CSE3103 : Database

Nazmus Sakib
Assistant Professor
Department of Computer Science and Engineering
Ahsanullah University of Science and Technology

ER (Entity Relationship) Modeling

- **Requirement Analysis:** Firstly you need to generate an idea about a project. From there you need to develop a High Level Description which is also called ER Modeling. The symbols which are used in ER Modeling that are representing the requirements.

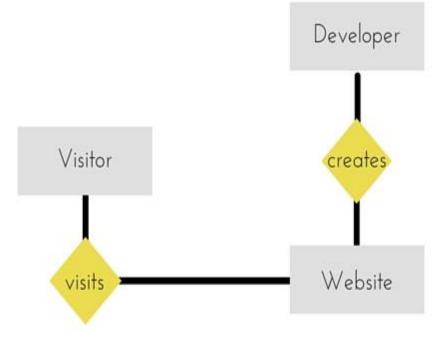Idea → High Level Description → Relationship Schema
- DDL
- DML → RDBMS → Implementation

ER (Entity Relationship)Diagram

- The diagram which represents ER Model that is ER diagram.

    - There are 3 (three) main parts in ERD
        - Entity
        - Relationship
        - Attributes

    - There are also many small parts in ERD.

Entity

- It's all-time singular noun and concise.

- After Requirement Analysis we have to find out the Entity and Relationships.

- Entity will be a real object from the problem Domain and Data will be stored in the database on Entity.

- Distinguishable from the other objects and Entity is described using a set of attributes.

  - Examples:
    - People – employee , students , patients
    - Place – store , warehouse
    - Objects – Machine, products, Vehicle
    - Events – lectures, sales, registration
    - Concept – Account , Course

Entity

People

Places

Companies

Products

Who?
Intentions?
Buy or quit?
How many?
Positive or negative?
Which competitors?
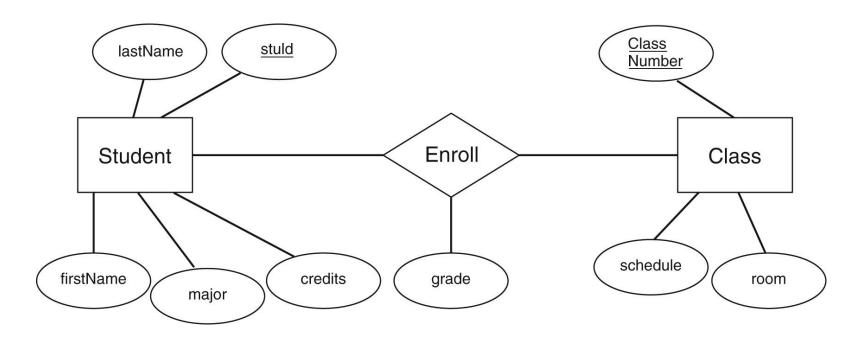What industry?
Where?
Compared to?
Evidence?

Entity : Example:

There are many students in AUST. Students can enroll in different courses and receive grades.
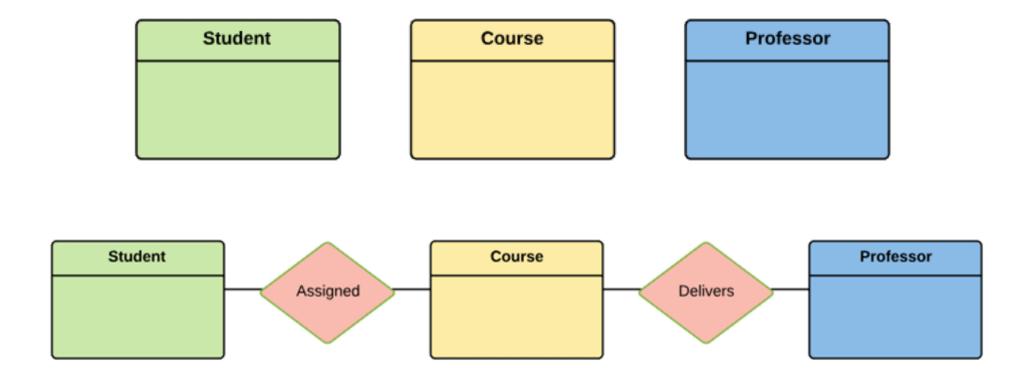
Possible Entity:
- Student
- ~~AUST~~
- Courses
- ~~Grades~~

- All entities in a entity set have some set of attributes.

- Each entity set has a key.
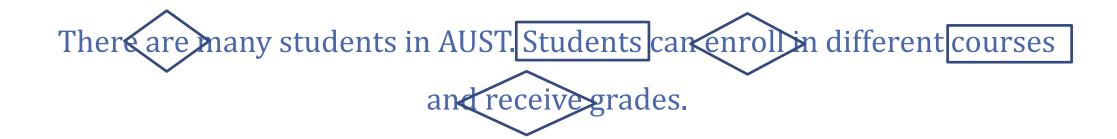
- Each attributes has a domain.

Relationship

- The interaction between Entity Set.

- Relationship is always a Verb and it can have own attributes.

- Association among two or more attributes.
  - Types:
    - Communication
    - Interaction
    - Multiplication
    - Join

Relationship : Example:

Relationship : Example:

There are many students in AUST. Students can enroll in different courses and receive grades.

Possible Relationship:
- ~~are~~
- Enroll
- ~~receive~~

Attributes:

- The properties of the entity or Relationship.
  - Properties are remaining same for the entity but value can change.
  - If properties/attributes are described in story , use the given ones.
  - Other than guess the attributes and use the meaningful properties.

- Example Student:
  - ID , Name, Parents name, Address, DOB, Blood Group
  - Phone, E-mail, Eye Color, Height, Hair Color
  - NID, Passport Number, Birth Certificate

Attributes:

Entity Name

Entity
Person, place, object, event or concept about which data is to be maintained
Example: Car, Student

Jack

Attribute Name

Attribute
Property or characteristic of an entity
Example: Color of car Entity Name of Student Entity

Relation

Verb Phrase

Association between the instances of one or more entity types
Example: Blue Car Belongs to Student Jack