

WHAT IS AN ENTITY RELATIONSHIP DIAGRAM?

An entity relationship diagram (ER Diagram) describes the relationship of entities that need to be stored in a database.

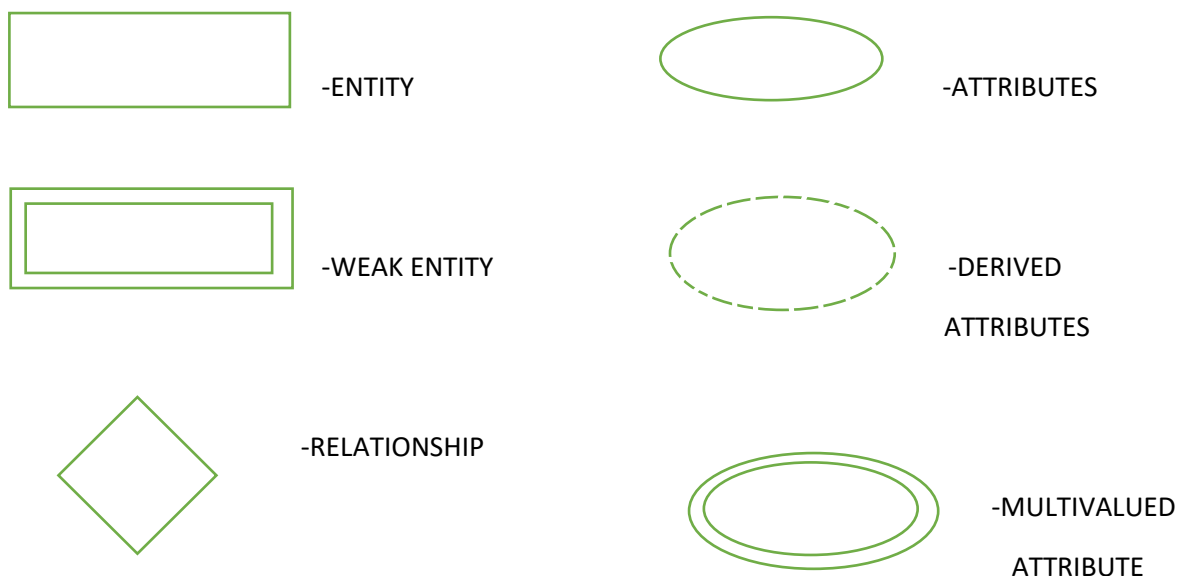
ER diagram is created based on three main components:

- Entities
- Attributes
- Relationships

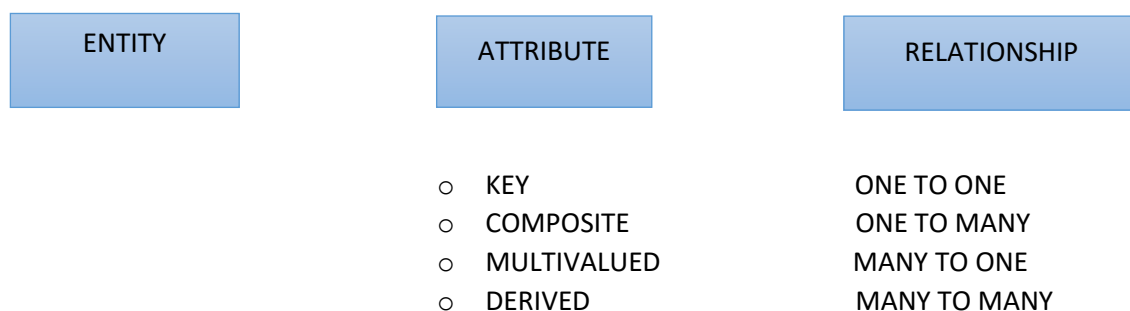
WHY DO WE USE ER DIAGRAM?

- Helps conceptualize the database and helps us know which fields need to be embedded for a particular entity.
- ER-diagram gives a better understanding of the information to be stored in a database.
- Reduces complexity and saves time which allows you to build database quickly
- Helps to describe elements using entity relationship model.

SYMBOLS USED IN ER DIAGRAM



COMPONENTS OF ER DIAGRAM

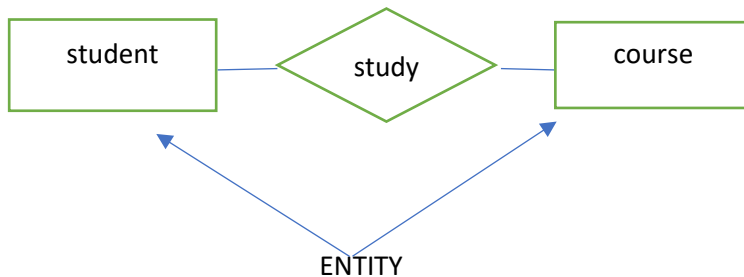


ENTITY-

- An entity can either be living or non living component
- An entity is showcased as rectangle in an ER DIAGRAM

EX. Students study course .

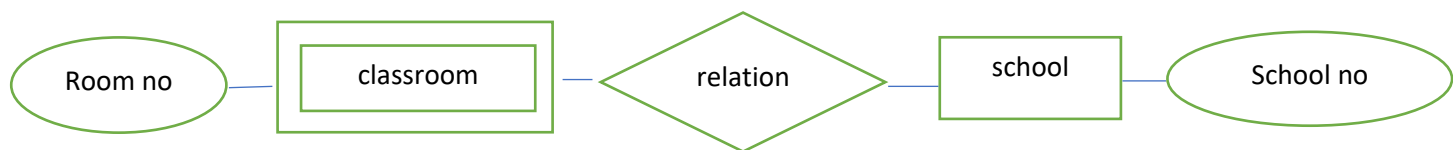
Here both student and course are entities.



WEAK ENTITY-

An entity that relies over another entity is called weak entity

The weak entity is showcased as a double rectangle in ER-diagram.

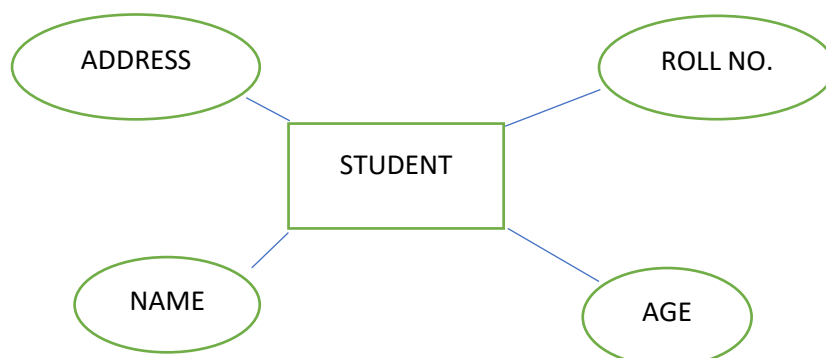


Weak entity because
It doesn't have primary key.
Room no. acts as a discriminator
& not a PK.

Strong entity because
It has PK attribute
school number.

ATTRIBUTES

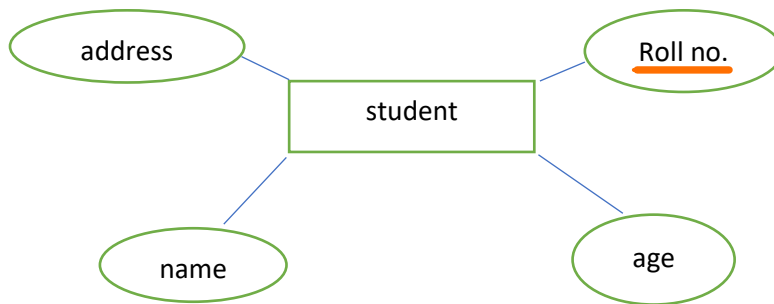
- An attribute describes the property of an entity
- An entity is represented as oval in an ER DIAGRAM



KEY ATTRIBUTE

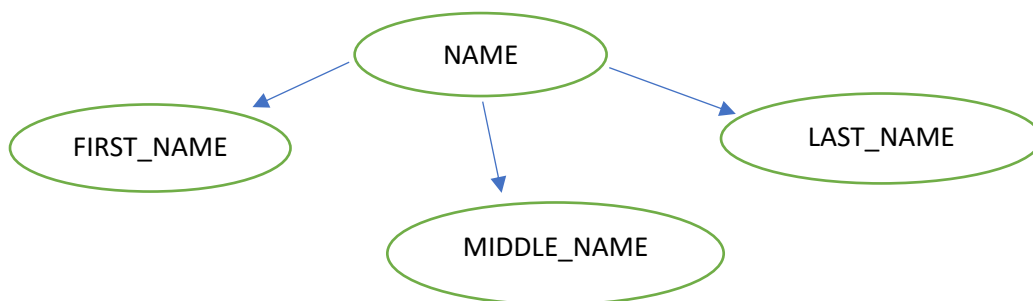
- Key attribute uniquely identifies an entity from an entity set
- The text of key attribute is underlined

Ex. Student roll number can uniquely identify a student from a set of students.



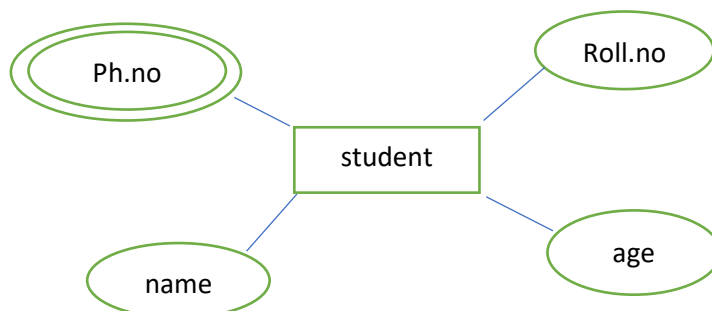
COMPOSITE ATTRIBUTE

- An attribute that is composed of other attributes is known as a composite attribute.
- The composite attribute is represented with an oval and that attribute is further connected with other ovals.



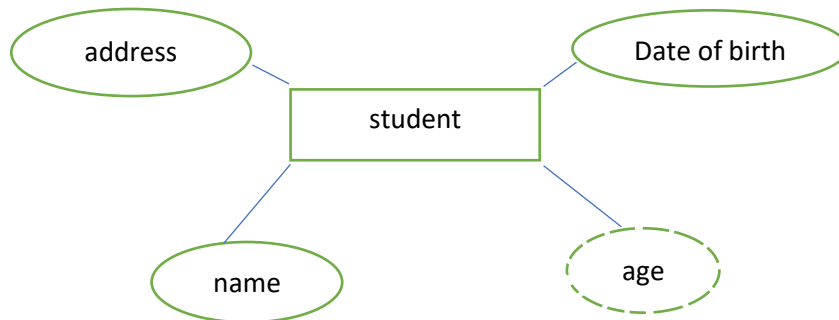
MULTIVALUED ATTRIBUTE

- An attribute that can possess more than one value, such attributes are called multivalued attributes.
- The double oval is used to represent a multivalued attribute.



DERIVED ATTRIBUTE

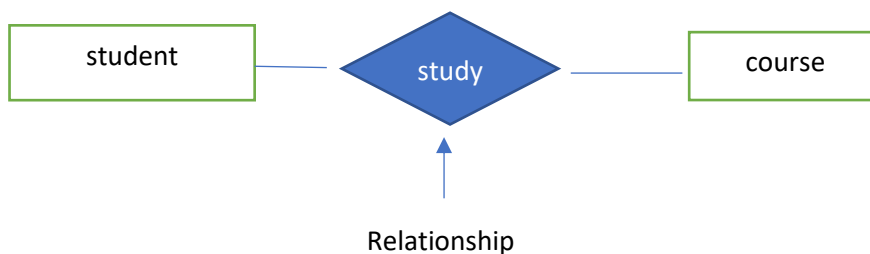
- An attribute that can be extracted from other attributes of the entity is known as derived attribute.
- In ER diagram , derived attribute is represented by dashed oval.



Can be derived by subtracting
Current date from DOB.

RELATIONSHIP

- A relationship is showcased by diamond shape in ER diagram.
- It shows the relationship among entities.



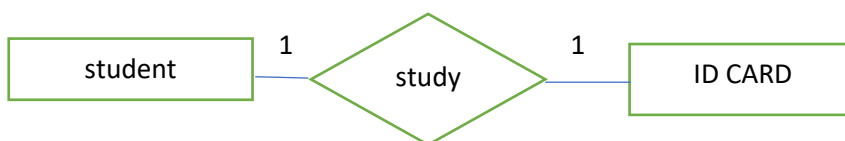
Relationship

TYPES OF RELATIONSHIP:

- ONE TO ONE RELATIONSHIP

When a single element of an entity is associated with a single element of another entity that is called one to one relationship.

EX. A student has only one identification card and an ID card is given to one person.



- ONE TO MANY RELATIONSHIP

When a single element of an entity is associated with more than one element of another entity that is called one to many relationship.

EX. A customer can place many orders, but an order cannot be placed by many customers.



- MANY TO ONE RELATIONSHIP

When more than one element of an entity is related with a single element of another entity then it is called many to one relationship.

EX. Student enrolls for only one course , but course can have many students.



- MANY TO MANY REALTIONSHIP

When more than one element of an entity is associated with more than one element of another entity that is called many to many relationship.

EX. Employee can be assigned to many projects and projects can have many employees.



HOW TO DRAW AN ER DIAGRAM?

- First , identify all the entities . Embed all in a rectangle and label them properly.
- Identify relationship between entities and connect them using a diamond in middle illustrating the relationship . Do not connect relationships to each other.
- Connect attributes for entities and label them properly.
- Eradicate any redundant entities or relationships.
- Make sure your ER diagram supports all the data provided to design the database.