

UNIT 3

For XII CSc:

Database Management

UNIT 2

DATABASE MANAGEMENT SYSTEM (DBMS)

What is a database?

→ Database is a set or collection of logically inter-related and persistent data along with its description.

What is DBMS ?

- A set of application programs used to store, access, update and manage the inter-related and persistent data.
- **Computer based Record Keeping System**

DATABASE APPLICATIONS Examples....

- 1. STUDENT RECORD KEEPING SYSTEM**
- 2. INVENTORY CONTROL MANAGEMENT**
- 3. PERSONNEL MANAGEMENT SYSTEM**
- 4. FINANCIAL ACCOUNTING SYSTEM**
- 5. BANKING SYSTEM**
- 6. AIRLINE RESERVATION SYSTEM**

WHY DATABASE????

ADVANTAGES OF DATABASE



- Database systems **reduce data redundancy** to a large extent.
(*redundancy meaning duplication*)
- Database systems control data inconsistency to a large extent.
- Database facilitate sharing of data.
- Databases enforce standards laid by organization or company
- Centralized databases can ensure data security.
- Integrity can be maintained through databases. (Eg. Invalid date)

DISADVANTAGES OF

DATABASE :-

- Without good controls a database may be compromised over security and integrity issues
- Database systems may require extra hardware.
- Performance overhead may be significant.
- System is likely to be complex.

DIFFERENT DATA MODELS

A data model refers to a set of concepts to describe the structure of a database, and certain constraints that the database should obey.

(i) **Relational data models,**



(ii) Network data model,

(iii) Hierarchical data model,

(iv) Object oriented data model.

RELATIONAL DATA MODEL

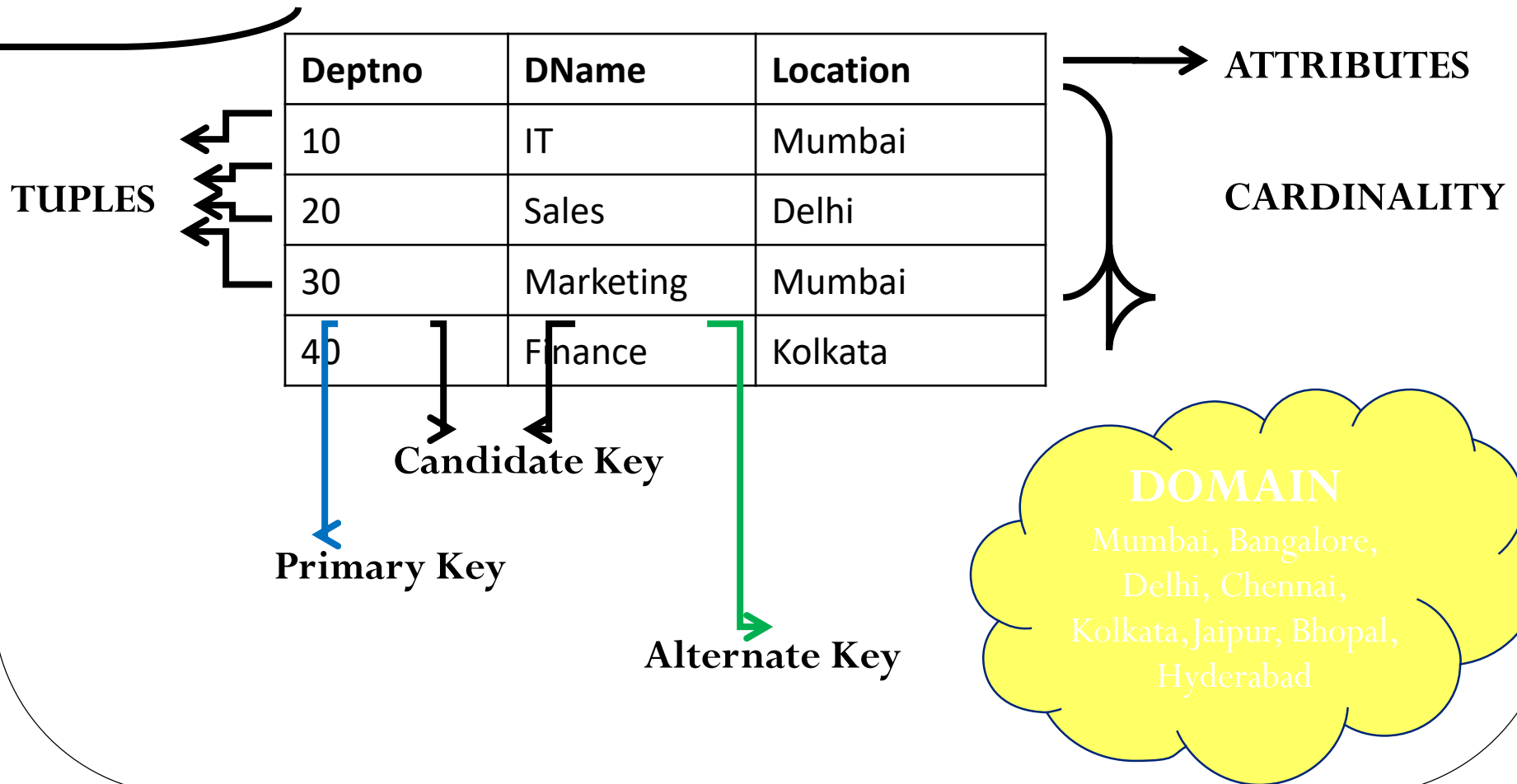
- ❖ The relational data model is organized into tables. These tables are called relations.
- ❖ A row in a table represents a relationship among a set of values.
- ❖ Since a table is a collection of such relationships, it is generally referred to using the mathematical term relation, from which the relational data model derives its name.

RELATIONAL MODEL TERMINOLOGY

RELATION	<p>A relation is a table storing logically related data;</p> <ul style="list-style-type: none">✓ A data must be atomic in a cell;✓ All rows of this table are distinct;✓ Ordering of rows and columns is immaterial.
DOMAIN	<p>This is a pool of a values from which the actual values appearing in a given column are drawn</p>
TUPLE / RECORD/ ROW	<p>A row of a relation is generally referred to a tuple.</p>
ATTRIBUTE/ FIELD/ COLUMN	<p>A column of a relation is generally referred to as an attribute.</p>
DEGREE	<p>This refers to the no. of attributes in a relation.</p>
CARDINALITY	<p>This refers to no. of tuples in a relation.</p>

RELATION:- Dept

DEGREE



RELATIONAL MODEL TERMINOLOGY CONTD.

PRIMARY KEY	This refers to a set of one or more attributes that can uniquely identify tuples within the relation.
CANDIDATE KEY	All attribute combinations inside a relation that can serve as primary key are candidate keys as they are candidate for primary key positions.
ALTERNATE KEY	A candidate key that is not primary key, is called an alternate key.
FOREIGN KEY	A non key attribute, whose values are derived from the primary key of some other table , is known as foreign key in its current table.

DEPT (Primary table / Master table)

<u>Deptno</u>	DName	Location
10	IT	Mumbai
20	Sales	Delhi
30	Marketing	Mumbai
40	Finance	Kolkata

Primary Key of DEPT table

EMP (Foreign table / Detail table)

Primary Key of EMP table



<u>Empno</u>	Ename	Job	Sal	Hiredate	Deptno
1001	ABC	Clerk	20000	25-10-2006	20
1002	EFG	Salesman	25000	12-08-2008	10
1006	XYZ	Manager	30000	19-05-2008	30
1003	BOB	Analyst	28000	10-07-2007	20

Foreign Key



REFERENTIAL INTEGRITY

A referential integrity is a system of rules that DBMS uses to ensure that relationships between records in related tables are valid and that users don't accidentally delete or change related data.

CONDITIONS SET FOR REFERENTIAL INTEGRITY CONSTRAINTS

- ✓ The matching field from the primary table is a primary key or has unique index.
- ✓ The related field have same data type.
- ✓ Both table belong to the same database. Referential integrity cannot be enforced for linked table from database in other format.

RULES FOR REFERENTIAL INTEGRITY CONSTRAINTS

- You can't enter a value in the foreign key field of the related table that doesn't exist in the primary key of the primary table.
- You can't delete a record from a primary table if matching records exist in a related table.
- You can't change a primary key value in the primary table, if that record has related records in the foreign key field.



Think BIG, Think POSITIVE.
Stay HOME. Stay SAFE. Stay HEALTHY

**THANK YOU
FOR YOUR
PATIENT HEARING ?**

*Education is the passport to the future, for
tomorrow belongs to those who prepare for it today.*