

# Assignment No. 2

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Ques-1 What is a relation? Explain the various properties of a relation.

Ans-

Relation -

A relation can be represented by a table in database. The rows of a relation (table) are called the records or tuples and columns are called the attributes.

→ Attributes

	$A_1$	$A_2$	.....	$A_n$
$R_1$				
$R_2$				
$R_3$				
⋮				
⋮				
Records				
$R_m$				

The figure shows a relation with  $n$  attributes and  $m$  records.

Properties of Relations -

- i) The relation has a name that is distinct from all other relation names in the

relational schema.

- ii) Each cell of the relation contains exactly one atomic (single) value.
- iii) Each attribute has a distinct name.
- iv) The values of an attribute are all from the same domain.
- v) Each tuple is distinct; there are no duplicate tuples.
- vi) The order of attributes has no significance.
- vii) The order of tuples has no significance.

Que-2 Define the following terms:

1. Degree
2. Cardinality
3. Relational Database
4. Relational Schema
5. Constraints

Ans -

1. Degree:

Mapping cardinalities or degree of a relationship express the number of entities of which another entity can be associated via relationship set. These indicate the link between two entities for a specified occurrence of each.

Types -

- i) One to one relationship
- ii) One to many relationship
- iii) Many to one relationship



#### iv) Many to many relationship

### 2. Cardinality :

The cardinality ratio specifies the number of relationship instances that an entity can participate in. The WORKS-FOR binary relationship type DEPARTMENT: Employee is of cardinality ratio 1:N, meaning that each department can be related to numerous employees, but an employee can be related to (work for) only one department.

### 3. Relational Database :

A relational database is a set of tables (sometimes called relations) containing one or more data categories in columns. Each row contains a unique instance of data for the categories defined by the columns.

### 4. Relational Schema :

A named relation defined by a set of attributes and domain name pairs is a relational schema.

Let  $A_1, A_2, \dots, A_n$  be attributes with domains  $D_1, D_2, D_3, \dots, D_n$ . Then the set  $\{A_1 : D_1, A_2 : D_2, \dots, A_n : D_n\}$  is a relational schema.

Each element in the  $n$ -tuple consists of an attribute and a value for that attribute.

### 5. Constraints :

These are used to specify rules for the data in a table. Constraints are used to limit the type of data that can go into a table. This ensures the accuracy and reliability of the data in a table.

If there is any violation between the constraint and the data action, the action is aborted.