RELATIONAL DATABASE MANAGEMENT SYSTEM

Various types of databases have been developed. One of them was relational database developed by E.F Codd at IBM in 1970. It is used to organize collection of data as a collection of relations where each relation corresponds to a table of values. Each row in the table corresponds to a unique instance of data and each column name is used to interpret the meaning of that data in each row. For example, consider EMPLOYEE table in Figure 1.5(a).

EMPLOYEE

Name	Employee_ID	Gender	Salary	Date_of_Birth
Neha Mehta	1121	Female	20000	04-03-1990
Paras Bansal	2134	Male	25000	19-10-1993
Himani Verma	3145	Female	20000	23-11-1992

Each row in this table represents facts about a particular employee. The column names – Name, Employee_ID, Gender, Salary and Date_of_Birth specify how to interpret the data in each row In relational model,

- A row is called a Tuple.
- Acolumn is called an Attribute.

- A table is called as a Relation.
- The data type of values in each column is called the Domain.
- The number of attributes in a relation is called the Degree of a relation.
- The number of rows in a relation is called the Cardinality of a relation.
- Relation Schema R is denoted by R (A , A , A …, A) where R is the relation name 1 2 3, n and A , A , A ,….A is the list of attributes. 1 2 3 n
- Relation State is the set of tuples in the relation at a point in time. A relation state r of relation schema R (A1, A2, ..., An), denoted r(R) is a set of n-tuples r = {t1, t2,...., tm}, where each n-tuple is an ordered list of values t = <v1, v2, ...,vn>, where vi is in domain of A or is NULL. Here n is the degree of the relation and m is the cardinality of ithe relation.
- EMPLOYEE table is a relation.
- There are three tuples in EMPLOYEE relation.
- Name, Employee_ID, Gender, Salary, Date_of_Birth are attributes.
- The domain is a set of atomic (or indivisible) values. The domain of a database attribute is the set of all the possible values that attribute may contain. In order to specify a domain, we specify the data type of that attribute. Following are the domain of attributes of the EMPLOYEE relation:

(a) Name – Set of character strings representing names of persons.

(b) Employee_ID–Set of 4-digit numbers

(c) Gender – male or female

(d) Salary – Number

(e) Date_of_Birth – Should have a valid date, month and year. The birth year of the employee must be greater than 1985. Also the format should be dd-mm-yyyy.The degree of the EMPLOYEE relation is 5 as there are five attributes in this relation.The cardinality of the EMPLOYEE relation is 3 as there are three tuples in this relation.Relation Schema – EMPLOYEE (Name, Employee_ID, Gender, Salary, Date_of_Birth)Relation State –{<Neha Mehta, 1121,Female,20000,04-03 1990>,

<Paras Bansal, 2134, Male, 25000, 19-10-1993>,

<Himani Verma, 3145, Female, 20000, 23-11-1992>}