Basic Data Concepts:

Data Models

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Objectives

Objective

Explain data models and data processing concepts.

Data Models

Data Model	Schema
• Collection of concepts for describing data	• Description of a particular collection of data, using given data model

Relational Model of Data

- Most widely used model
- Relation is shown through the table with rows and columns

Relational Model

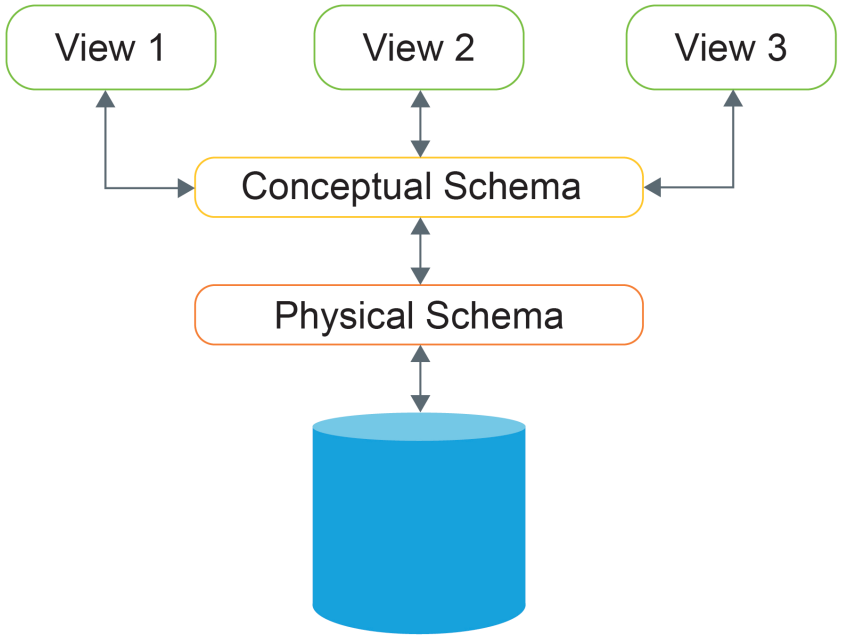
Schema 1	Schema 2
Attribute	Attribute
Attribute	Attribute

Levels of Abstraction

Many Views, single conceptual (logial) schema and physical shcema.

- Views describe how users see the data.
- Conceptual schema defines logical structure
- Physical schema describes the files and indexes used

Schemas are defined using DDL; data is modified/queried using DML.

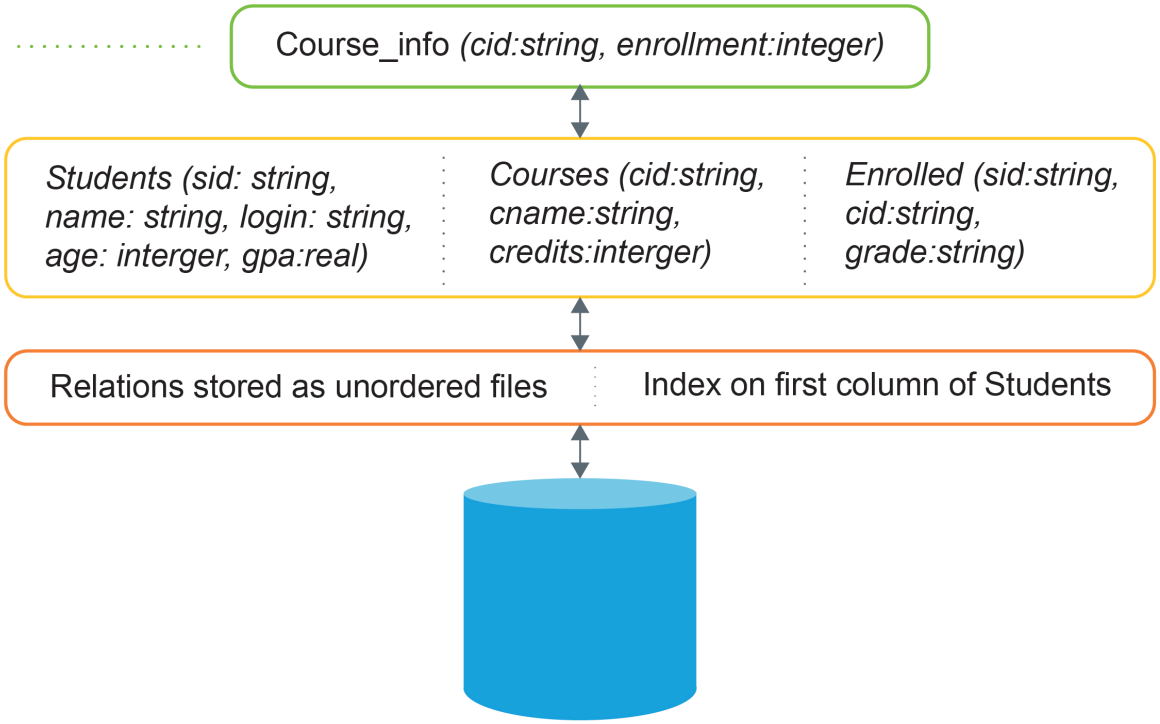


Example: University Database

External Schema (View):

Conceptual Schema:

Physical Schema:



Data Independence

One of the most important benefits of using a DBMS

Logical Date Independence

Protection from changes in logical structure of data

Physical Data Independence

Protection from physical structure of data

Example Queries in a DBMS

- What is the name of the student with ID 12?
- What is the salary of Professor Mohamed Sarwat?
- How many students are enrolled in *Introduction to Scalable Data*?
- How many students in *Introduction to Scalable Data* received a grade less than C?