DBMS

Database Models

A set of rules and standards that define how the database organizes/store data is called database model.

Collection of concept to describe the structure of database.

" A data model is the collection of concepts that can be used to describe the structure of the database including data types, relationships and the constraints that apply on data".

- Diagrammatic Representation.
- Support communication b/w the users and database designers.
- Data and their relation can be expressed & distinguished easily.
- Application independent, so that different app. can share it.
- data rep. must be without duplication.

Types of Data Models

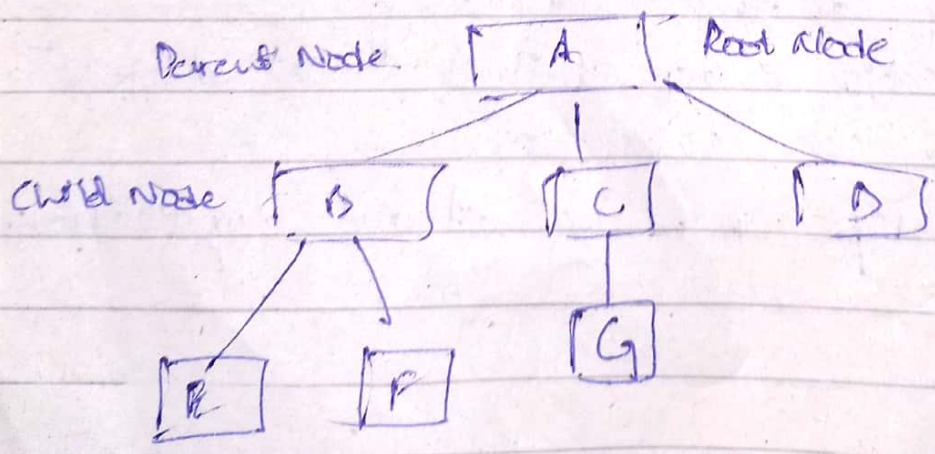
1- Object Based Data Model (Conceptual DM)
   - ↳ Entity Relationship DM.
   - ↳ Object Oriented DM.
   - ↳ Functional DM.
   - ↳ Semantic DM.

2- Record based DM (Representational DM)
   - ↳ Hierarchical DM
   - ↳ Network DM.
   - ↳ Relational DM.

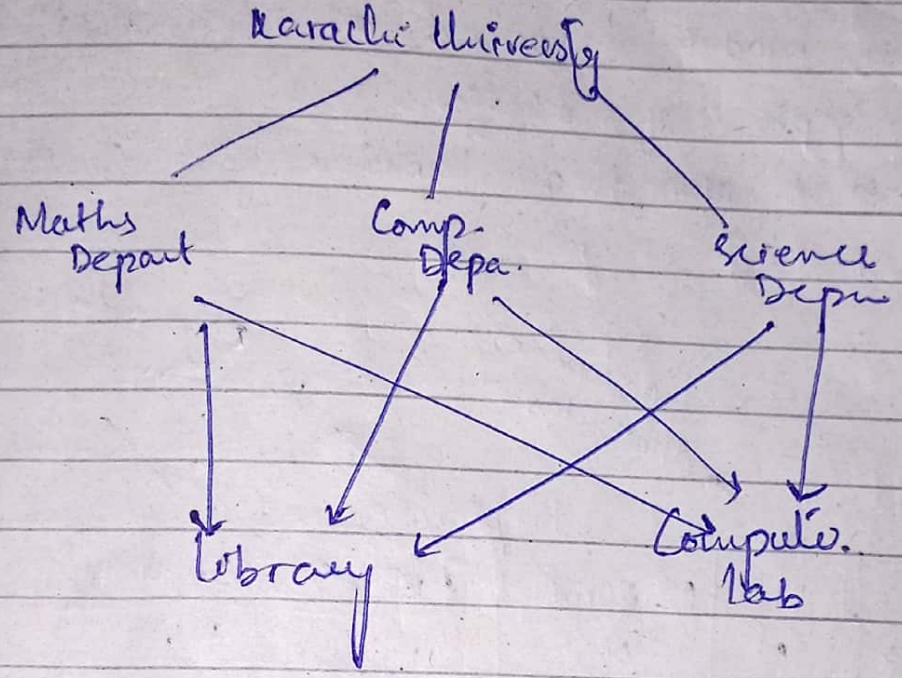
3- Physical Data Model (low level DM)
   - ↳ Unified model
   - ↳ Frame Memory model.

Record Based DM:

* Hierarchical Data Model
  - ⇒ Tree Structure.
  - ⇒ represents 1:1 or 1:M relation only.



* Network Data Model: (Directed Graph)



⇒ Many to many relations.
⇒ Linked list representation.

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* Object Oriented Data Model:

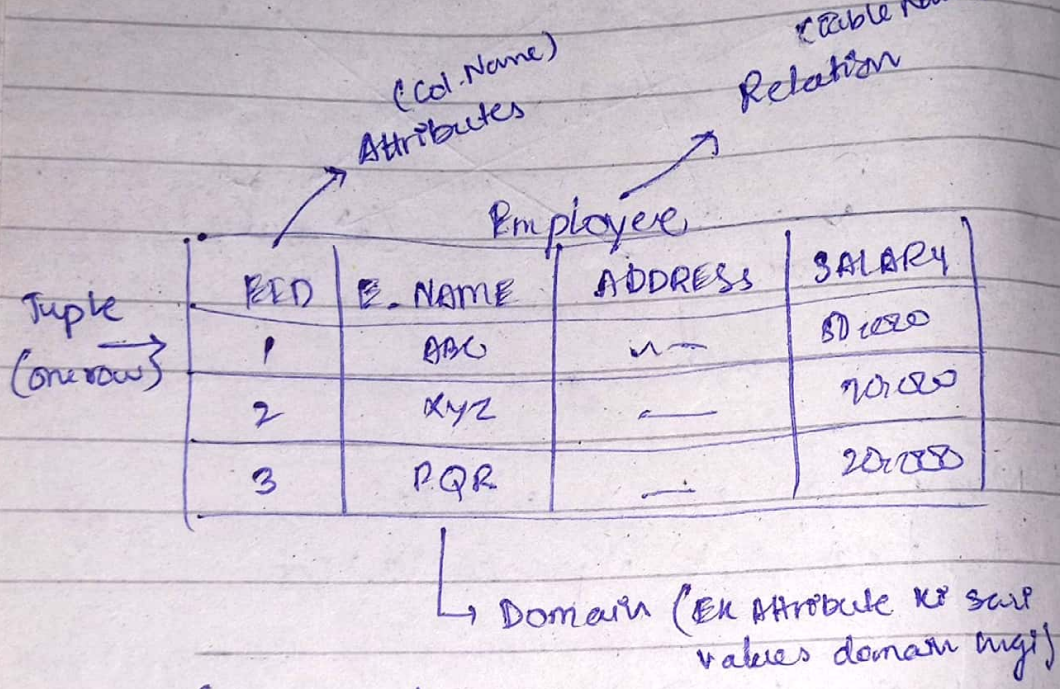
⇒ It captures semantics of objects.
⇒ It is collection of objects, attributes, relationships which form static properties.

Relational Data Model

=> Discovered by Dr. E.F Codd. (Father of Database MS)

=> This model is based on mathematical concepts of relations

=> Data is stored in tabular form.



Degree (No. of columns in a relation)

(4)

Cardinality (No. of rows in any relation)

(3)

- Not necessary to arrange attributes and tuples in order/sequence.
- Duplicate values in tuples should not be there.
- Attributes should have unique name
- There should be exactly one value for each attribute.
- Relation name should be different from other relation.
- Attribute should follow the same data type for its domains.