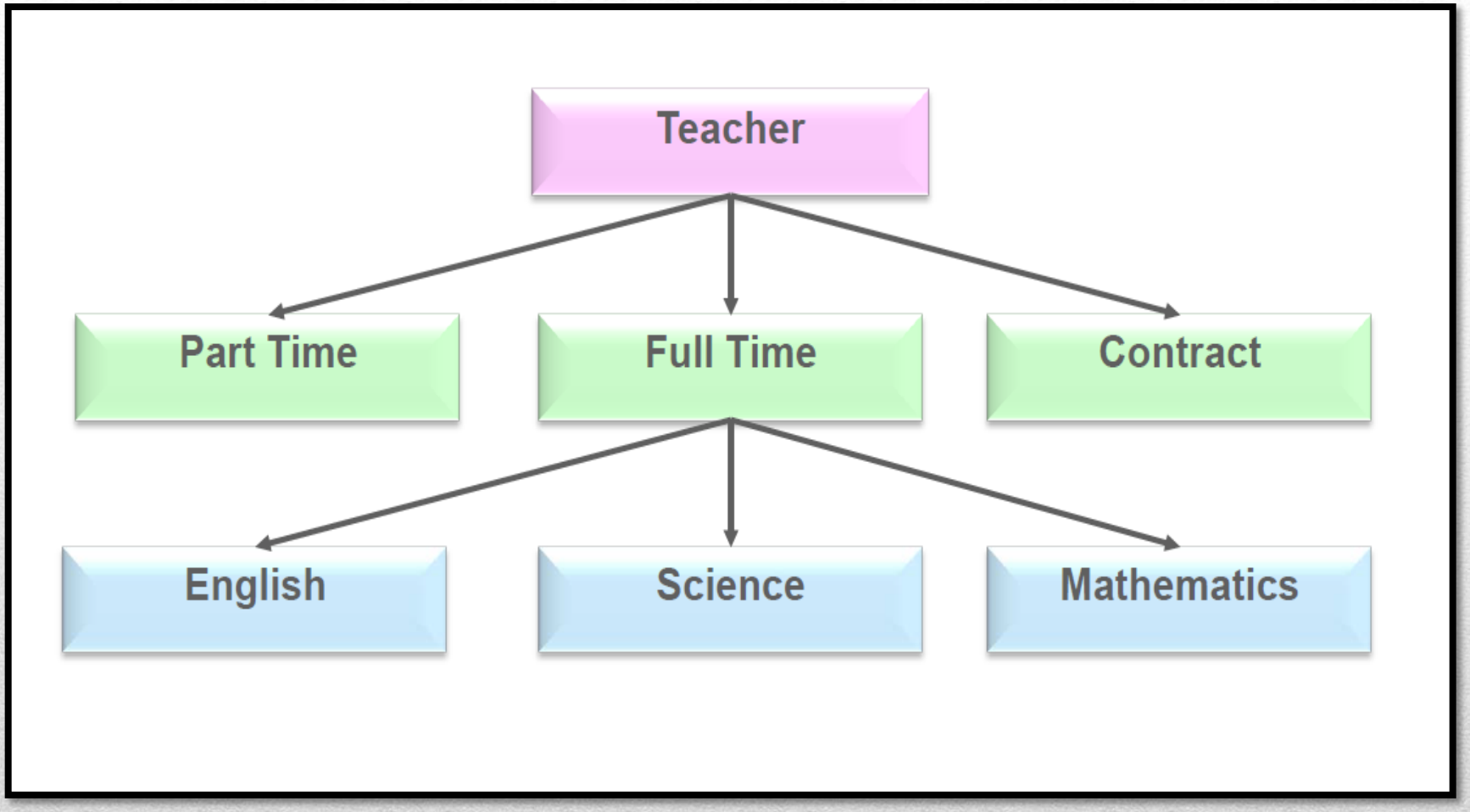
Data Model

A set of concepts to describe the structure of a database and certain constrain that the database should obey.

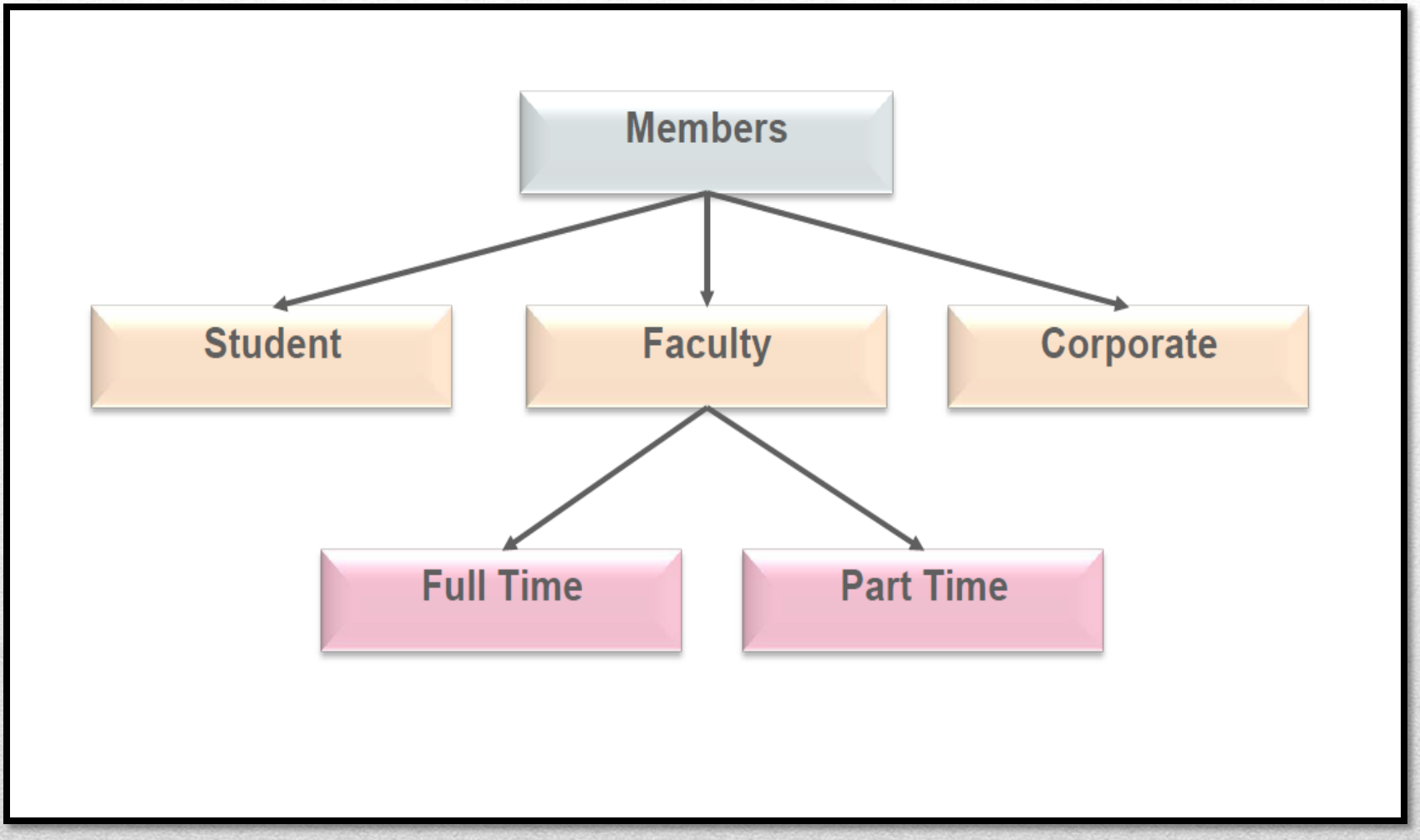
- Types of data model:
  - Hierarchy
  - Network
  - Relational
  - Object : Entity Relationship
  - Object-relational

EXAMPLE



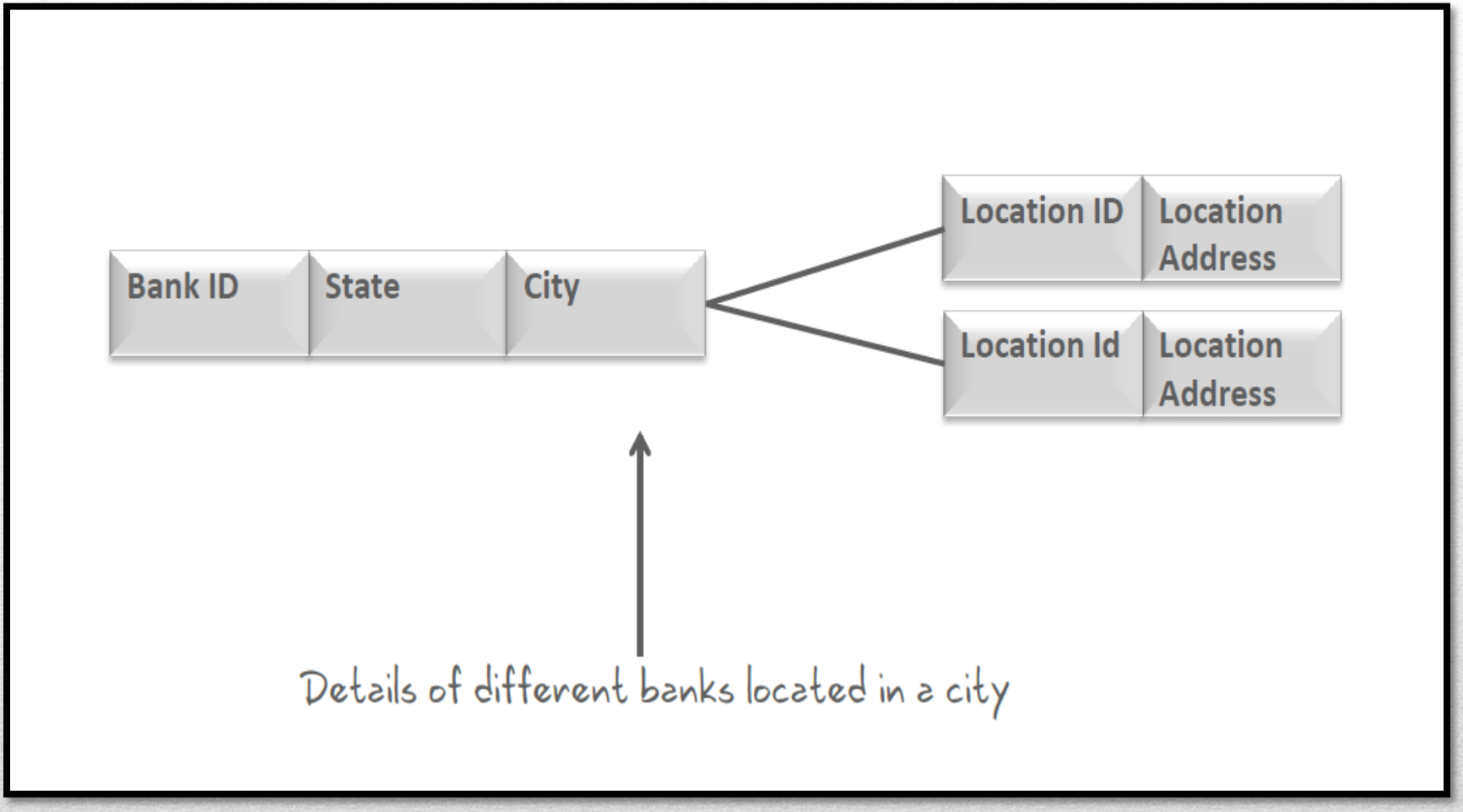
Data Model : Hierarchy

EXAMPLE



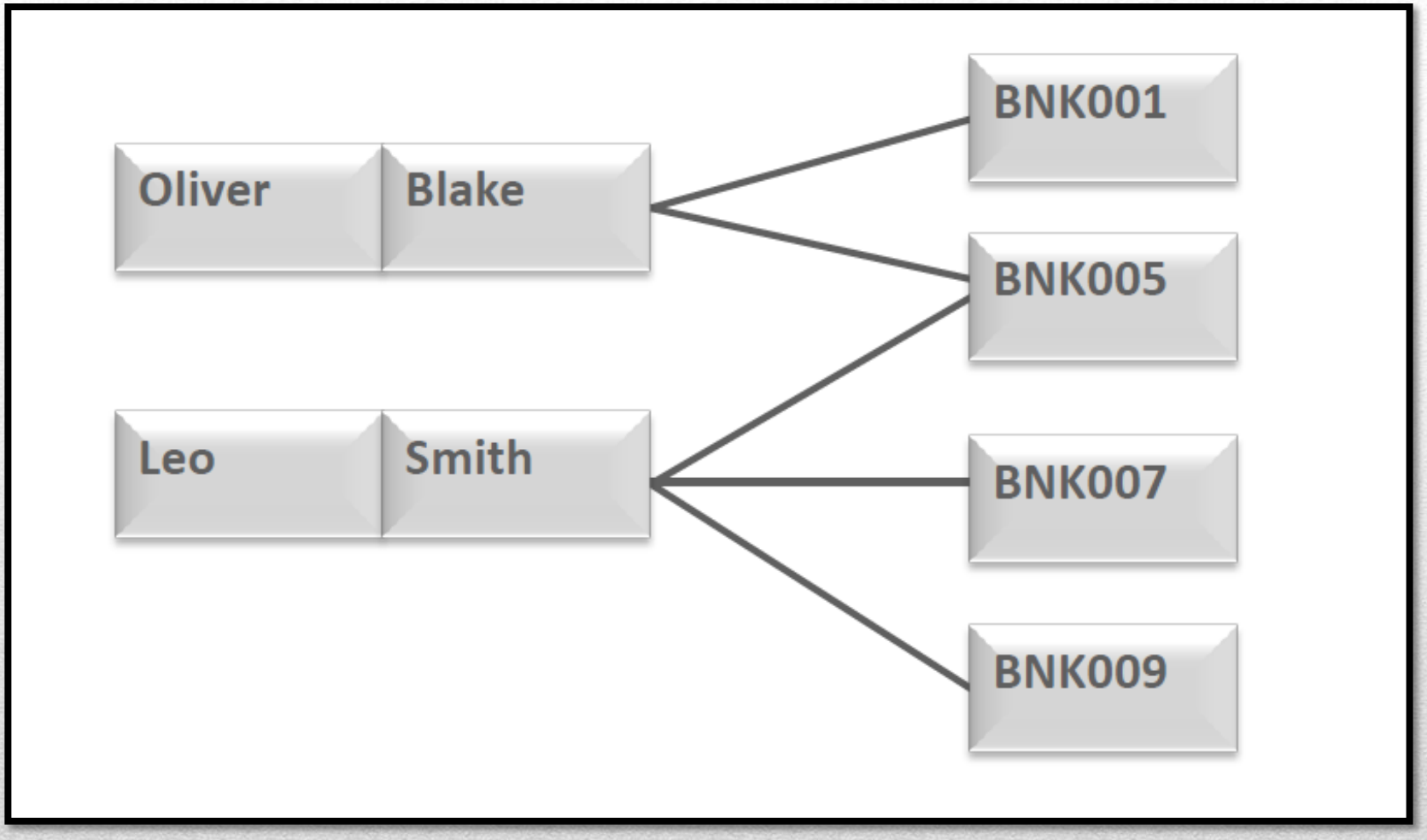
Data Model : Hierarchy

EXAMPLE



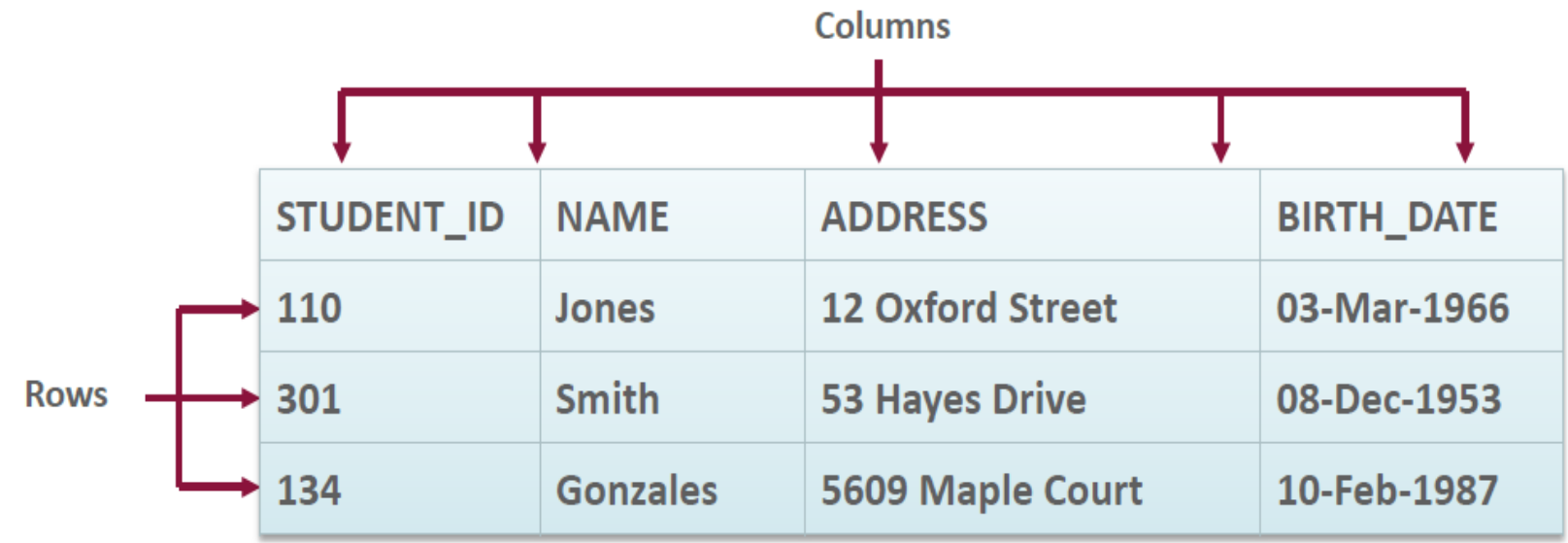
Data Model : Network

EXAMPLE



Data Model : Network

EXAMPLE



Data Model : Relational

EXAMPLE

EMPLOYEE_ID	EMPLOYEE_NAME	HIRE_DATE	DEPARTMENT_ID
E0001	Jeff Covey	10-Jan-2003	10
E0002	William Jake	23-Nov-2006	20
E0003	Mary Schmidt	14-Jun-2007	30

Data Model : Relational

EXAMPLE

EMPLOYEE_ID	EMPLOYEE_NAME	HIRE_DATE	DEPARTMENT_ID
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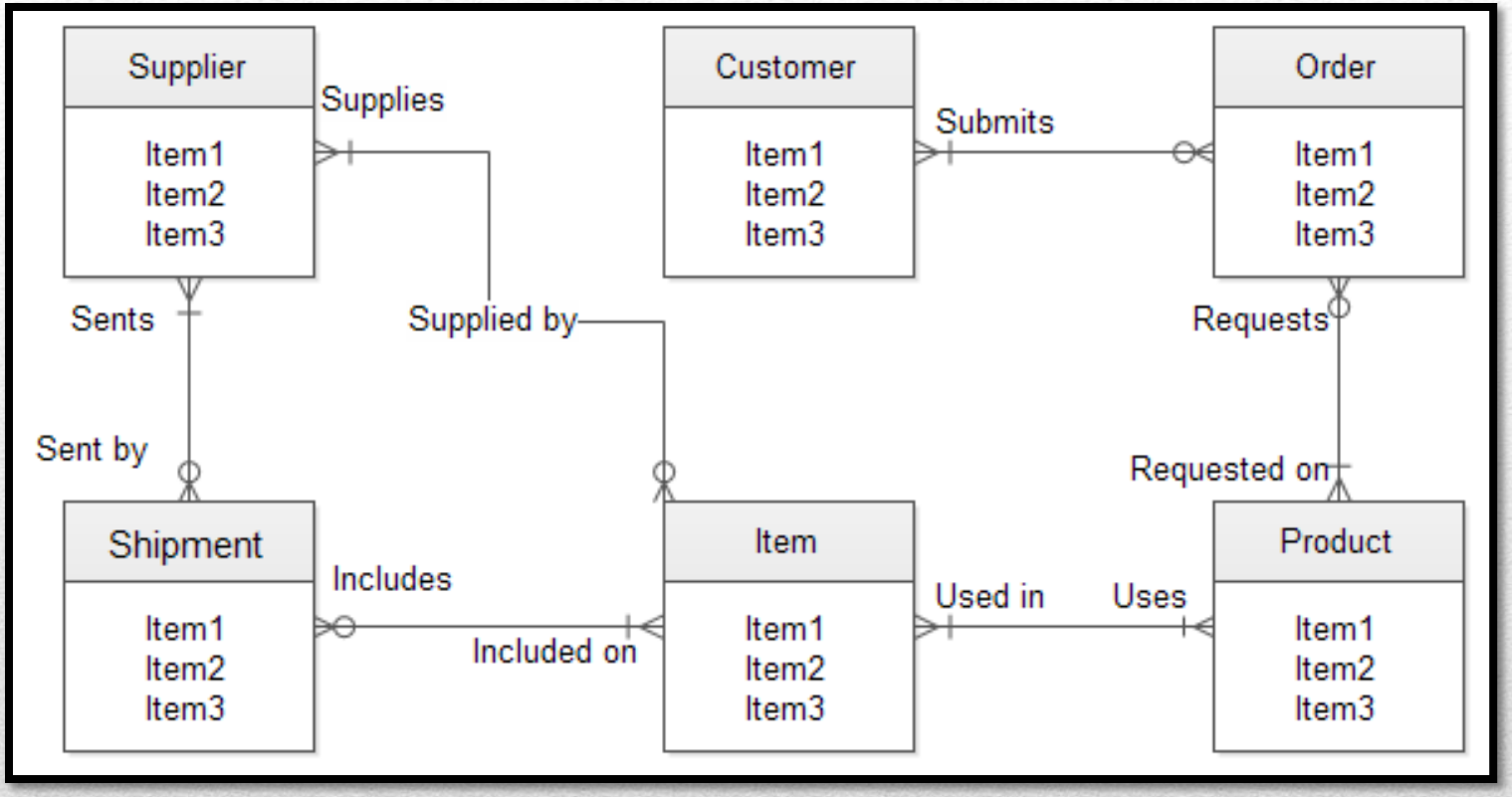
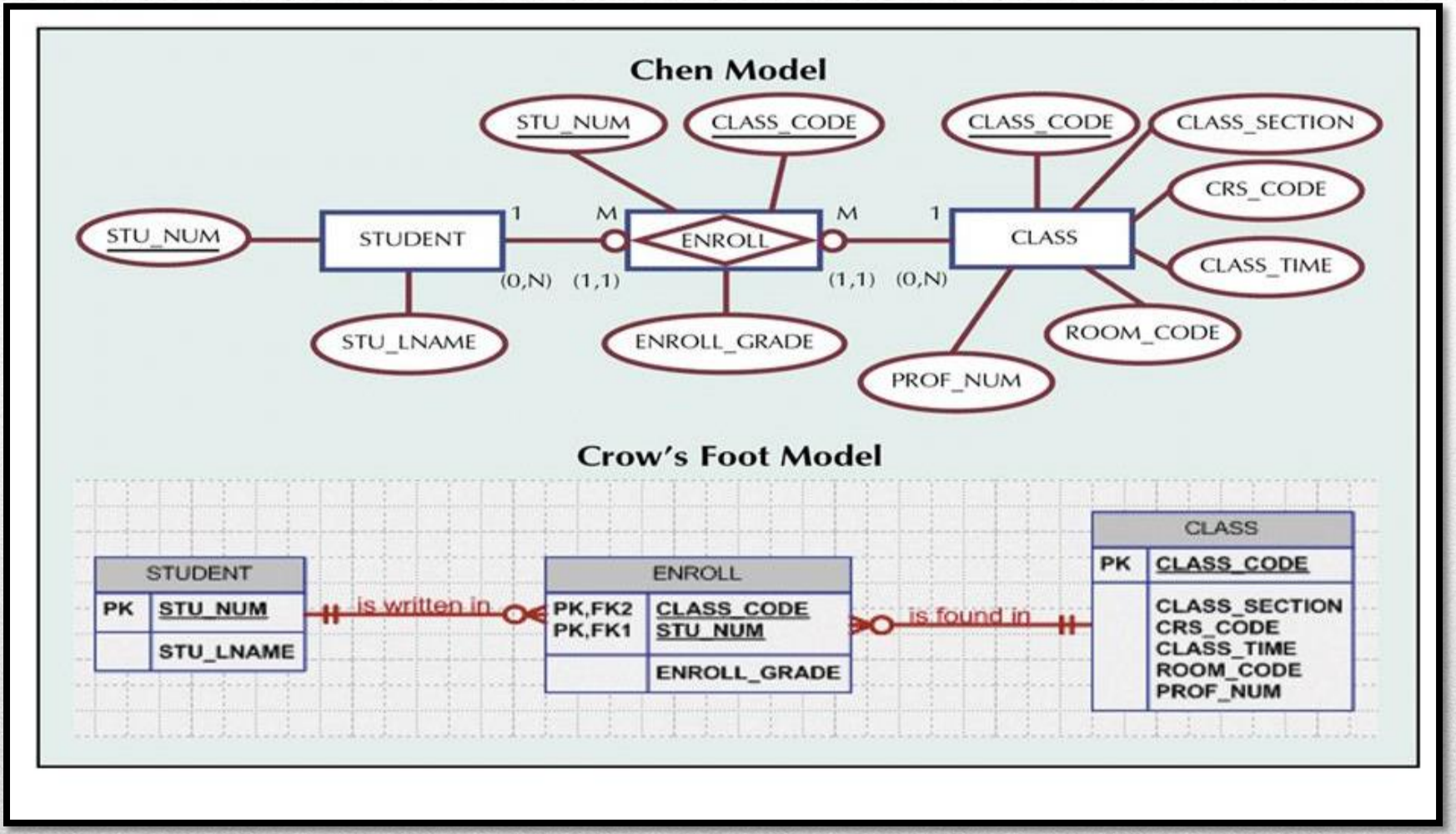
Data Model : Relational

EXAMPLE



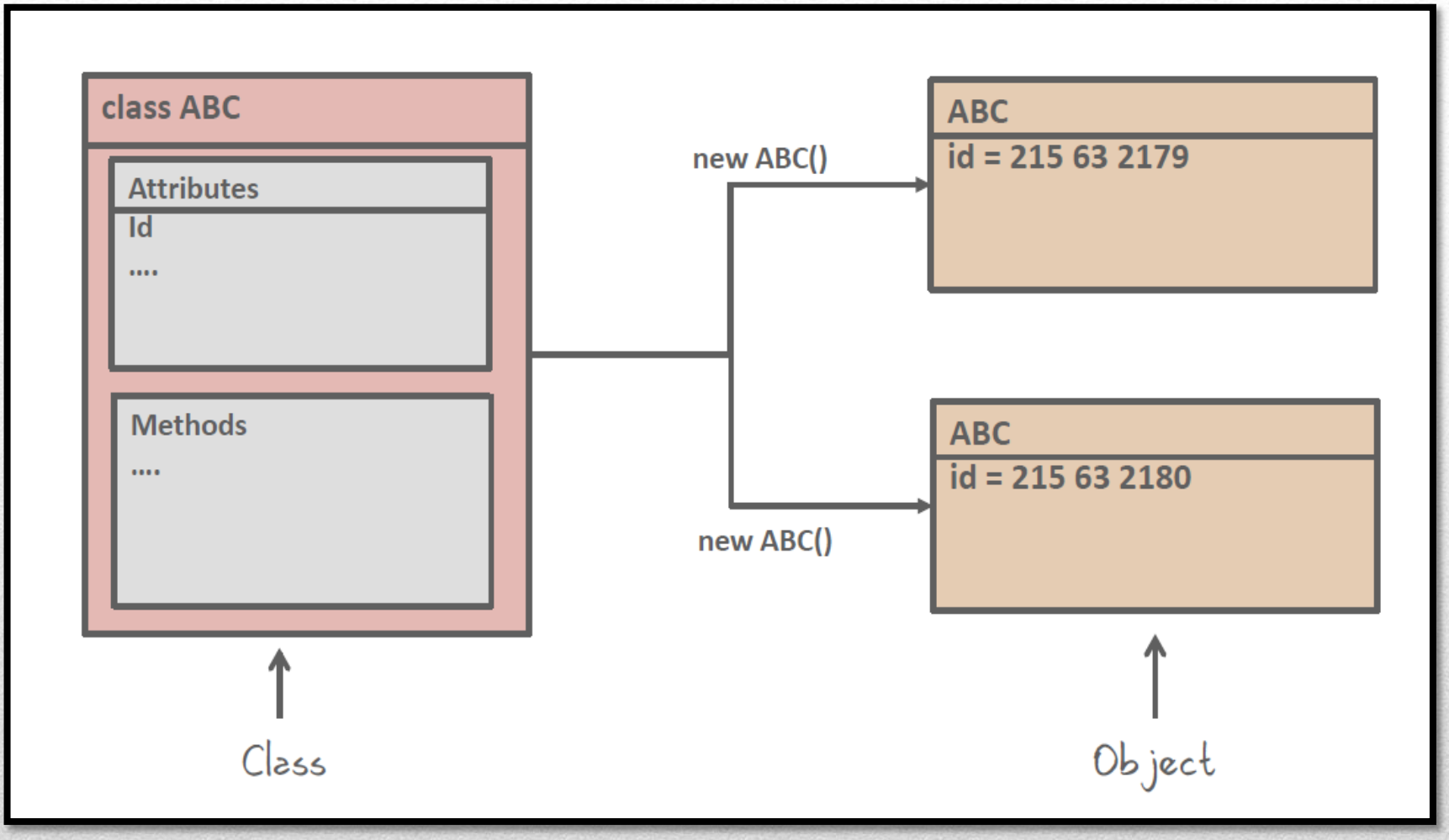
Data Model : Entity Relationship

EXAMPLE



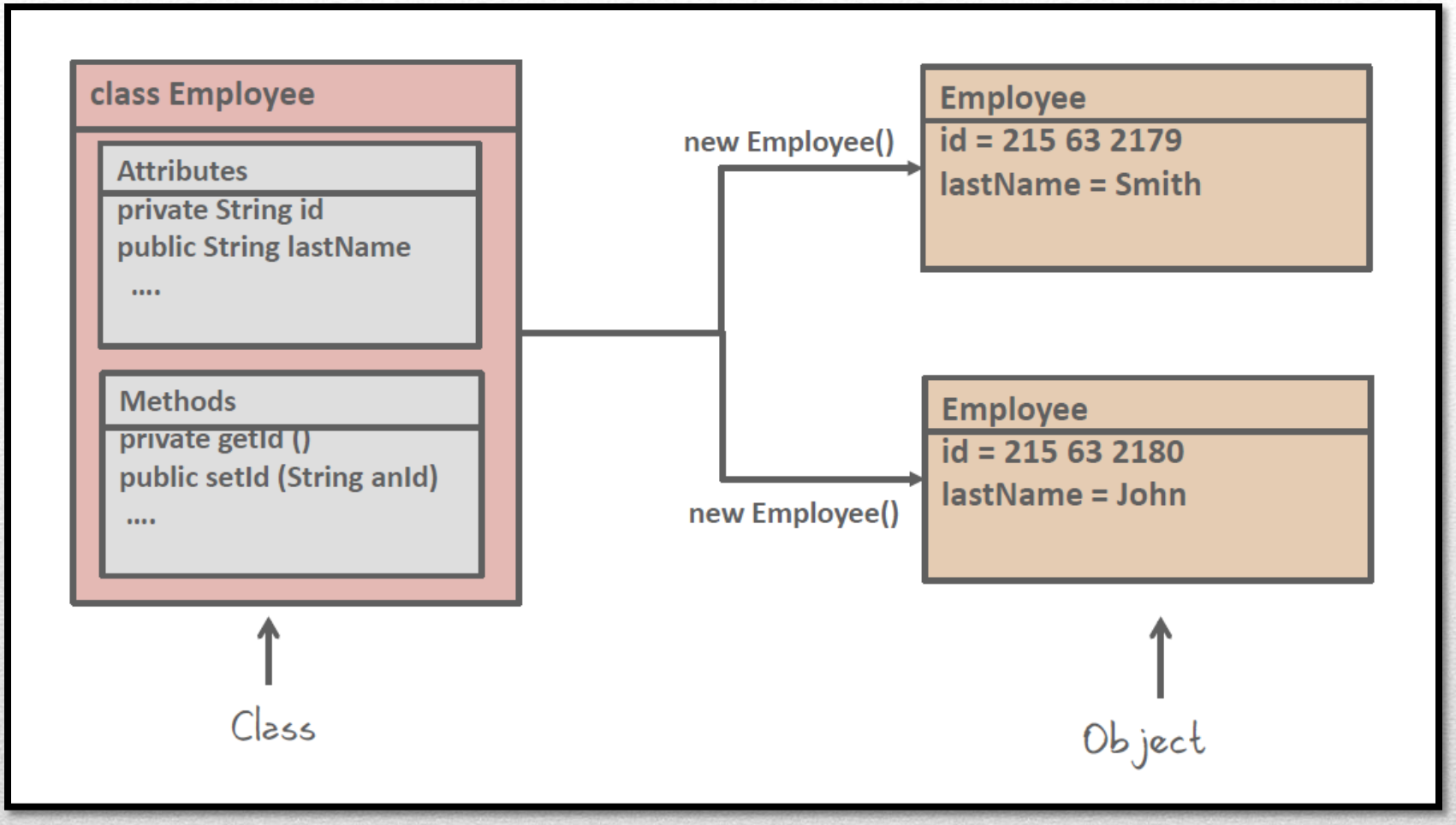
Data Model : Entity Relationship

EXAMPLE

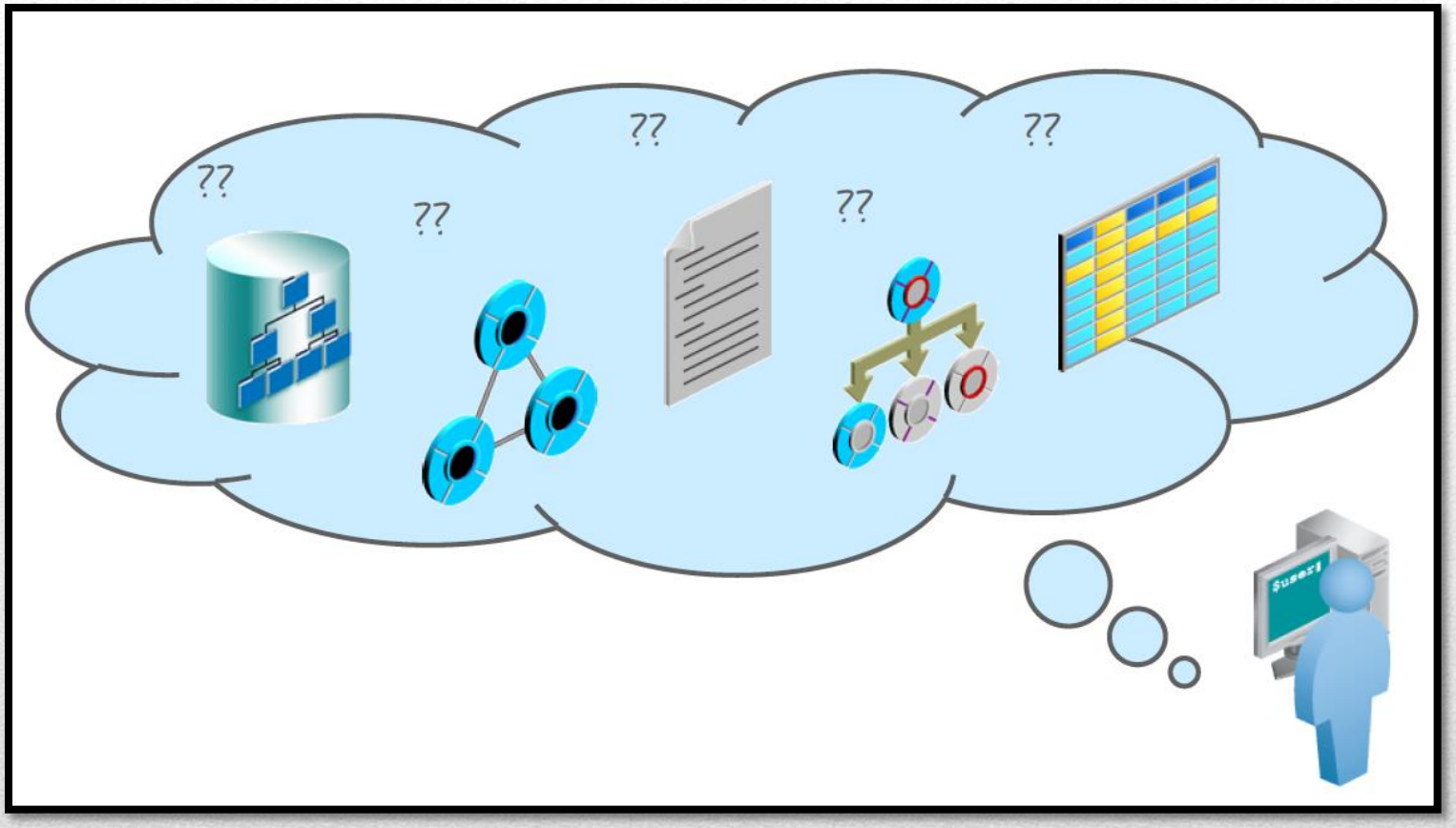


Data Model : Object Oriented

EXAMPLE



Data Model : Object Oriented



Recall: Type of Database Models

Number of users

- **Single User**

support only one user at one time

- **Multi User**

support multiple use at one time

Number of sites

Centralized

- Data is stored at a single computer site.
- DBMS can support multiple user, but the DBMS and the database reside totally at a single computer site.

Distributed

- Can have many the actual database and DBMS software distributed over many sites, connected by a computer network.

Purpose

General Purpose :

- Does not include many transactions

Special Purpose:

- Require many transaction.
- When performance is primary consideration, a special purpose of DBMS can be design.
- Online Transaction Processing (OLTP) system which support large number of concurrent processing without imposing excessive delay
- Example: Airline Reservation System

Question to answer when choosing DBMS.

- Who will be using the database and what tasks will they perform?
- How often will the data be modified? Who will make these modifications?
- Who will be providing IT support for the database?
- What hardware is available? Is there a budget for purchasing additional hardware?

Question To Answer when choosing DBMS

- Who will be responsible for maintaining the data?
- Will data access be offered over the Internet? If so, what level of access should be supported?

Comparison between DBMS

DBMS	Operating System	Estimated Price	Transaction Support	Interface	Max DB size
Oracle	Window Mac Unix	$40000 - $12800	Yes	GUI SQL	Unlimited
IBM DB2	Window Mac Unix	$25000 - $800000	Yes	GUI SQL	512 TB
SQL Server	Window		Yes	GUI SQL	524258 TB
MySQL	Window Linux Mac Solaris Netware	Open Source	Yes	GUI SQL	256 TB
Microsoft Access	Window	Package with Microsoft products		GUI SQL	2G