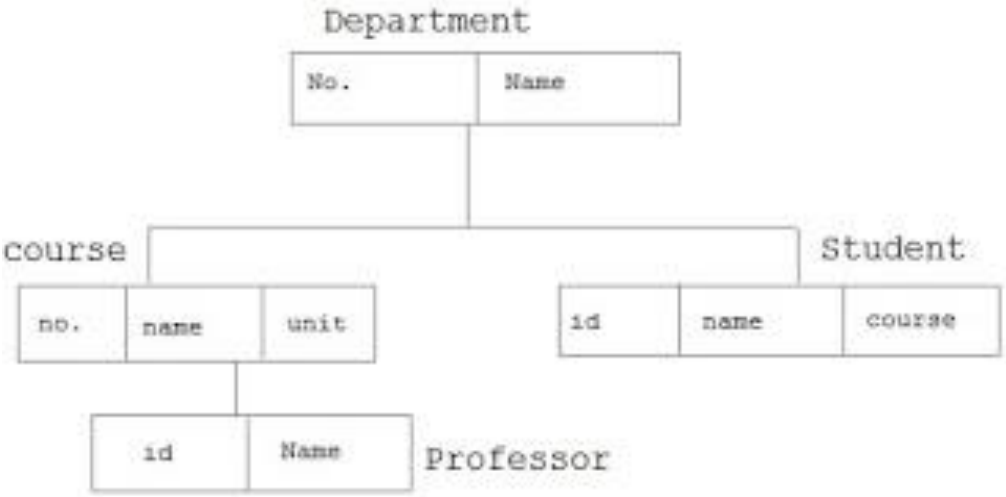
DATA MODEL

A model is like a blueprint of a more complex real-world object or event.
A data model is a picture or description which shows how data is to be arranged to serve a specific purpose.
A data model defines how data is connected to each other and how they are processed and stored inside the system.
A data model documents and organizes data, how it is stored and accessed, and the relationships among different parts of data.

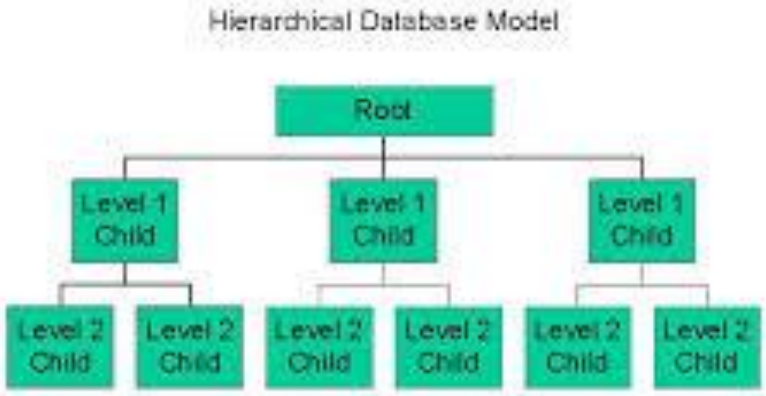
TYPES OF DATA MODEL

1. **Flat file model**: A flat data is a type of database that stores data in a single table. Flat file databases are generally in plain-text form, where each line holds only one record. The fields in the record are separated using delimiters such as tabs and commas

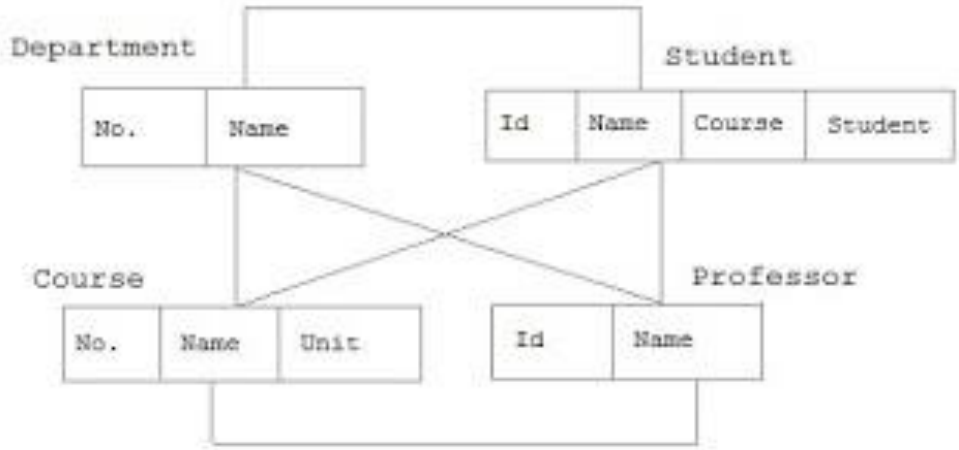
2. **Hierarchical model**: In this model, data is organised into a tree like structure. The data is stored as records which are connected to one another through links. In a hierarchical model, each child record has only one parent, whereas each parent record can have one or more children. At the top of hierarchy there is only one entity which is called Root. In order to retrieve data from a hierarchical database the whole tree needs to be traversed starting from the root node.

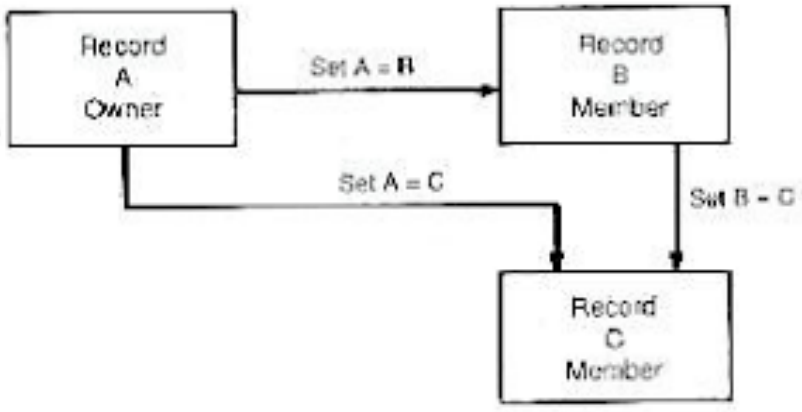


Hierarchical database model

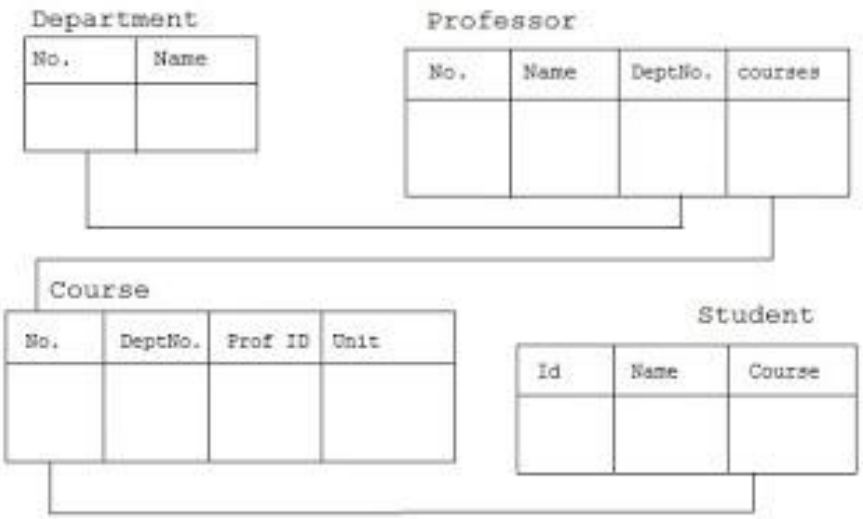


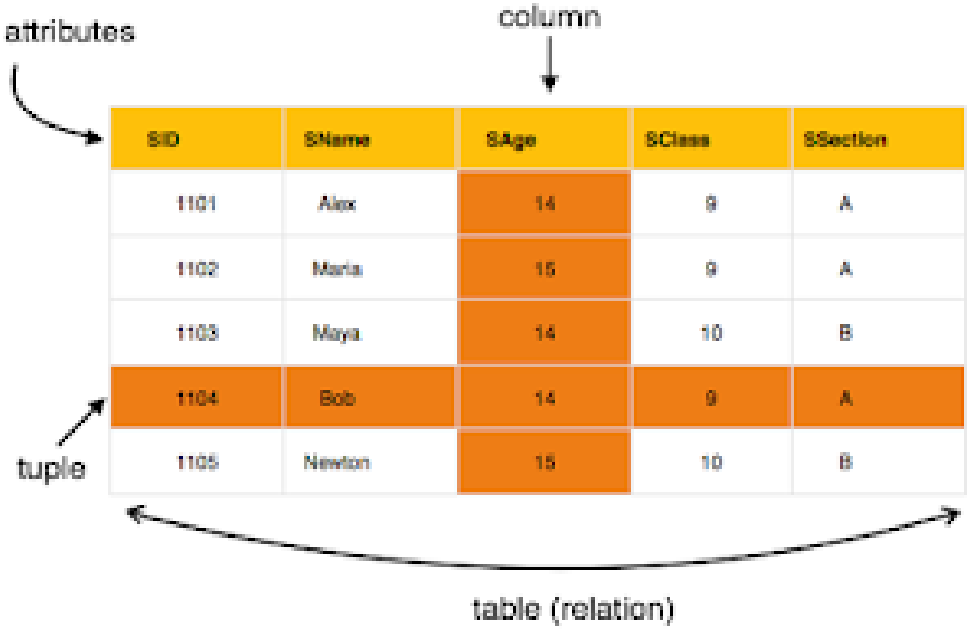
3. **Network model**: In the network model, data records are organised in a graph, in which some records can be accessed through several paths. This model organizes data using two fundamental constructs, called records and sets. Records contain fields, and sets define one-to-many relationships between records: one owner, many members.





4. **Relational model**: In this model, data record is organised in two-dimensional tables called relations. The tables or relations are related to each other. Each table is made up of rows and columns and a table stores records about a particular subject. Relational data models are used in IBM's DB2, Informix, Oracle, Sybase, Paradox, FoxBase, Teradata).

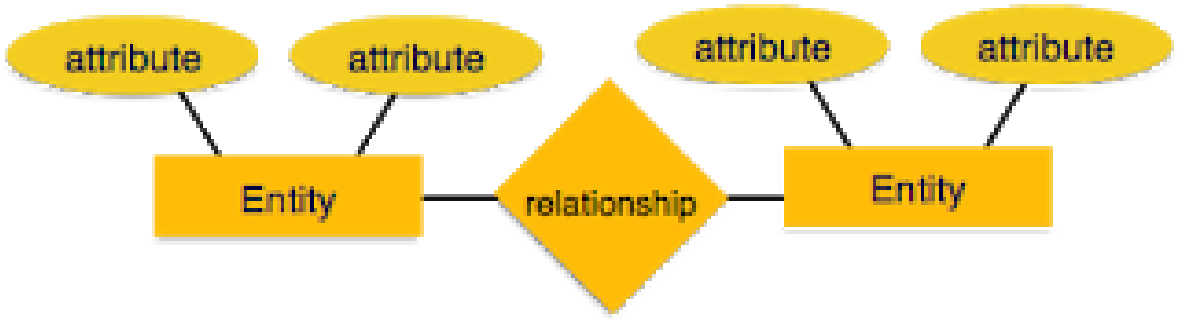




5. **Entity-relationship model**: this model is based on the notion of real world entities and relationships among them. ER model is based on:

- Entities and their attributes
- Relationships among entities

In ER modeling, the structure for a database is portrayed as a diagram called an entity-relationship diagram (or ER diagram). An example is shown below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