

Lecture 1 - Introduction to Database Systems

Database - a collection of related data represented (using a data model and a defined data schema)

Database Management System (DBMS) - a software system managing and maintaining a database

Data Model - a formal definition on how to represent data ^{in general} and the available data operations

Data Schema - a definition of the structure of a ^{specific} database

◦ Modelling of Data

→ Data Models for describing what kind of schemas are possible

→ Schemas for describing what data can be stored in a given database

◦ Data Independence and Declarative Queries

→ Independence of how data is stored, logically organized, and queried by users

◦ Transactions

→ Making sure that data stays consistent when faced with multiple concurrent users and system failures

◦ DBMS Architecture

→ Manages all aspects of query processing, indexing, transaction management, schema management, etc.