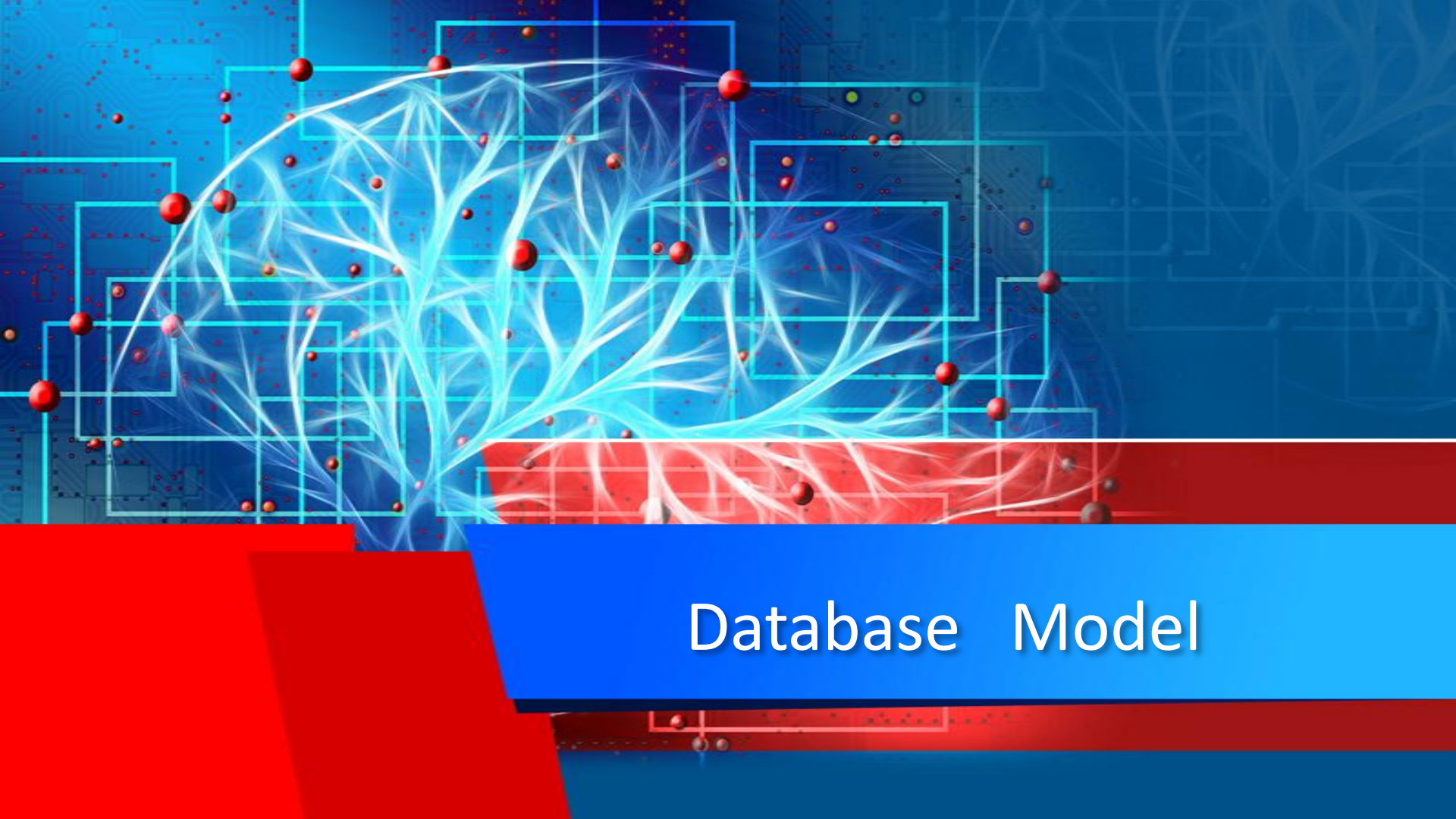
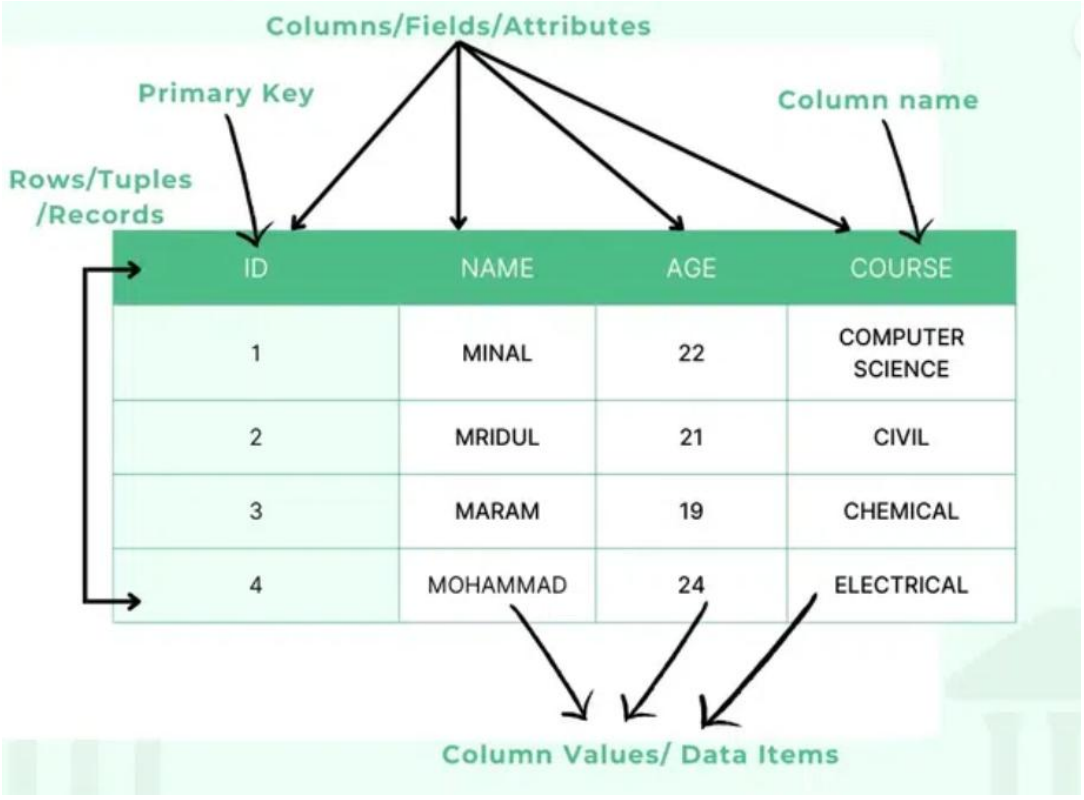

Database Model

Basic DBMS table and terms



What is database model?

- Database model defines the logical design and structure of a database. It defines how data will be stored, accessed, and updated in a database management system.
- As per application's requirement, we can use a database model to define the database, it is like creating the blueprint of database.

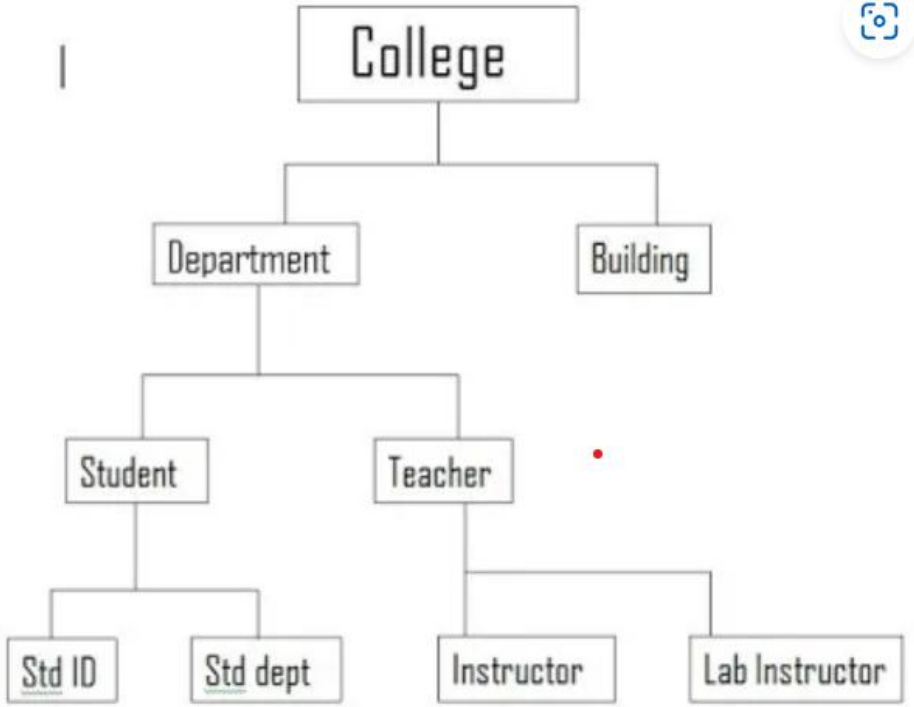
Type of Database models:

- Hierarchical Model
- Network Model
- Entity-relationship Model (ER- Model)
- Relational Mode
- Object-oriented Model
- NoSQL Model
- Graph Model

Hierarchical Model

- The hierarchical database model organizes data into a tree-like structure, with a single root, to which all the other data is linked.
- **The hierarchy starts from the Root data, and expands like a tree, adding child nodes to the parent nodes.**
- In this model, a child node will only have a single parent node.
- **This model efficiently describes many real-world relationships like the *index of a book*, etc.**
- Data is organized into a tree-like structure with a one-to-many relationship between two different types of data, for example, one department can have many courses, many teachers, and many students.

Figure of Hierarchical Model



Database schema

Definition:

A blueprint that defines the structure, organization, and relationships of data stored in a database.

Components:

- Tables (Structures in a database that organize data into rows and columns.)
- Columns/Fields (Attributes within a table that hold specific types of data.)
- Primary Keys(Unique identifiers for each record in a table.)
- Foreign Keys (Columns that establish relationships between tables by referencing the primary key of another table.)
- Indexes (Data structures that improve the speed of data retrieval operations on a table.)
- Constraints (Rules forced to maintain data integrity)
- Views (Virtual tables presenting data from one or more tables)