

DBMS Data Models

Data model tells how the logical structure of a database is modeled. Data Models are fundamental entities to introduce abstraction in DBMS. Data models define how data is connected to each other and how it will be processed and stored inside the system.

The very first data model could be flat data-models where all the data used to be kept in same plane. Because earlier data models were not so scientific they were prone to introduce lots of duplication and update anomalies.

Entity-Relationship Model

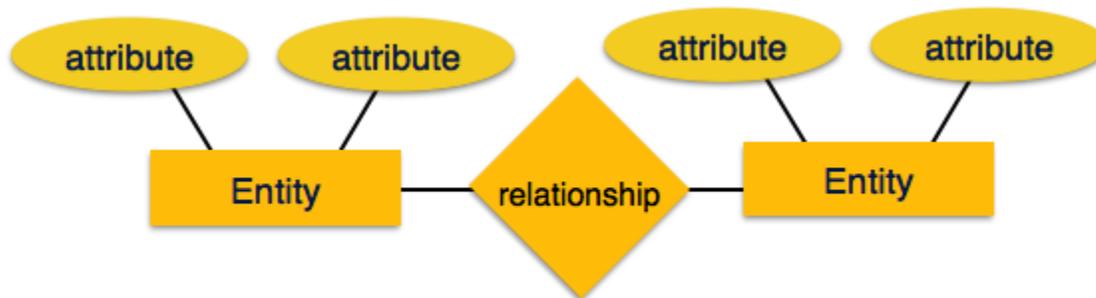
Entity-Relationship model is based on the notion of real world entities and relationship among them. While formulating real-world scenario into database model, ER Model creates entity set, relationship set, general attributes and constraints.

ER Model is best used for the conceptual design of database.

ER Model is based on:

- **Entities** and their *attributes*
- **Relationships** among entities

These concepts are explained below.



[Image: ER Model]

- **Entity**
An entity in ER Model is real world entity, which has some properties called **attributes**. Every attribute is defined by its set of values, called **domain**.

For example, in a school database, a student is considered as an entity. Student has various attributes like name, age and class etc.

- **Relationship**
The logical association among entities is called **relationship**. Relationships are mapped with entities in various ways. Mapping cardinalities define the number of association between two entities.

Mapping cardinalities:

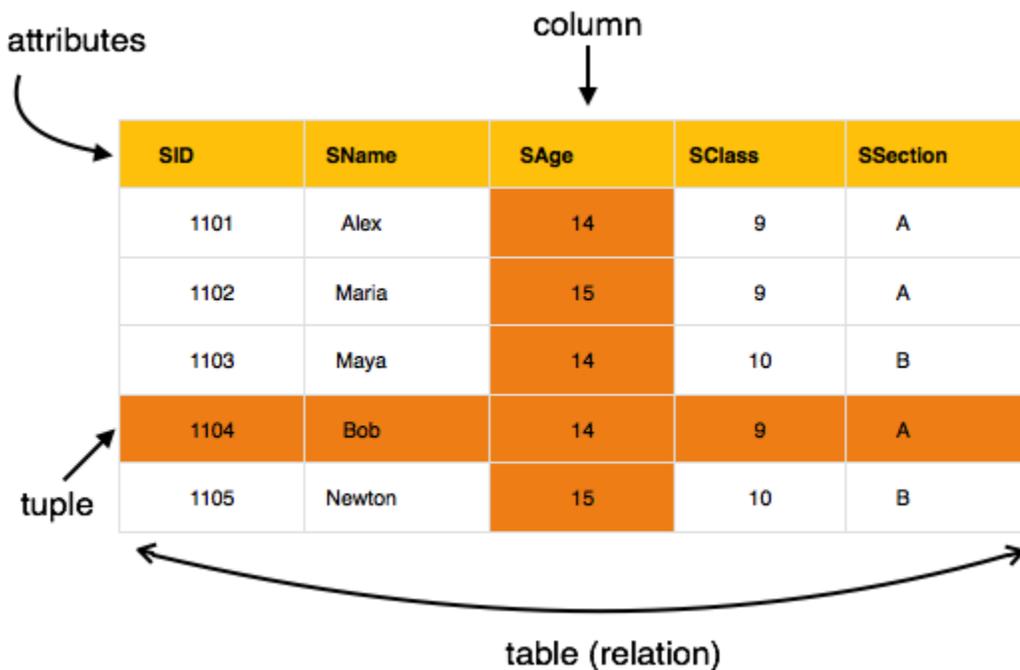
- one to one
- one to many

- many to one
- many to many

ER-Model is explained [here](#).

Relational Model

The most popular data model in DBMS is Relational Model. It is more scientific model than others. This model is based on first-order predicate logic and defines table as an n-ary relation.



[Image: Table in relational Model]

The main highlights of this model are:

- Data is stored in tables called relations.
- Relations can be normalized.
- In normalized relations, values saved are atomic values.
- Each row in relation contains unique value
- Each column in relation contains values from a same domain.

Source:

http://www.tutorialspoint.com/dbms/dbms_data_models.htm