

Part 1 / Section 1 → Introduction.

1) Data → collection of facts abt an obj of interest.

→ Data is raw by itself, we need to ~~analyze~~ ~~analyze~~ ~~analyze~~ it to gain anything from it.

→ information.

→ The result of that analysis will tell us if we need to change or make a decision.

2) Data requirements → Available / Accessible

Valid / Integrity / True

Secure

Consistent / Multiple people view at same time.

Data



3) Database → Shared collection of logically related data & description of these data, designed to meet information requirements of an organization.



DBMS → A software system that allows users to define, create, maintain and control access to databases.



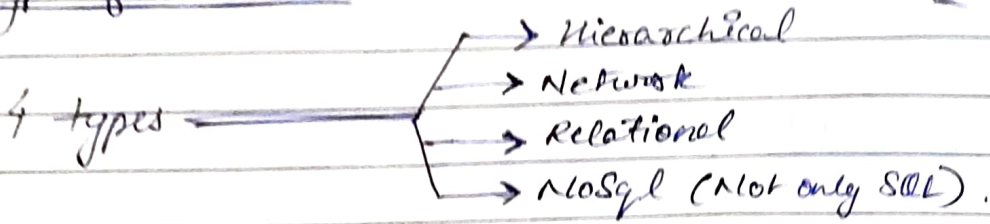
Application → Interacts with databases using appropriate req. (Like an SQL statement).



User

Old → flat file model.
 [binds many relational models]

4) Types of databases



(i) Hierarchical → tree like structure. Eg:- IMS, RDB, Mobile. (RDBMS)

(ii) Network → Graph Structure. Eg:- IBM, IDB.

(iii) Relational → one or more tables having rows & columns.
 Eg:- DB2, Oracle, SQL Server.

(iv) NoSQL → key-value or graph or documents structures used to store data. Aim is for simplicity of design, horizontal scaling & finer control over availability.

Eg:- Cassandra, MongoDB, CouchDB, OrientDB, HBASE, etc.

In this course focus on Relational Databases.

5) Relational Model.

→ Attribute → Name of each column. [field → intersection cell b/n row & column.]
 (or field)
 tuple → row (or) also called records.

Cardinality → No. of rows in a relation / table.

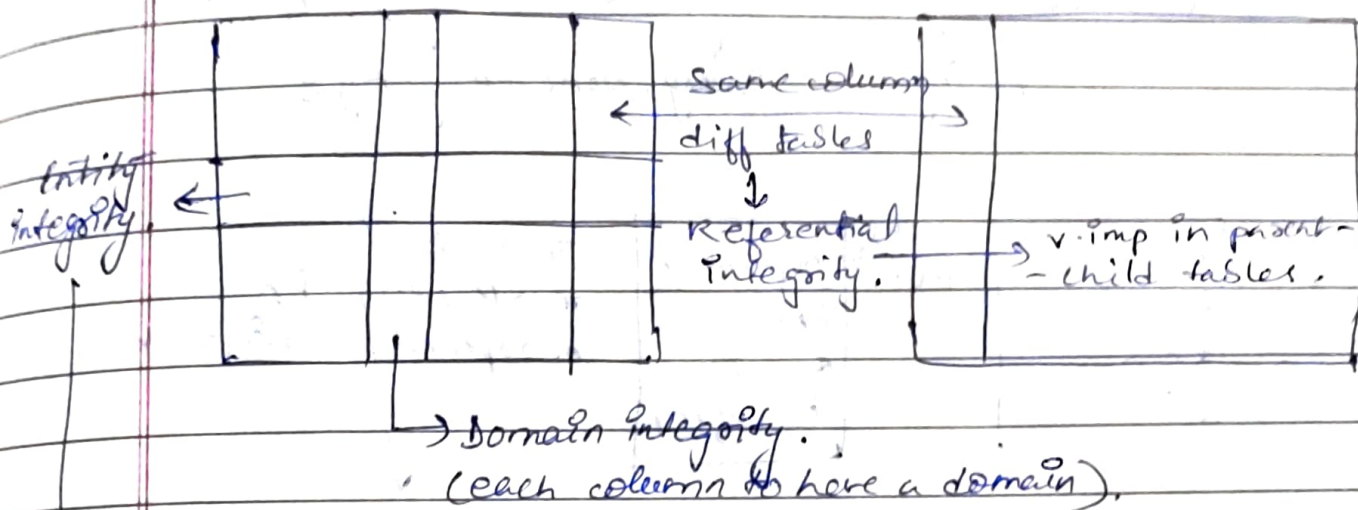
Degree of relation → No. of attributes.

Domain → No. of allowable in an attribute.

6) Data Integrity & Constraints

⇒ Data Integrity means ensuring accuracy & consistency of data.

DBMS ensure data integrity through constraints.



⇒ Each table should have a column through which we can uniquely identify a row. (Eg:- Reg No., Id, etc). Cannot be null. Called Primary Key.

If more than one column used to identify a unique row, they are together called composite Primary key.

A table can have multiple candidate keys but only one primary key.