



DATABASE CONCEPTS

Database or DBMS (Database Mangement system)

- It is a collection of multiple tables.
 - OR
- collection of logically related data.
 - OR
- It is computerized record keeping information system.

- ❖ Examples of DBMS software are
 - ❖ Dbase, Foxpro, Oracle, MS SQL Server, MS Access, Paradox, DB2, FileMaker and MySQL etc.

DATABASE

is a collection of
organized
DATA/INFORMATION

Data is organized into
rows, columns i.e. in
the tables form

It works like a
container which
contains the various
object like Tables,
Queries, Reports

Different types of Databases

- **RDBMS**-(Relational Database management system).
e.g. MS Access, MySQL, Microsoft SQL Server, IBM DB2
- **ORDBMS**-Object Relational Database management system. e.g. Oracle

WHY DO WE NEED DATABASE? OR ADVANTAGES OF DATABASE

reduces
Redundancy
(duplication)

facilitate Sharing
of Data

Provides
Security

maintains
Integrity
(rules /condition)

RELATIONAL DATABASE

It is a collective set of multiple data sets organized by tables, records and columns

It establishes a well-defined relationship between database tables

It uses Structured Query Language (SQL),

SQL- is a standard user application that provides an easy programming interface for database interaction.

RELATIONAL DATABASE TERMS

Relation

Domain

Tuple/Record

Attribute/field/column

Degree

Cardinality

Relation - Relation is a collection of rows and columns
. It is also called Table.

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Attribute/field/column

A column in a relation is called an attribute. It is also termed as field or column.

Relation - Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Degree

No of columns/attributes in a relation

Degree is 5

Relation : Student

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1	12/345	Teena	Science	234567879
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3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Tuple/Record

- A row in a relation is called a tuple.

OR

- Collection of fields in a relation

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Cardinality

- No of rows/record/tuples in a relation

Cardinality is 6

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
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4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Domain

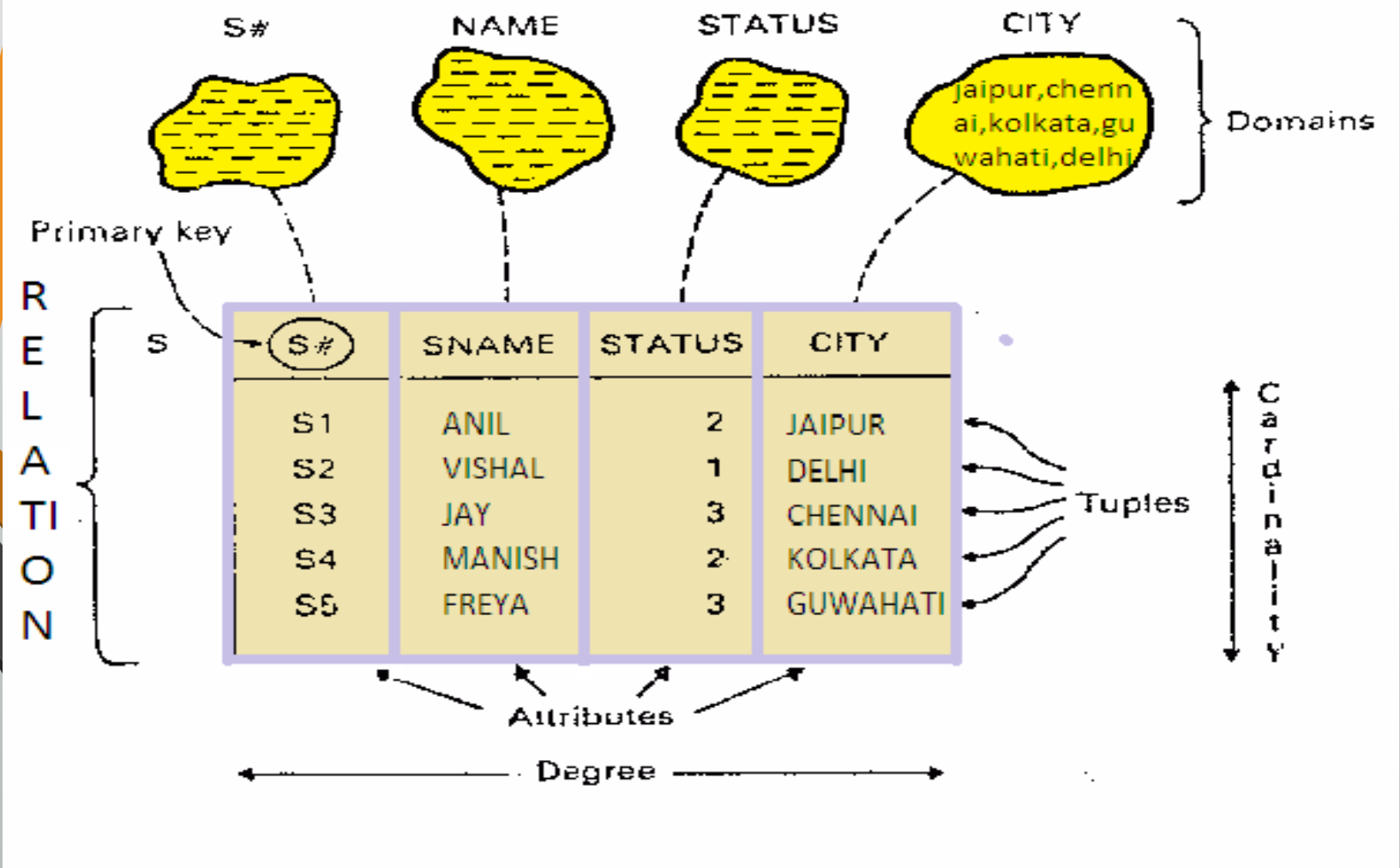
It is pool of values from which the value is derived for a column.

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
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Science
Commerce
Humanities

RELATIONAL DATABASE TERMS



KEYS IN A DATABASE

it is used for identifying unique rows from table & establishes relationship among tables on need.

KEYS IN A DATABASE

Primary Key

Candidate Key

Alternate Key-

Foreign Key

Primary Key

Primary key is a key that can uniquely identifies the records/tuples in a relation.

This key can never be duplicated and NULL.

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

Rollno can be primary key

Candidate Key -

which can serve as a primary key but not primary key. it is also called alternate key

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
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4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

admno can be candidate key

Alternate Key-

Out of all candidate keys, only one gets selected as primary key, remaining keys are known as alternate or candidate key

Relation : Student

Rollno	Admno	Name	Stream	Phone
1	12/345	Teena	Science	234567879
2	14/564	Sheena	Commerce	344553322
3	10/345	Heena	Science	23455632
4	11/456	Meena	Science	345522356
5	13/432	Leena	Humanities	456720980
6	3/567	Reena	Commerce	456322578

admno can be alternate key/candidate key

Foreign Key-

Foreign Key is a key that is defined as a primary key in some other relation.

Relation : Student

Rollno	Admno	Name	Stream	Phone	Tno
1	12/345	Teena	Science	234567879	T1
2	14/564	Sheena	Commerce	344553322	T1
3	10/345	Heena	Science	23455632	T2
4	11/456	Meena	Science	345522356	T2
5	13/432	Leena	Humanities	456720980	T3
6	3/567	Reena	Commerce	456322578	T2

Relation : Test

Tno	Tname	dateofexam
T1	UT1	2/4/2020
T2	HY	3/9/2020
T3	UT2	5/11/2020
T4	Annual	9/1/2021

FOREIGN KEY

Observe the following table and answer the question

TABLE: VISITOR

VisitorID	VisitorName	ContactNumber
V001	ANAND	9898989898
V002	AMIT	9797979797
V003	SHYAM	9696969696
V004	MOHAN	9595959595

1. Write the name of most appropriate columns which can be considered as Candidate keys?
2. Out of selected candidate keys, which one will be the best to choose as Primary Key?
3. What is the degree and cardinality of the table?

Modern Public School is maintaining fees records of students. The database administrator Aman decided that-

- Name of the database -School
- Name of the table – Fees

The attributes of Fees are as follows:

- Rollno - numeric
- Name – character of size 20
- Class - character of size 20
- Fees – Numeric
- Qtr – Numeric

(i) Identify the attribute best suitable to be declared as a primary key

(ii) Write the degree of the table.

(iii) Define attribute and cardinality.

Write SQL Commands for the following queries based on the relations PRODUCT and CLIENT given below.

- **Table: Product**

P_ID	ProductName	Manufacturer	Price	ExpiryDate
TP01	Talcum Powder	LAK	40	2011-06-26
FW05	Face Wash	ABC	45	2010-12-01
BS01	Bath Soap	ABC	55	2010-09-10
SH06	Shampoo	XYZ	120	2012-04-09
FW12	Face Wash	XYZ	95	2010-08-15

- **Table: Client**

C_ID	ClientName	City	P_ID
1	Cosmetic Shop	Delhi	FW05
6	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty One	Delhi	FW05

- Identify the attribute best suitable to be declared as a primary key from the product table
- Identify the foreign key and primary key from the table client
- Write the degree and cardinality of the table product.