Relational Model

It was introduced by Ted Codd in 1970. This model was all about organizing the data in the form of tables in row and column. This model has all the properties and capabilities required to process data with efficiency.

The relation in Relational Model is different from relations in ER model, in relational model relation refers to tables in which data is organized in the form of rows and columns.

When we get a problem statement and we have to solve it using databases:

- first we convert it into an ER model for better visualization of the problem statement.
- then we convert it into a relational model and
- the relational model is implemented using the Relational database management system (RDBMS).

Example –

Here ID, Name, Salary, dept_name are attributes for the table/relation named Professors.

| ID	Name	Salary	dept_name
4784545	Phunsuk Wangdu	95000	Mechanics
6474736	Farhan Qureshi	90000	Anatomy
4353463	Karan Malhotra	80000	Ortho

Primary Key

Records present in the above relations are called tuple.

Eg: Below is one of the tuple from above table.

ID	Name	Salalry	dept_name
6474736	Farhan Qureshi	90000	Anatomy

Relational Database Management System (RDBMS) –

A RDBMS is a type of database that stores and provides access to data points that are related to one another. RDBMS stores data in tables or relations. It is based on a relational model i.e. each row is a unique record that is called **tuple**. Column of the table stores attributes. Oracle, MySQL etc are some examples of RDBMS software.
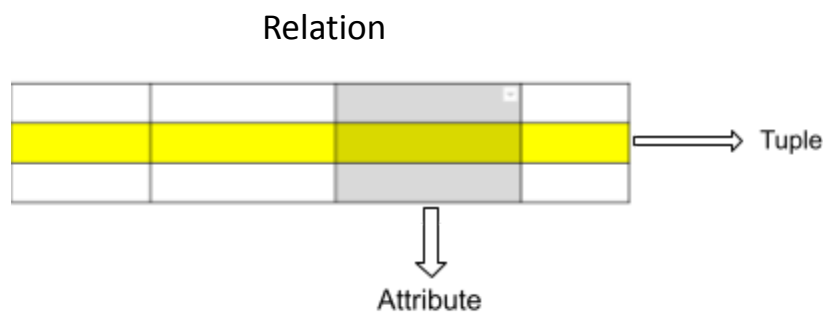
Relation

In relational Model relations are saved in the format of tables. This table stores relations among entities. Rows of tables represent records and columns of table represent attributes.

Tuple

A single row or record of the table is known as tuple.

Relation Instance

A row or tuple of a table is called a relationship instance.

Relation schema

Relational schema defines design and structure of the relation and also the variable declarations in tables. It consists of the relation name, set of attributes, column name.

The relationship schema for above table/relation Professors would be –

Professors (ID, Name, Salary,dept_name)

Degree of table

It is the number of columns in a given relation.

For the above relation, degree = 4.

Cardinality

The total number of rows in a given relation is the cardinality of that relation.

For the above relation, cardinality is 3.

Relation Key

Relation key is a set of attributes of a table which can uniquely identify each row.

Important properties of table

- The values have to be atomic(they can't be broken down The values in each column has to be of same data types further)
- Each row has to be unique in a table. To avoid Redundancy, otherwise will go against the concepts of RDBMS.
- The sequence of column and row is insignificant.
- Each attribute must be unique.