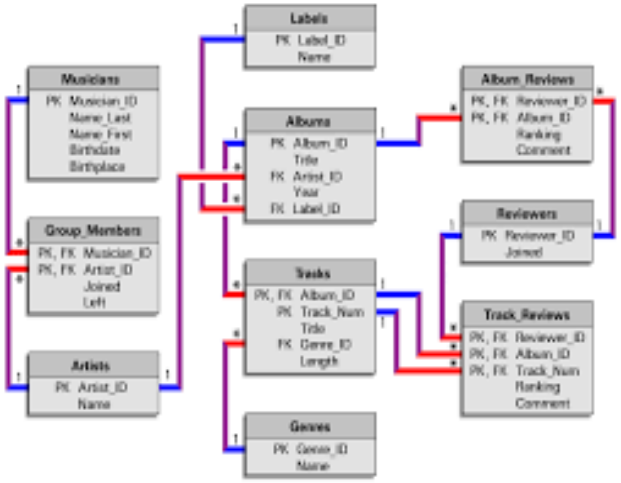
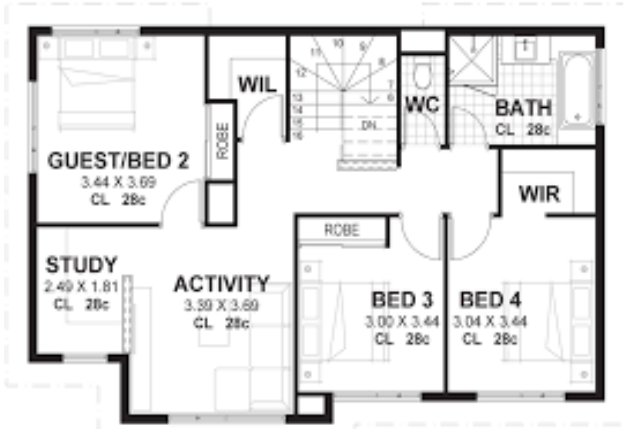
Database design





Database Model

- All products are designed before made; a model is developed first
- A model represents a real object
- E.g a house plan, car model

Database Model

- Similarly, in database design, a model of a database is developed before the actual creation of the database
- This is refers to as a data model of a database
- A model imitates an original object

Database Model

- A database model is refers to a prototype
- The data models are logical; they clearly and accurately depict entity relationships based a certain agreed standards and practices in database designing

What are entities ?

- An entity is an object or a thing that has physical or conceptual existence
- Entities with physical existence are those that we can see with our eyes which include employee while entities with conceptual existence are things that we cannot feel, touch and see with our eyes such as library membership

What are entities ?

- Organizations keep information on these various entities by creating databases
- For example, a library will keep information on entities such as library users, library materials and circulation of library materials
- Entities of a given type are grouped into **entity class**

Entity instances

- Entities have number of instances (meaning the number of times the entity appears in the database).
- This is what is referred to as entity instance
- If for example you enter 100 users of the library in the database, it implies that the entity class *library user* has 100 instances.

Entity instances

- All entities whether with physical or conceptual existence have attributes
- Attributes are features that help to describe entities
- For example, the entity library user has attributes such as *first name, last name, user id number, address, e-mail**, and** phone #.*

Identifiers entities

- All entities do have identifiers
- Identifiers are attributes that uniquely identify each and every entity instance
- It is an attribute which is not common to all the entity instances.
- For library user entity instances, the identifier could be the **user id number**

Entity relationships

- The term relationship refers to association that exist among entities
- The E-R model contains both **relationship classes** and **relationship instances**

Entity relationships

- All relationships are given names that describe the nature of the relationship.
- For example, a relationship called *Loan relationship* shows the relationship that exists between the library user and library material.
- The relationship can involve two or more entity classes

End of Class