

CS 3002D

Database Management Systems

Lecture 2

Introduction and basic concepts

Data and Database

- Data
 - Known facts that can be recorded and have an implicit meaning.
Eg : Address Book
- Database
 - A collection of related data
 - DB represents some aspects of the real world
 - Logically coherent collection of data with some inherent meaning
 - Designed, built and populated with data for a specific purpose
 - Intended for a group of users and some preconceived applications in which these users are interested



What is a Miniworld

- Some part of the real world about which data is stored in a database.

Eg:- Academic details of Students in an Institute



Database Management System

- A software package/system to facilitate the creation and maintenance of a computerized database
- General purpose software system that facilitates the process of defining, constructing and manipulating databases for various applications
Eg: MySQL, Oracle



Defining a Database

- Specifying the data types, structures and constraints for the data



Constructing a Database

- Process of storing the data on some storage medium that is controlled by DBMS



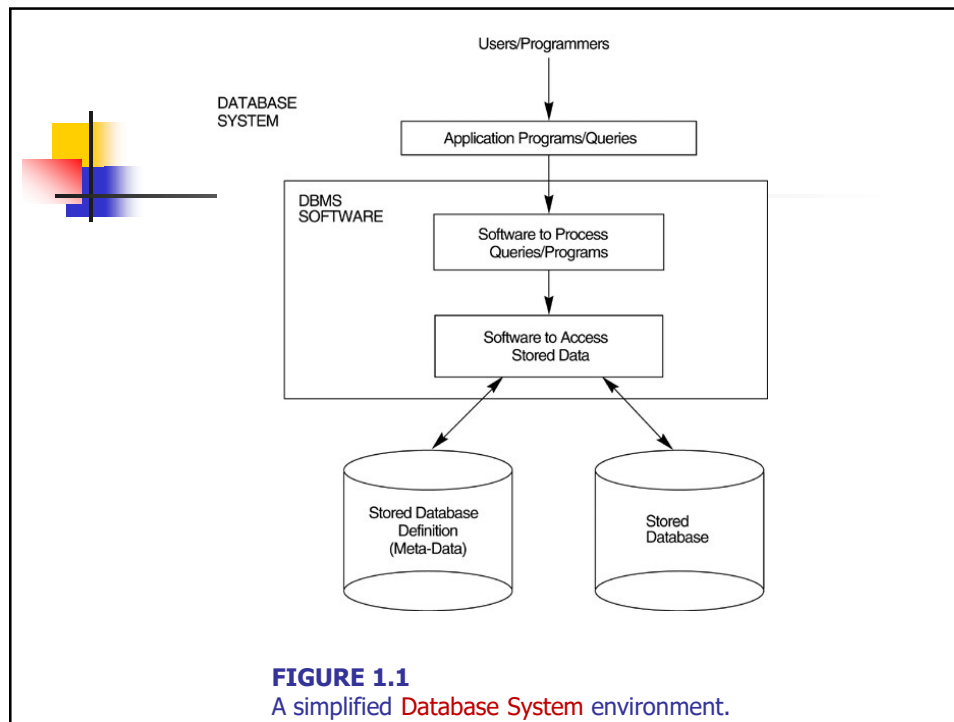
Manipulating a Database

- Includes functions such as querying the DB to retrieve specific data
- Updating the database to reflect changes in the mini-world
- Generating reports from data
Eg: Mark list



What is a Database System?

- The DBMS Software together with the data itself
- Sometimes the applications are also included



Typical DBMS Functionality

- **Define a database:** in terms of data types, structures and constraints
- **Construct or Load the Database** on a secondary storage medium
- **Manipulating the database:** querying, generating reports, insertions, deletions and modifications to its content
- **Concurrent Processing and Sharing** by a set of users and programs – yet, keeping all the data valid and consistent



Typical DBMS Functionality

Other features:

- Protection or Security measures to prevent unauthorized access
- Presentation and Visualization of data