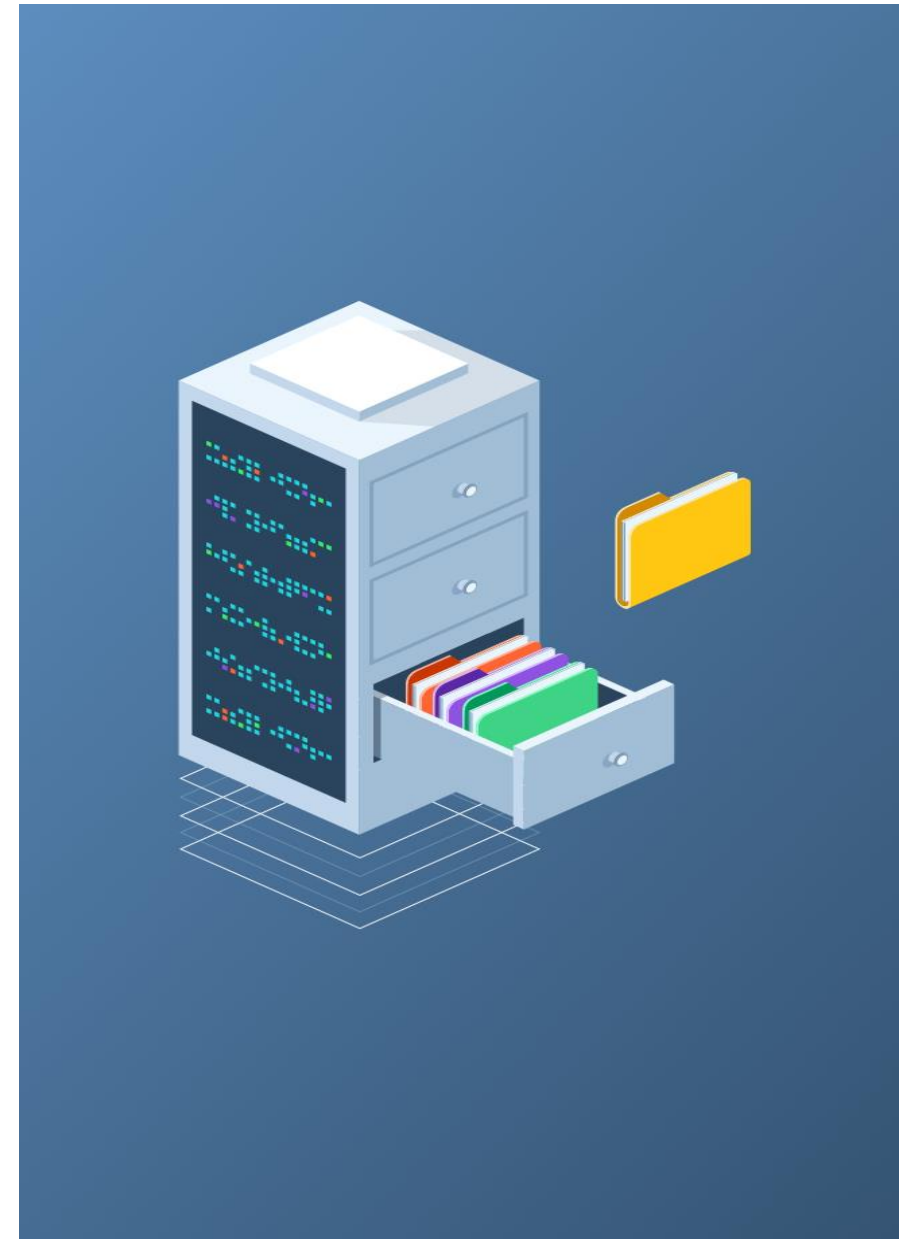DATABASE

CSE3103 : Database
FALL 2020

Nazmus Sakib
Assistant Professor
Department of Computer Science and Engineering
Ahsanullah University of Science and Technology

What is a Database ?

- To Know about the Database first think about the types of Data.

- Make them a relation or interrelate each data items.

- Now think how much data are you maintaining each day in Social Network.

- DB is basically huge amount of interrelated data collection which is ease to retrieve and having very good speed for access and search.

Database Applications?

- Banking
- Airlines
- Universities
- Sales
- Purchases
- Order Tracking
- Customized Recommendations
- Supply Chain
- Human Resources
- Tax Deduction

Database Management System (DBMS)

- DBMS contains information about a particular enterprise .

- DBMS is a software package to store and manage database.
  - Set of programs to access the data
  - An environment that is both *convenient* and *efficient* to use

- Database system allow users to store, update, retrieve ,organize, protect their data by providing an environment.

Drawbacks of using file systems to store data

- Data redundancy and inconsistency

- Difficulty in accessing data

- Data Isolation

- Integrity problems
  - Integrity constraints
  - Hard to add new constraints

- Atomicity of updates

- Concurrent access by multiple users
  - Concurrent access needed for performance
  - Uncontrolled concurrent accesses can lead to inconsistencies

- Security problems
  - Hard to provide user access to some, but not all, data

Levels of Abstraction

- **Physical level:** describes how a record (e.g., instructor) is stored.

- **Logical level:** describes data stored in database, and the relationships among the data.

    type *instructor* = **record**

    ID : string;
    name : string;
    dept_name : string;
    salary : integer;

    end;

- **View level:** application programs hide details of data types. Views can also hide information (such as an employee's salary) for security purposes.

View of Data