DATA MODEL

A data model within a Database Management System (DBMS) serves as an abstract representation of how data gets structured and organized within a database.

It outlines the logical arrangement of data and the connections between various data components.

Data models play a crucial role in comprehending and shaping databases, acting as a vital link between real-world entities and the actual storage of data within the database.

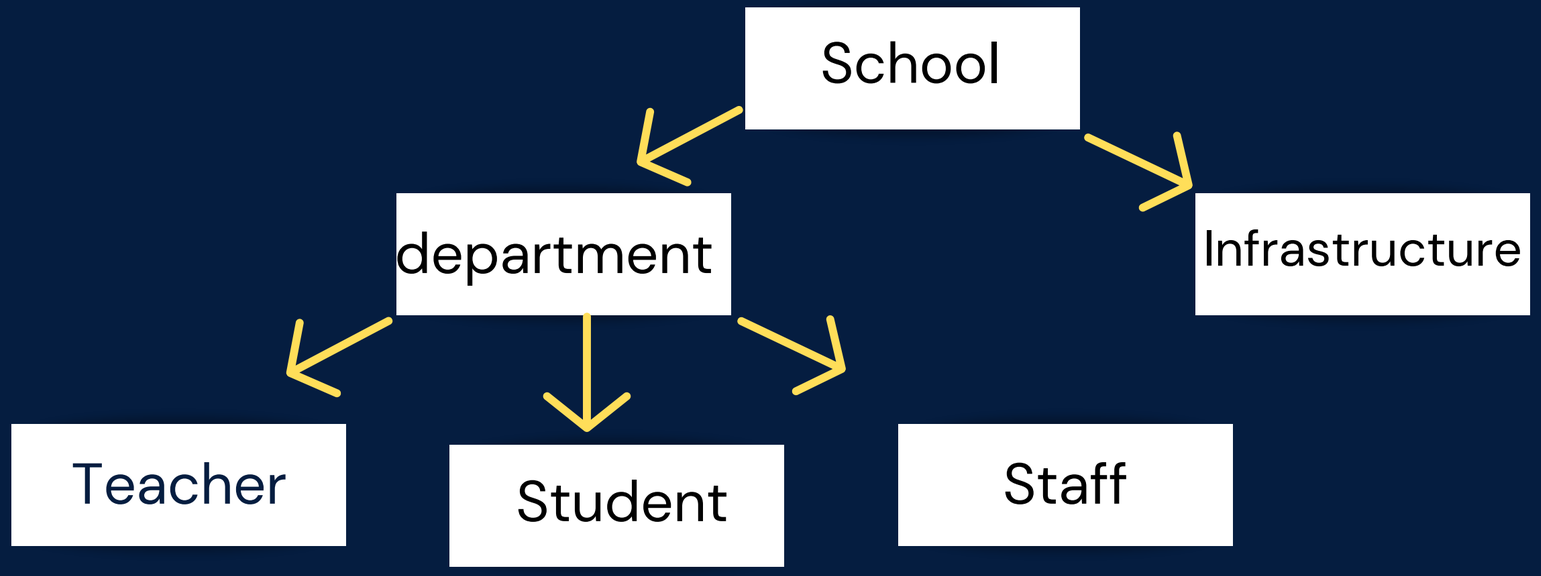
DATA MODEL

Types of Data Model

- Hierarchical Data Model
- Network Data Model
- Relational Data Model
- Entity-Relationship Model (ER Model)
- Object-Oriented Data Model
- NoSQL Data Models

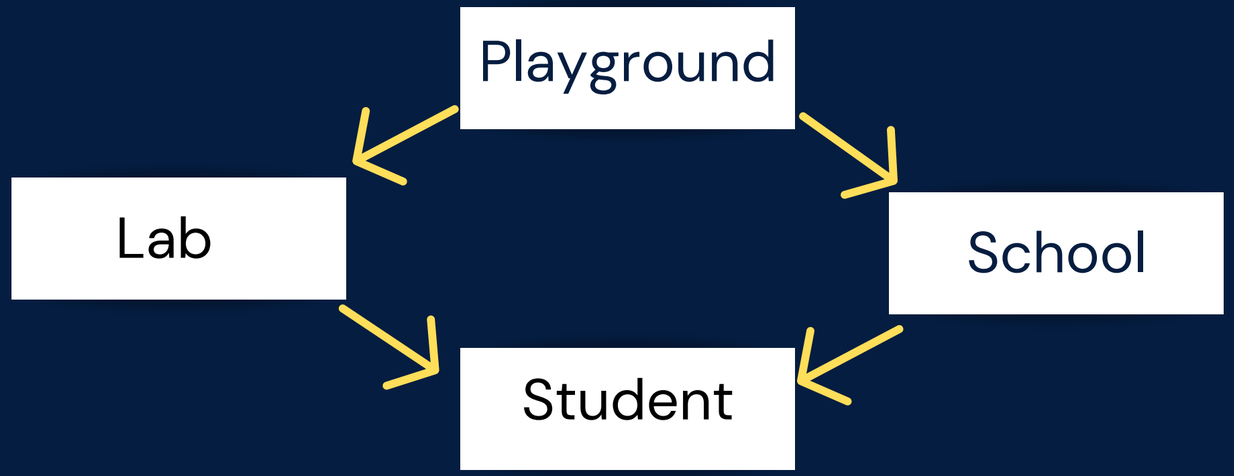
TYPES OF DATA MODEL

- **Hierarchical Data Model:** This model portrays data in a manner resembling a tree structure, where each record maintains a parent-child relationship. Its primary application lies in older database systems.



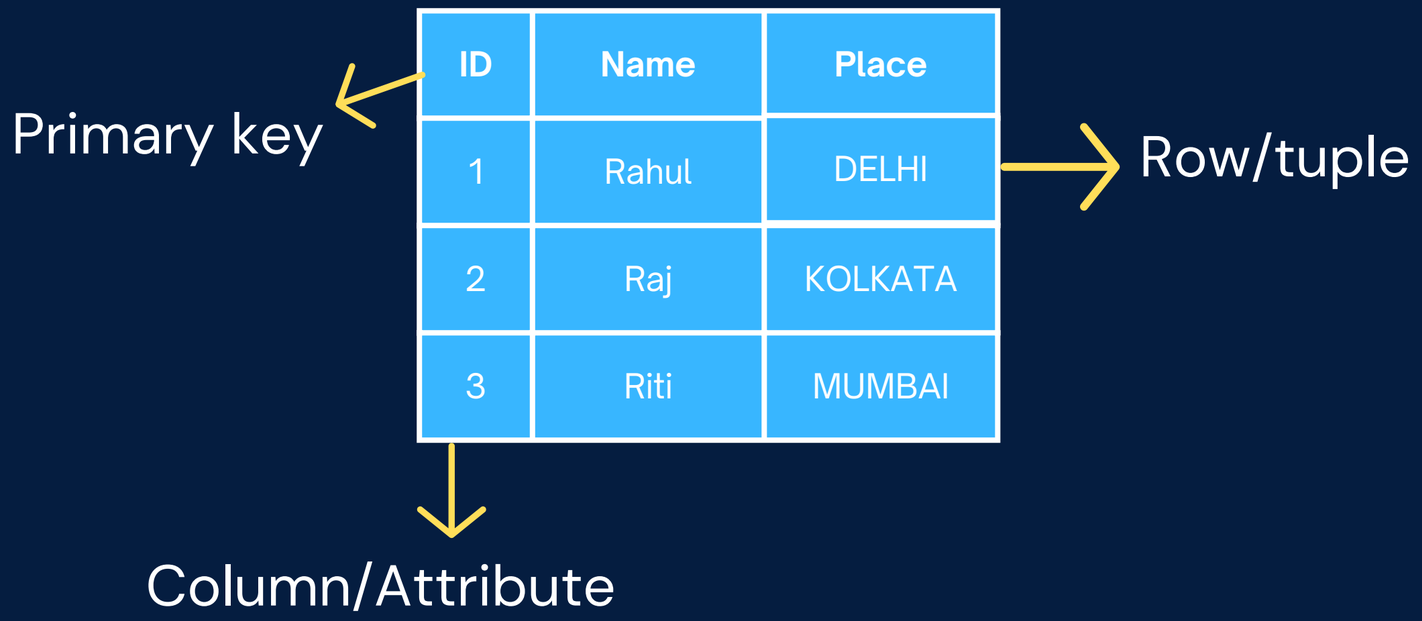
TYPES OF DATA MODEL

- **Network Data Model**: This model shares similarities with the hierarchical approach, permitting records to hold multiple parent-child relationships. It adopts a structure akin to a graph, offering more flexibility compared to the hierarchical model.



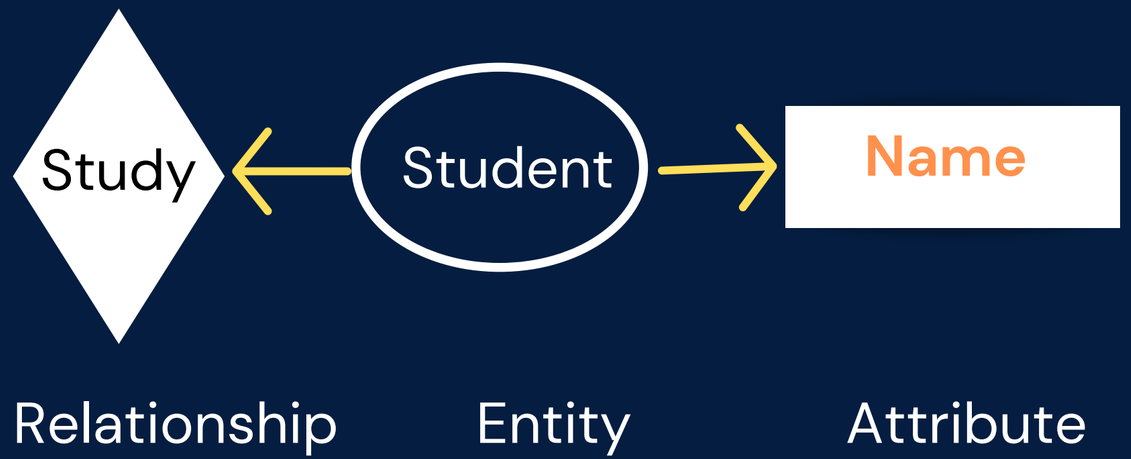
TYPES OF DATA MODEL

- **Relational Data Model:** Organizing data into tables (known as relations) consisting of rows and columns characterizes the relational model. It stands as the most prevalent data model, rooted in the principles of set theory, and relies on Structured Query Language (SQL) for data manipulation.



TYPES OF DATA MODEL

- **Entity-Relationship Model (ER Model):** Utilized for crafting relational databases, the ER model represents data through entities (objects), attributes (entity properties), and relationships connecting these entities.



TYPES OF DATA MODEL

- **Object-Oriented Data Model:** Extending the principles of object-oriented programming into the database domain, this model depicts data as objects complete with attributes and methods, fostering support for inheritance and encapsulation.

- **NoSQL Data Models:** NoSQL databases encompass a diverse array of data models, such as document-oriented (e.g., MongoDB), key-value (e.g., Redis), column-family (e.g., Cassandra), and graph (e.g., Neo4j). These models are designed to offer scalability and flexibility when handling extensive volumes of unstructured or semi-structured data.