A data model describes the structure of the database including how data are defined and represented, relationships among data and the constraints.

The most commonly used data model is RD Model (Relational Data Model).

It was propounded by E.F. Codd of the IBM.

In this, a table is called “relation”.

These relations are associated with each other.

A database that is modeled on RD Model is called “relational database”.

Its users may query these relations, insert new tuples, delete them and modify them.

There are several languages for expressing these operations.

Two such languages are “relational query language” and “relational algebra”.

**Relational Model Terminologies:**

1)Relation: A relation is a table, it has the following properties.

In any given column, all items are of the same kind.

For a row, a column can not have more than one value.

Each row should be distinct.

There is no order for rows in the relation like row no. and etc.

Each column has a unique name.

A special value “NULL” is used to represent values are unknown or

non applicable to certain columns.

2)Domain: It is a set of values from which a column takes values for its rows.

Usually, a data type is used to specify domain for each column like integer

string, etc.

3)Tuple: The row in a relation is called “tuple”.

In a relation of n columns, a tuple is a relationship between the n related values.

4)Attributes: The column in a relation is called “attribute”.

5)Degree: The no. of attributes in a relation is called “degree of the relation”.

Relation of degree 1 is called “unary”.

Relation of degree 2 is called “binary”.

Relation of degree 3 is called “ternary”.

Relation of degree n is called “n-ary”.

6)Cardinality: The no. of tuples in a relation is called “cardinality of the relation”.

7)Views: A view is a kind of table whose contents are derived from “base tables”

depending upon a condition.

It does not contain data of its own, the data is determined by carrying out the

execution of the given query(the given condition).

The relations are the base tables that actually contain data.

It is also called “virtual table”.

The content of view table is not stored but the given condition is stored.

It can be queried, updated, inserted into, deleted from, and joined with

other tables and views.

Even views can be created for read-only purpose, i.e., they can not be updated.

**Keys in RD Model:** It is important that each tuple has an attribute that is distinct from other

attributes.

So, RD Model imposes some constraints on the values of the attributes.

These constraints are specified at the time of defining the database through

different keys as given below.

1)Candidate keys: Those attributes which takes distinct values are called

“candidate keys”.

It can be one or more than one.

2)Primary key: The candidate key chosen by the database designer to uniquely

identify the tuples in a relation is called “primary key”.

The remaining candidate keys are called “alternate keys”.

3)Composite Primary key: That primary key which consists of more than one

candidate key is called “composite primary key”.

It is also known as “compound primary key”.

4)Foreign key: It is that attribute of a relation which is used to relate that relation

with the attribute of another relation that is primary key of this

relation.

From which table the relation is occurred is called “foreign relation”

or “foreign table”.

With which table the relation is occurred is called “primary

relation” or “primary table”.

A record of the foreign key can take NULL value if it is not the part

of primary key of the foreign table.