

CS281 Class Notes - Week 1 (2.2.15 – 6.2.15)

Title: Overview of DBMS

Gizem Tutku Altun

Burak Başlık

Ayça Karatepe

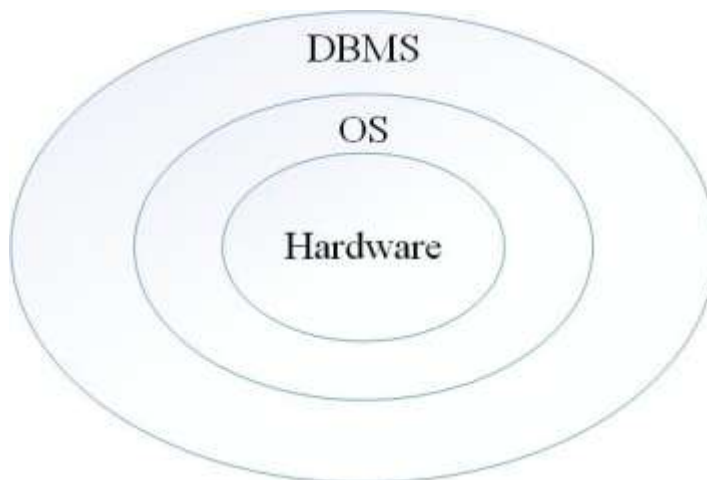
Ekin Mutfak

What is database?

It is a collection of data typically describing the entity/component of an organization and activities related to their component.

DBMS : Database Management System

- Create
- Maintain
- Access data/ retrieve



OS: Operating System

1st database; IBM, IMS-based

Relational Model

STUDENTS → key → Table relation

StNo	StName	StDept
10	Ahmet	IE
...
...
...

Students (Relation/Table name) is an entity.

StNo
StName
StDept

} Attributes

COURSES

CNo	CName	Credit
CS281	Database	3
...

COURSES TAKEN

StNo	CNo	Semester
10	CS281	Spring 2015
...

NOT: Query is the way to get answers from DBMS.

DBMS vs File System

DBMS provides

- 1) Flexible access
- 2) Data independence
- 3) Physical data independence

If there is a change at the bottom, it has no effect on top of applications

- 4) Logical data independence

change in the model do not affect applications like adding a new column to a table

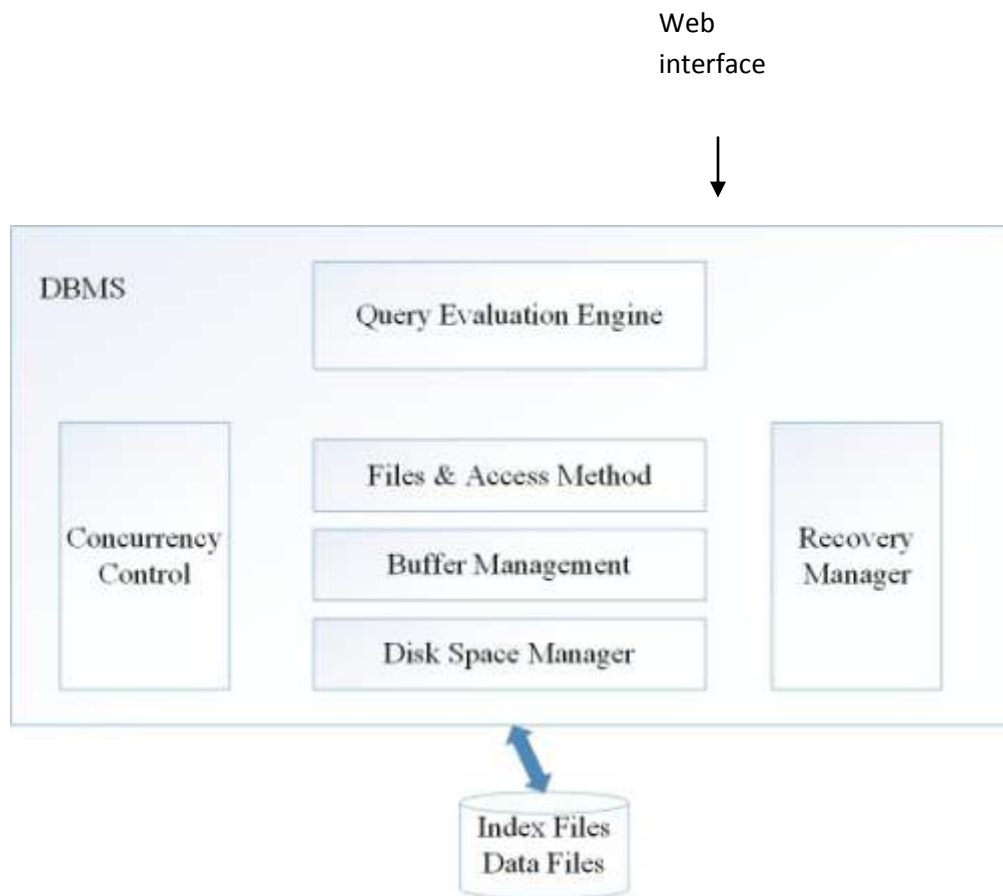
- 5) Data integrity
- 6) Referential integrity

i.e. Add a student to courses table

StNo	CNo
20	CS499

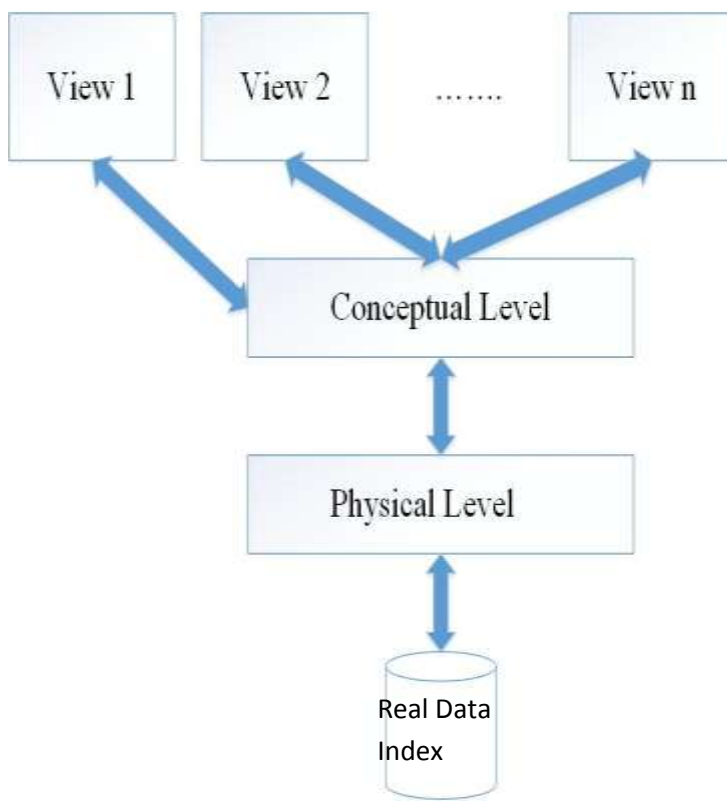
- 7) Security
- 8) Concurrent access
- 9) Crash recovery

Structure of a DBMS




Levels of Abstraction in a DBMS (Considering What, Ignoring How)

External Schema



Conceptual Schema (Logical Schema)

Definition of the tables in terms of names and students

Physical Schema  **File Structure**

Steps in setting up a DB

- 1) Define entities and relationships ER model
- 2) Define Tables