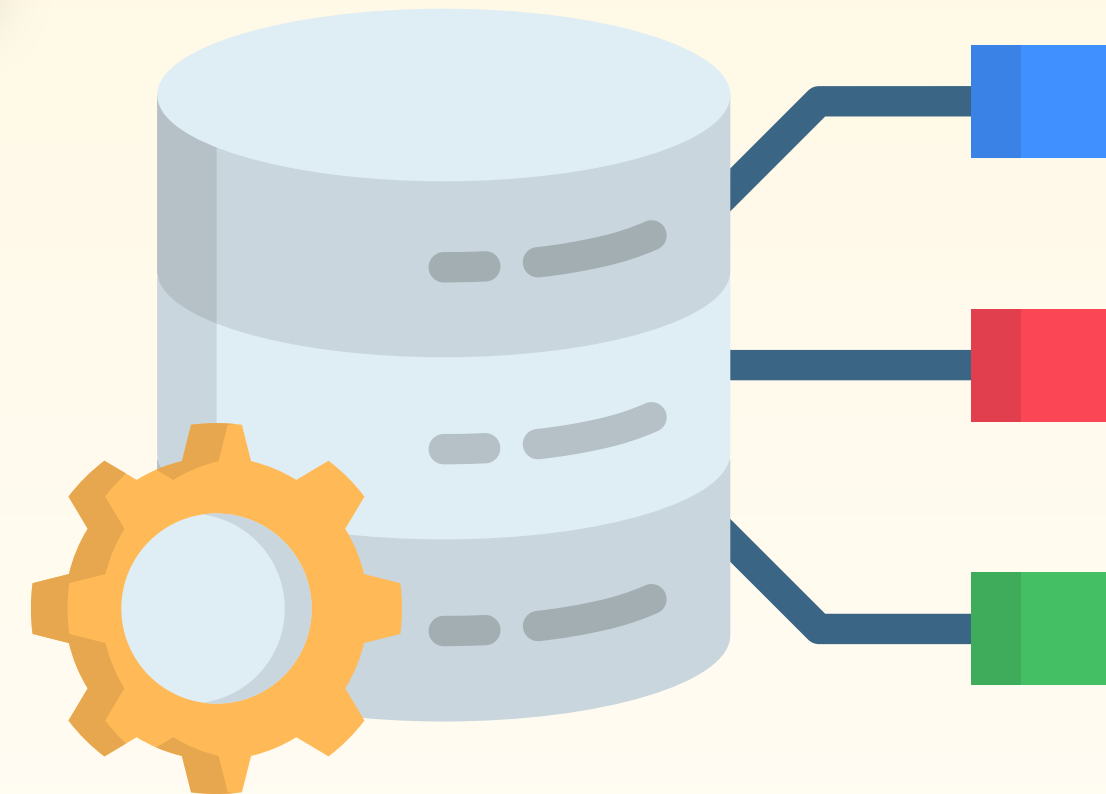
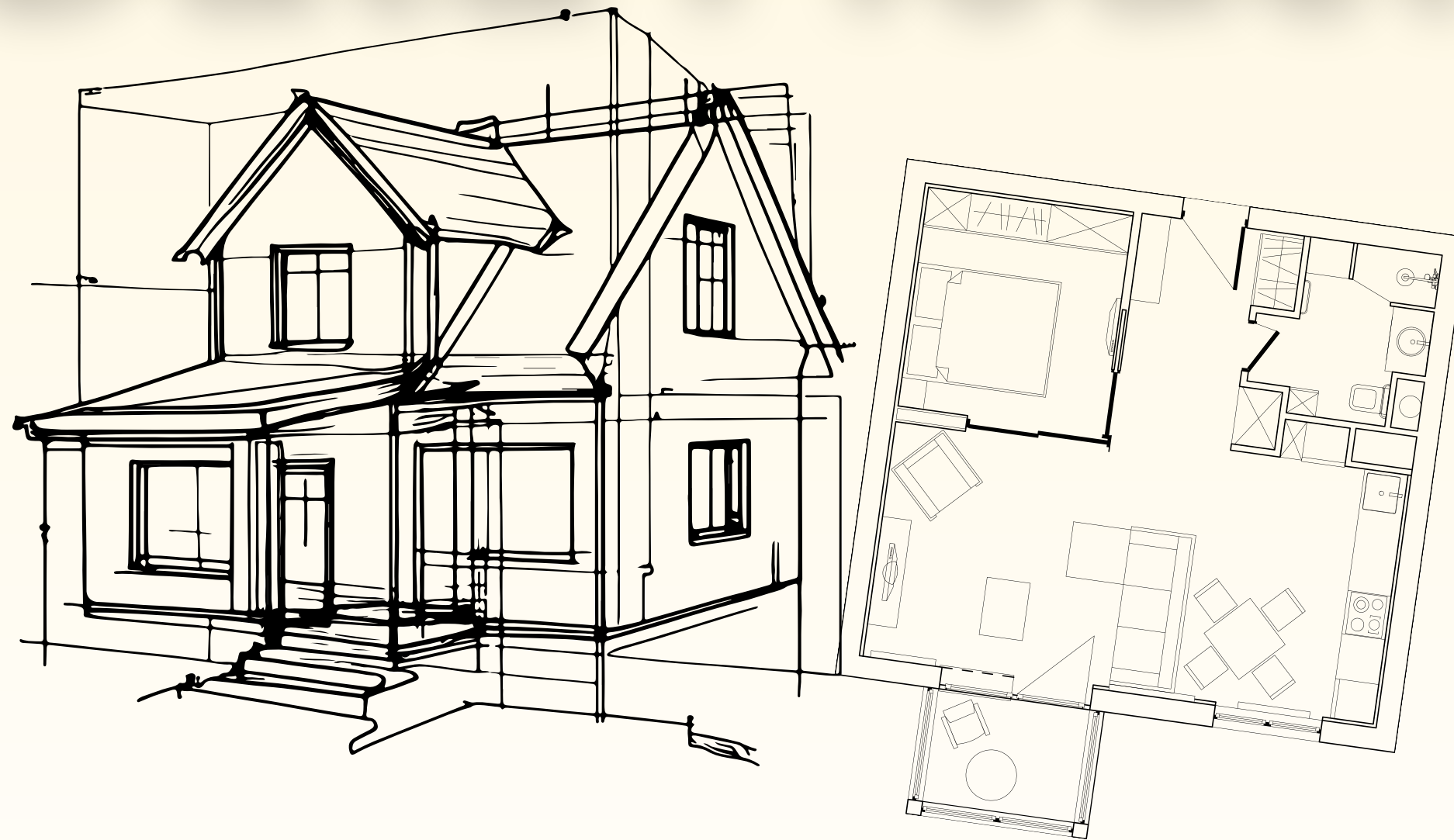




Data Model



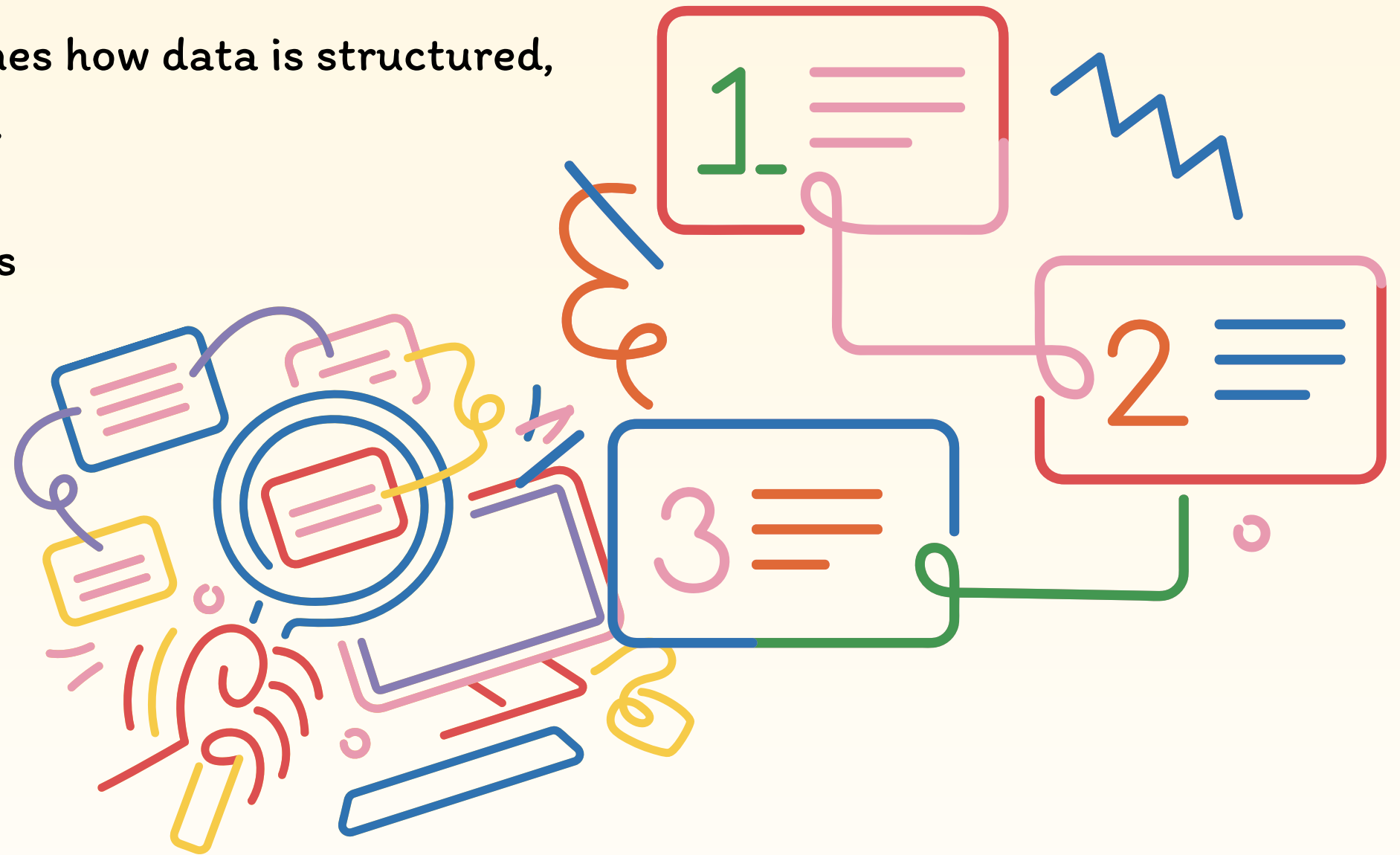


What is a Data Model?

A data model is a framework that defines how data is structured, stored, and managed in a database system.

Main purposes:

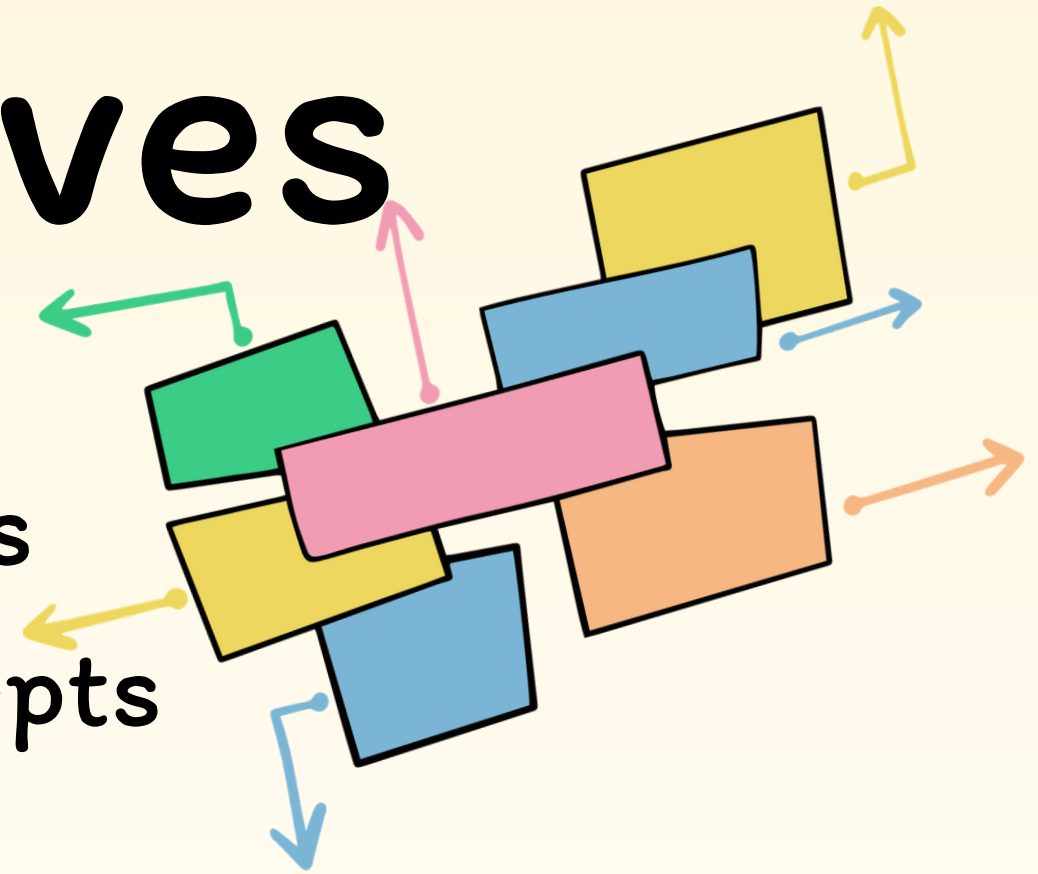
- Represent real-world data structures
- Define relationships between data
- Establish rules and constraints
- Improve database design efficiency





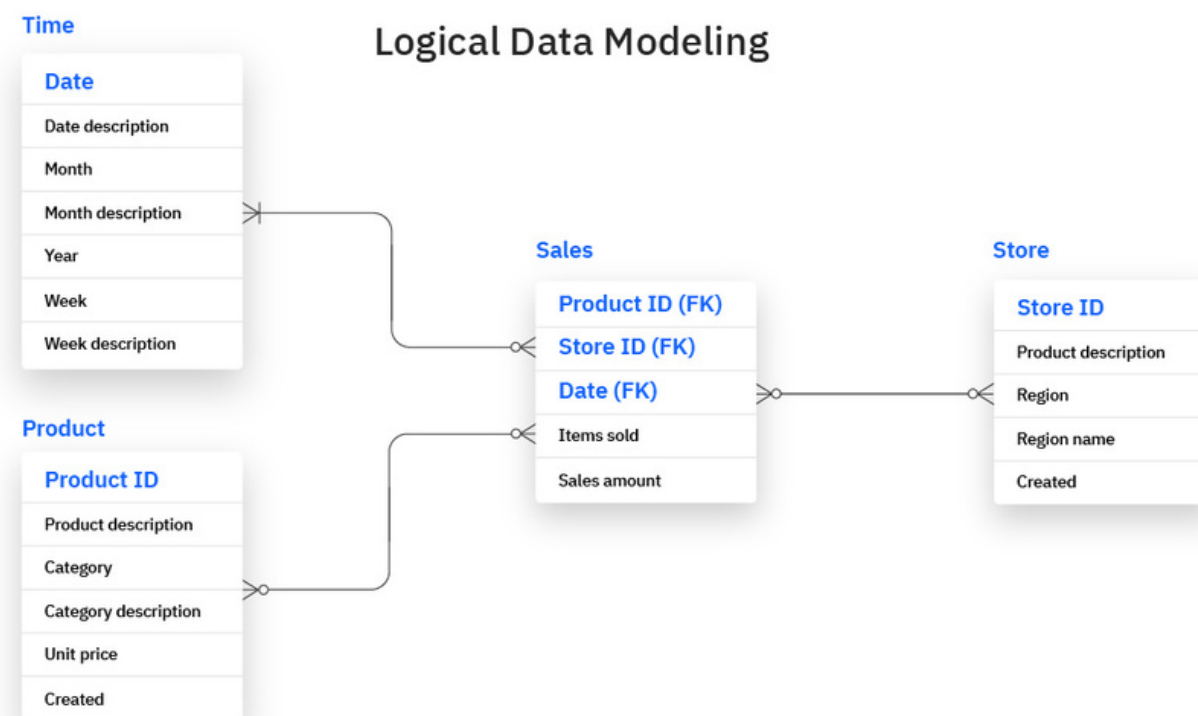
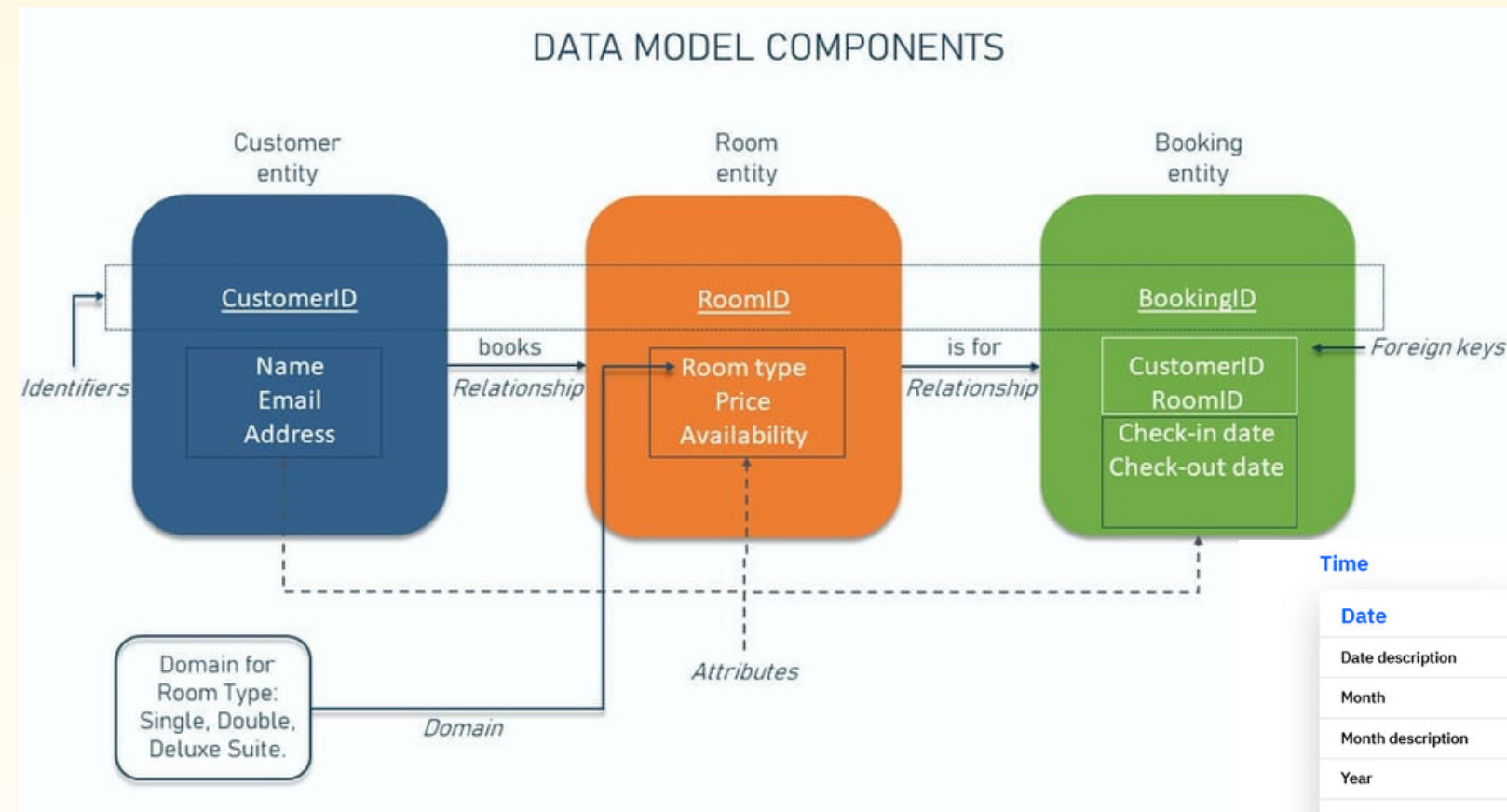
Learning Objectives

- Explain the concept of data models
- Identify different types of data models
- Understand relational database concepts
- Design simple database structures





Types of Data Models





Importance of Data Models

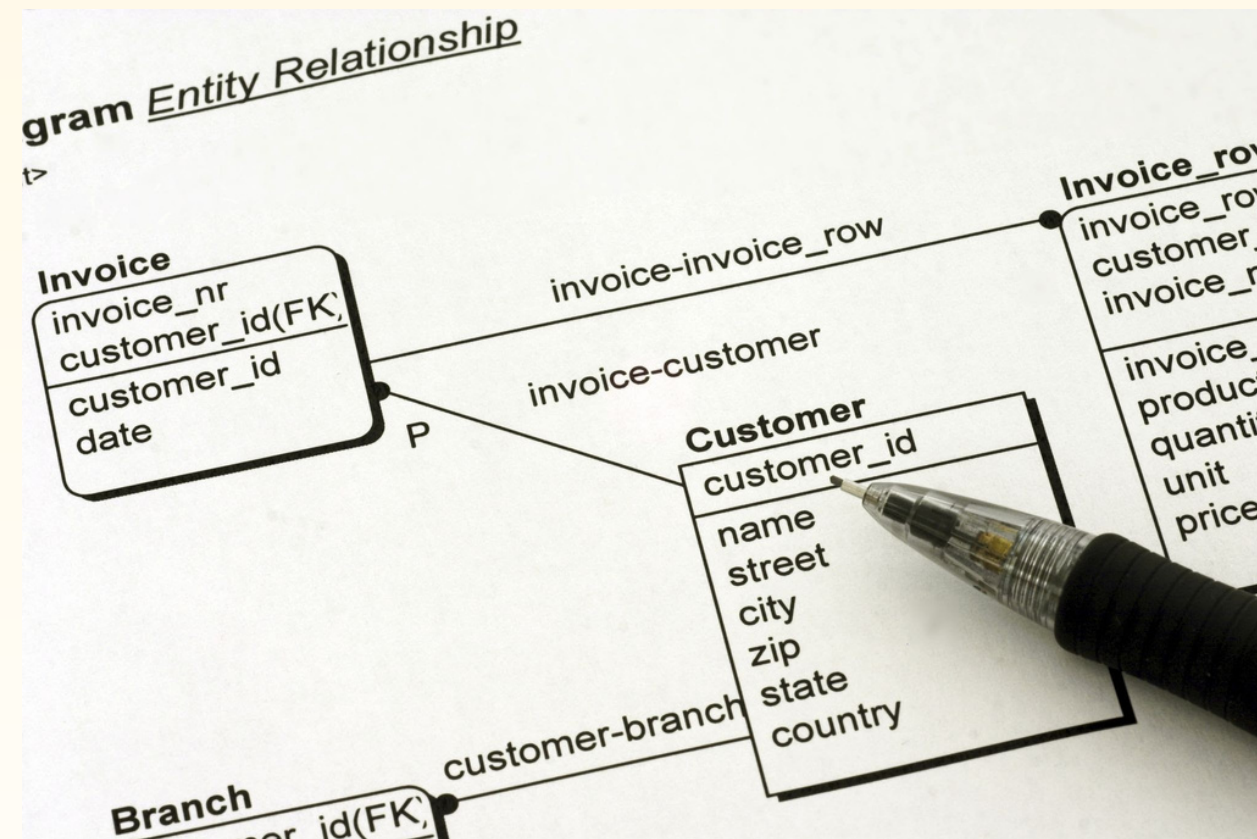
Data models are important because they:

- Provide a clear data structure
- Reduce data redundancy
- Improve database consistency
- Support efficient data retrieval



Types of Data Models

Conceptual Data Model

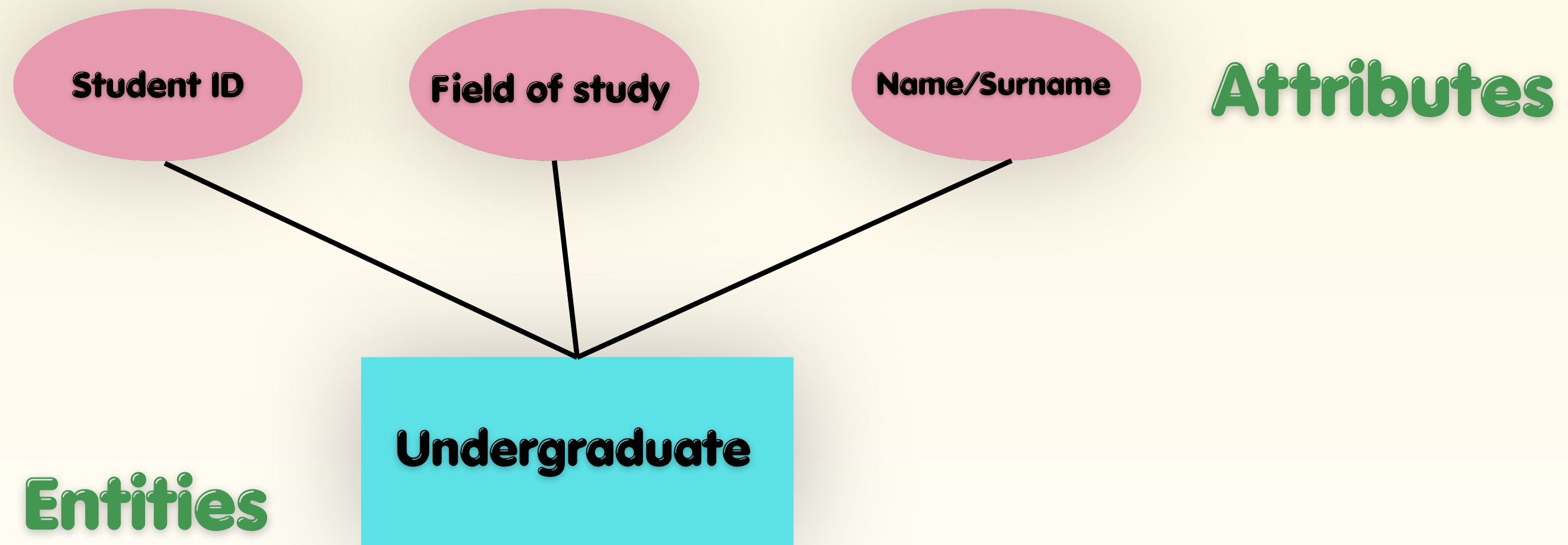


Implementation Data Model





Data Model Basic Building Blocks





Relationships

One-to-One Relationship(1:1)

Employee — ID Card

One-to-Many Relationship(1:M)

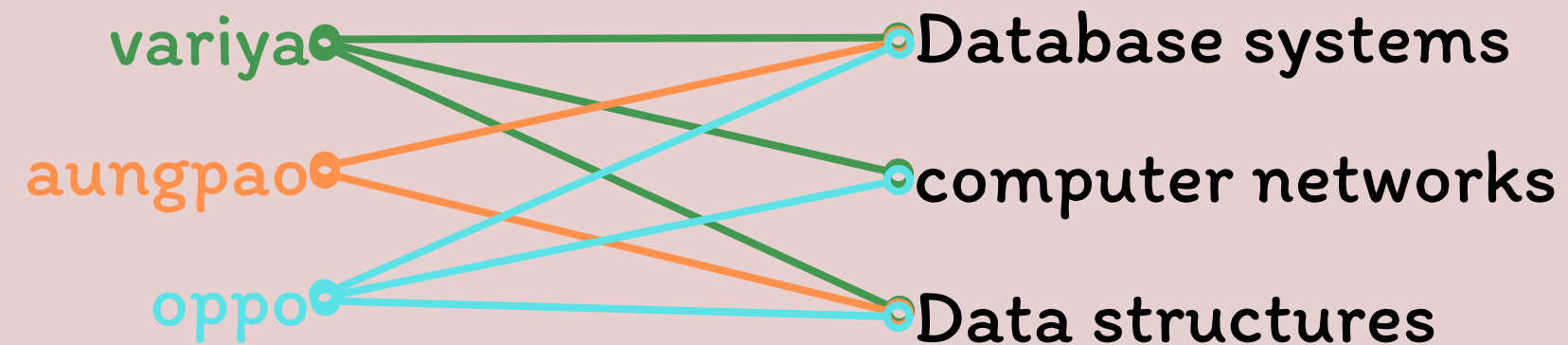
Faculty of Science
and Technology

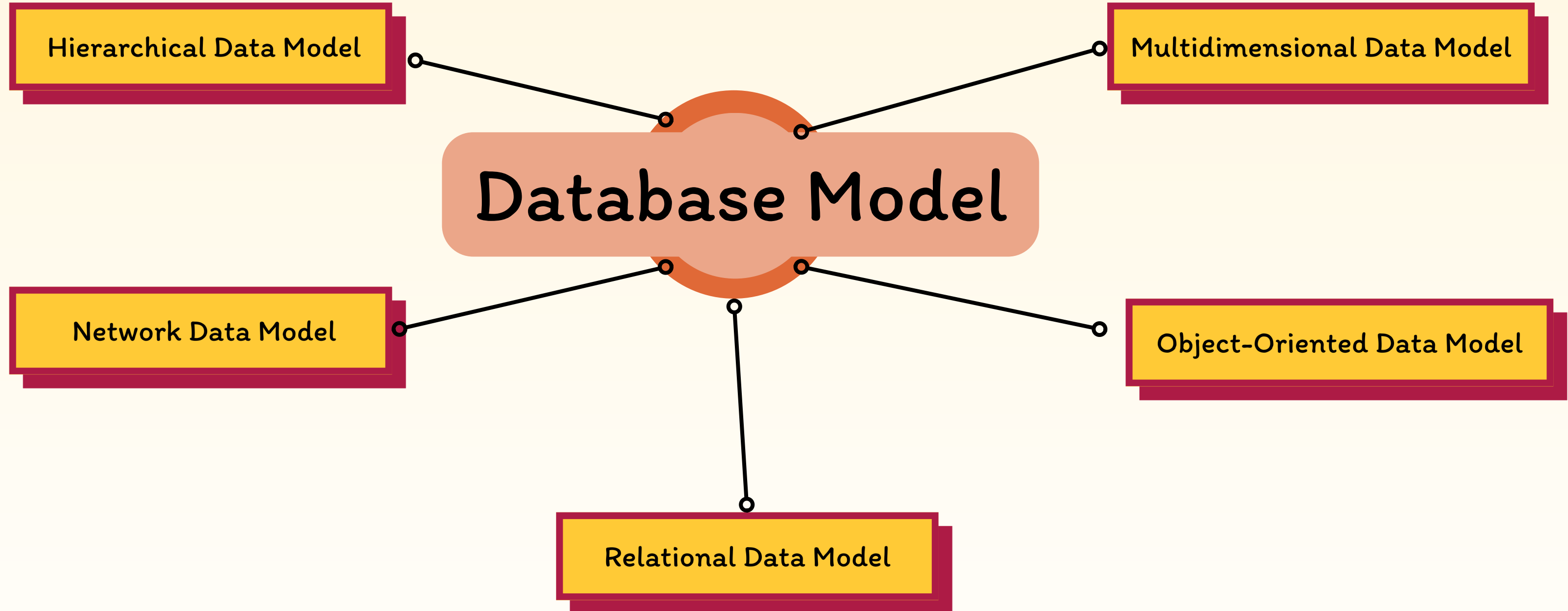
Industrial Education

Computer Engineering

Computer Education

Many-to-Many Relationship(M:N)

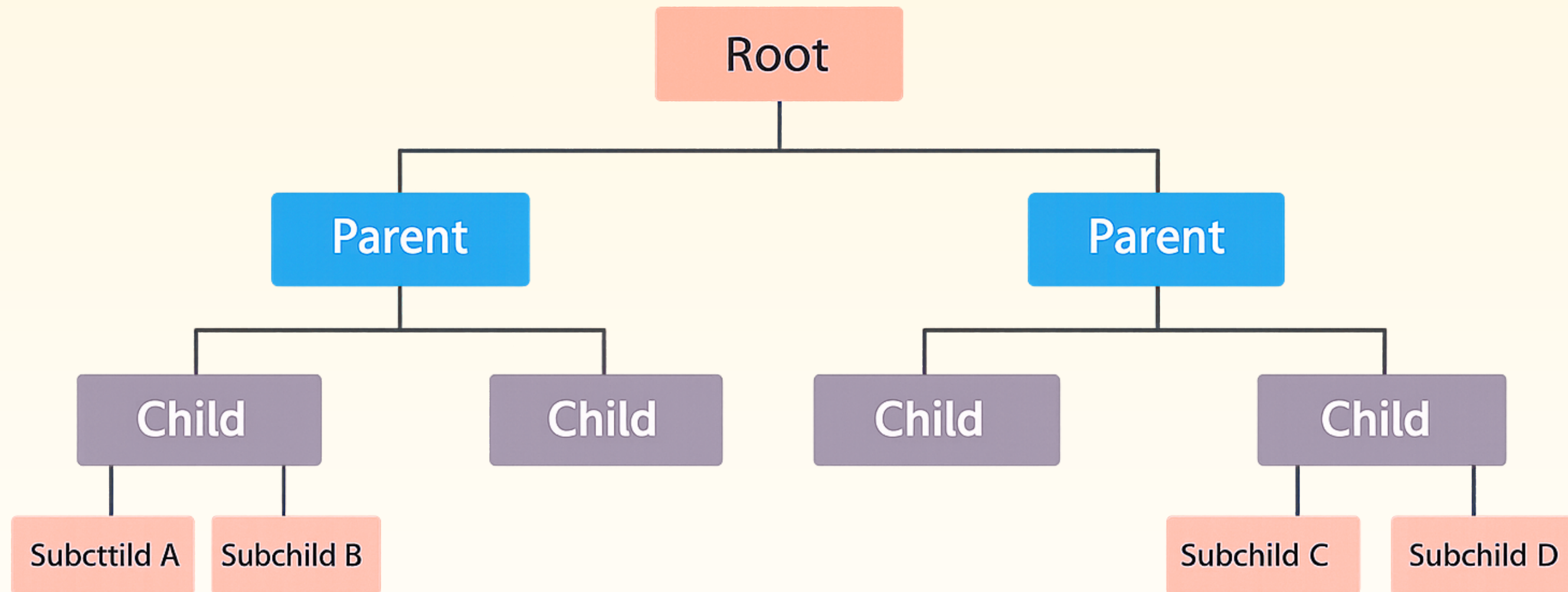






Database Model

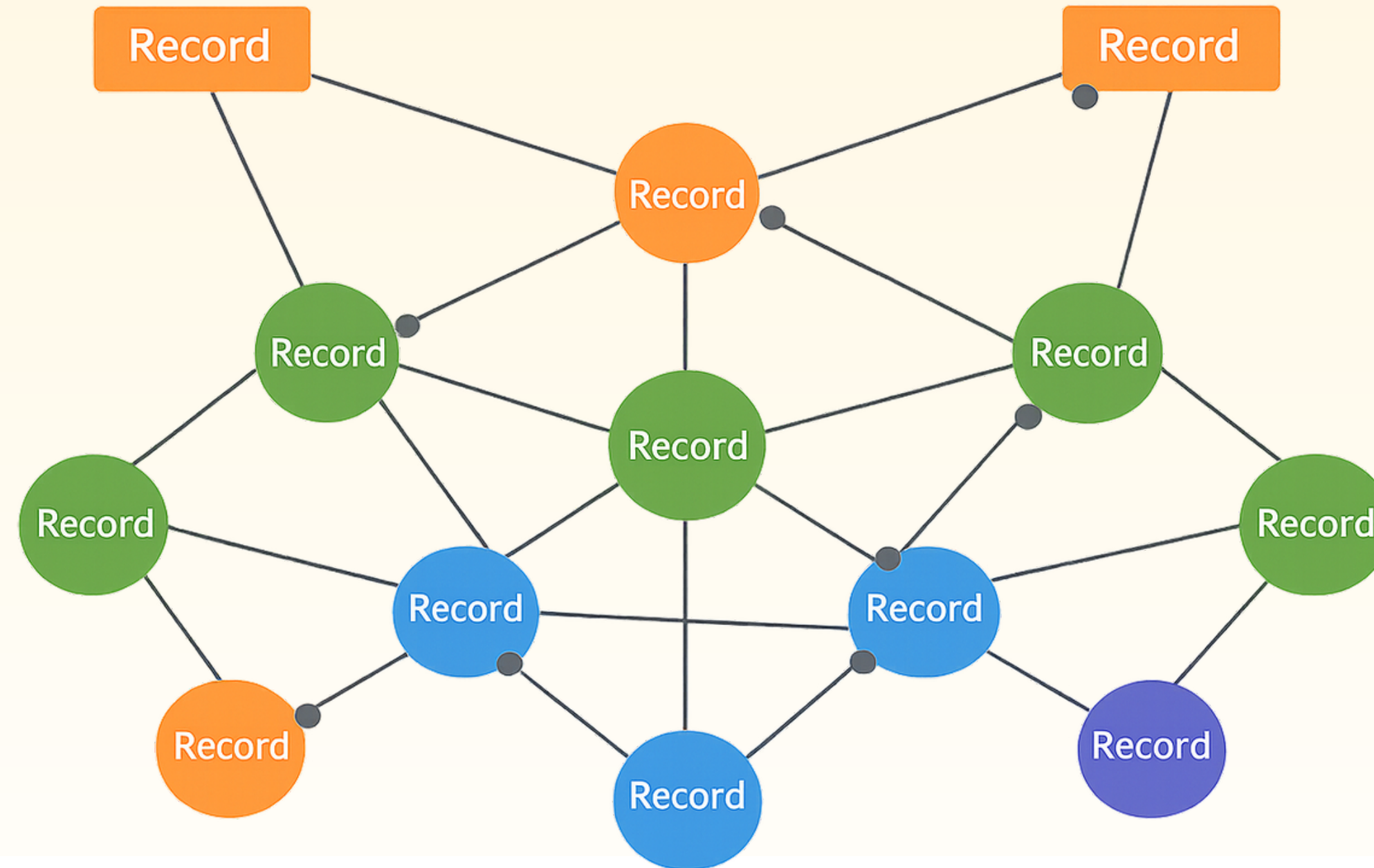
Hierarchical Data Model





Database Model

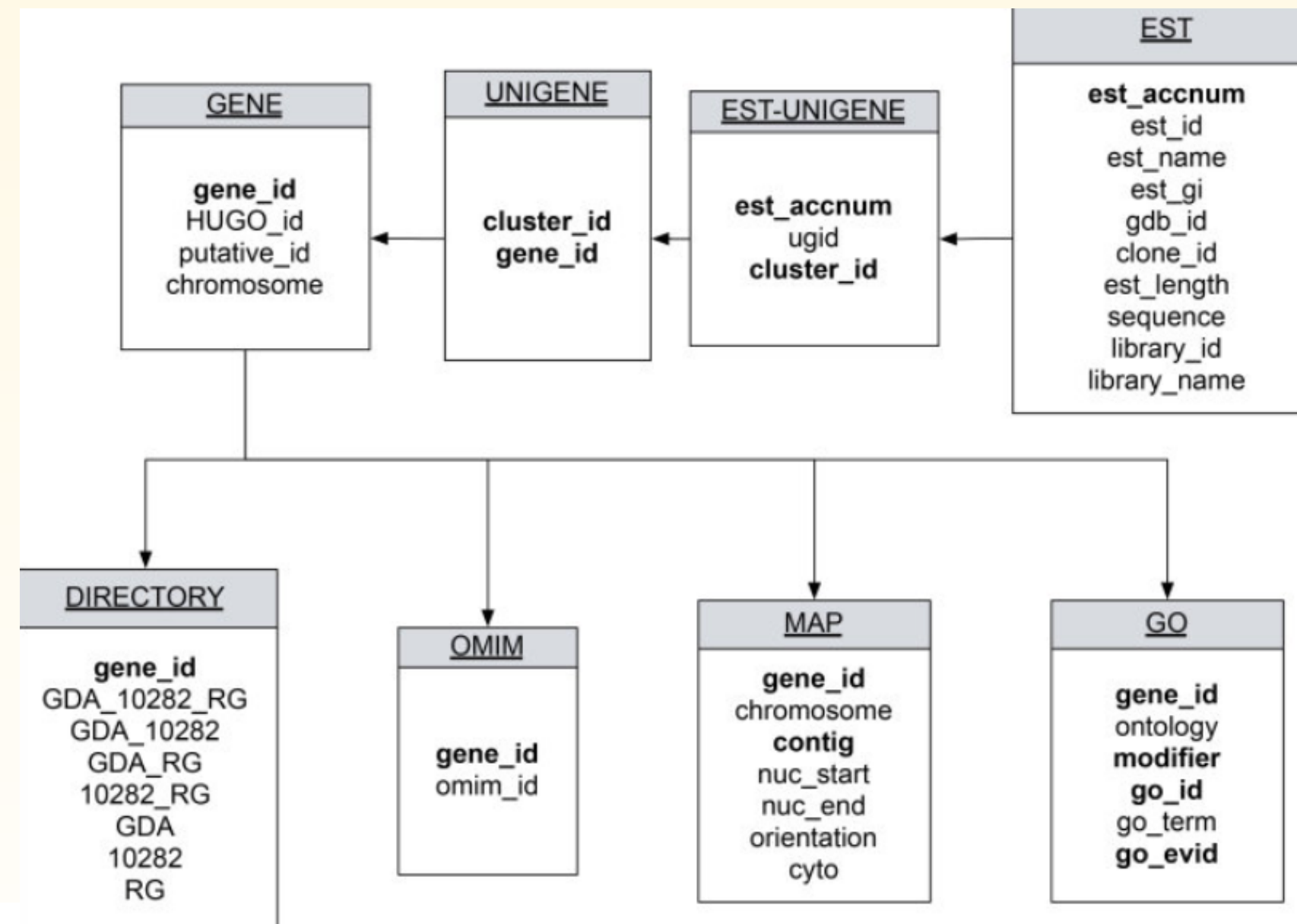
Network Data Model





Database Model

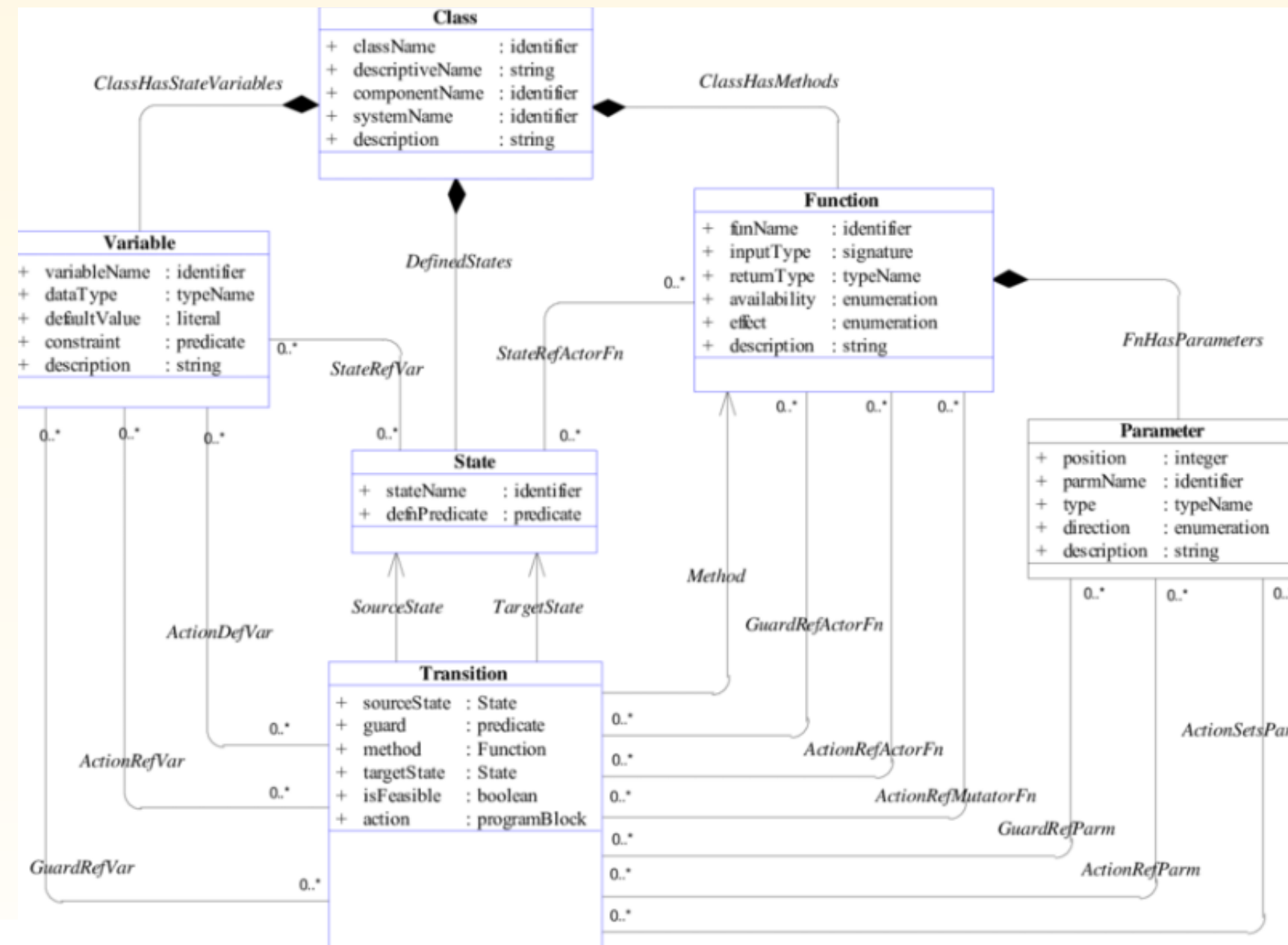
Relational Data Model





Database Model

Object-Oriented Data Model





Database Model

Multidimensional Data Model

