

DATABASE TECHNOLOGY

1.Explain in detail about weak entity set with proper ER example.

The entity sets which do not have sufficient attributes to form a primary key are known as **weak entity sets** and the entity sets which have a primary key are known as strong entity sets.

As the weak entities do not have any primary key, they cannot be identified on their own, so they depend on some other entity (known as owner entity).

The weak entities have total participation constraint (existence dependency) in its identifying relationship with owner identity. Weak entity types have partial keys.

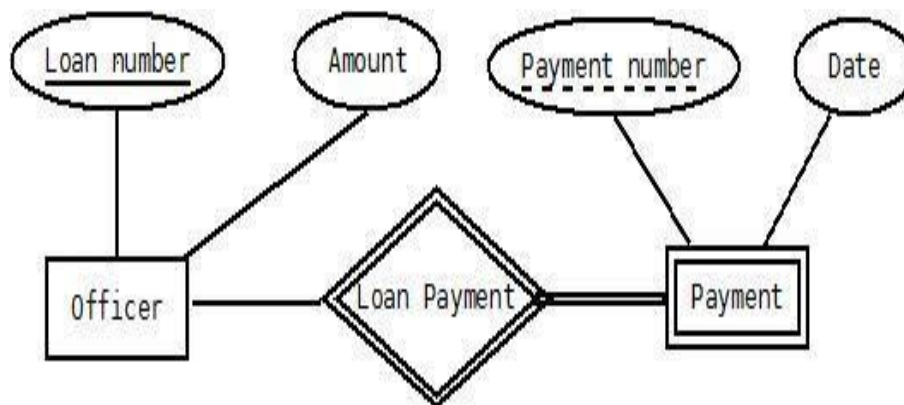
Weak entity is **depend on strong entity** to ensure the existence of weak entity. Like strong entity, weak entity does not have any primary key ,It has partial discriminator key.

Weak entity is represented by double rectangle. The relation between one strong and one weak entity is represented by double diamond.

Weak entities are represented with **double rectangular** box in the ER Diagram and the identifying relationships are represented with double diamond. Partial Key attributes are represented with dotted lines.

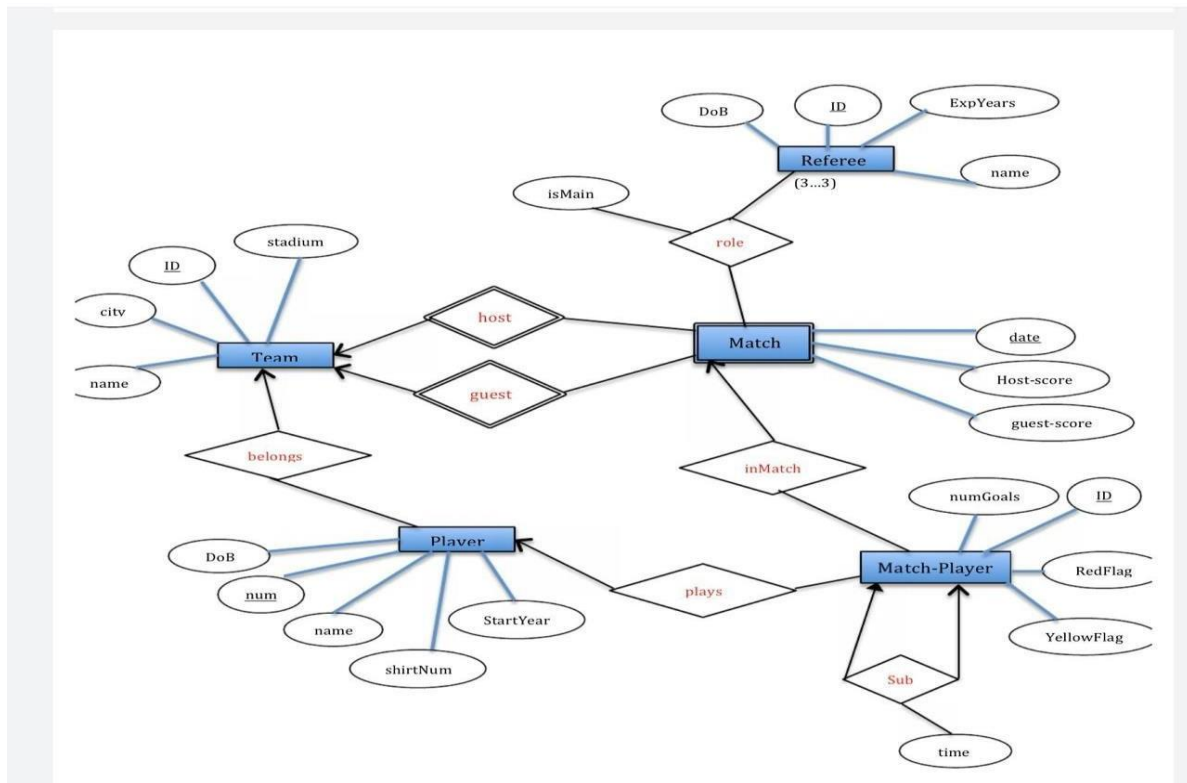
Example:

In the below ER Diagram, 'Payment' is the weak entity. 'Loan Payment' is the identifying relationship and 'Payment Number' is the partial key. Primary Key of the Loan along with the partial key would be used to identify the records.

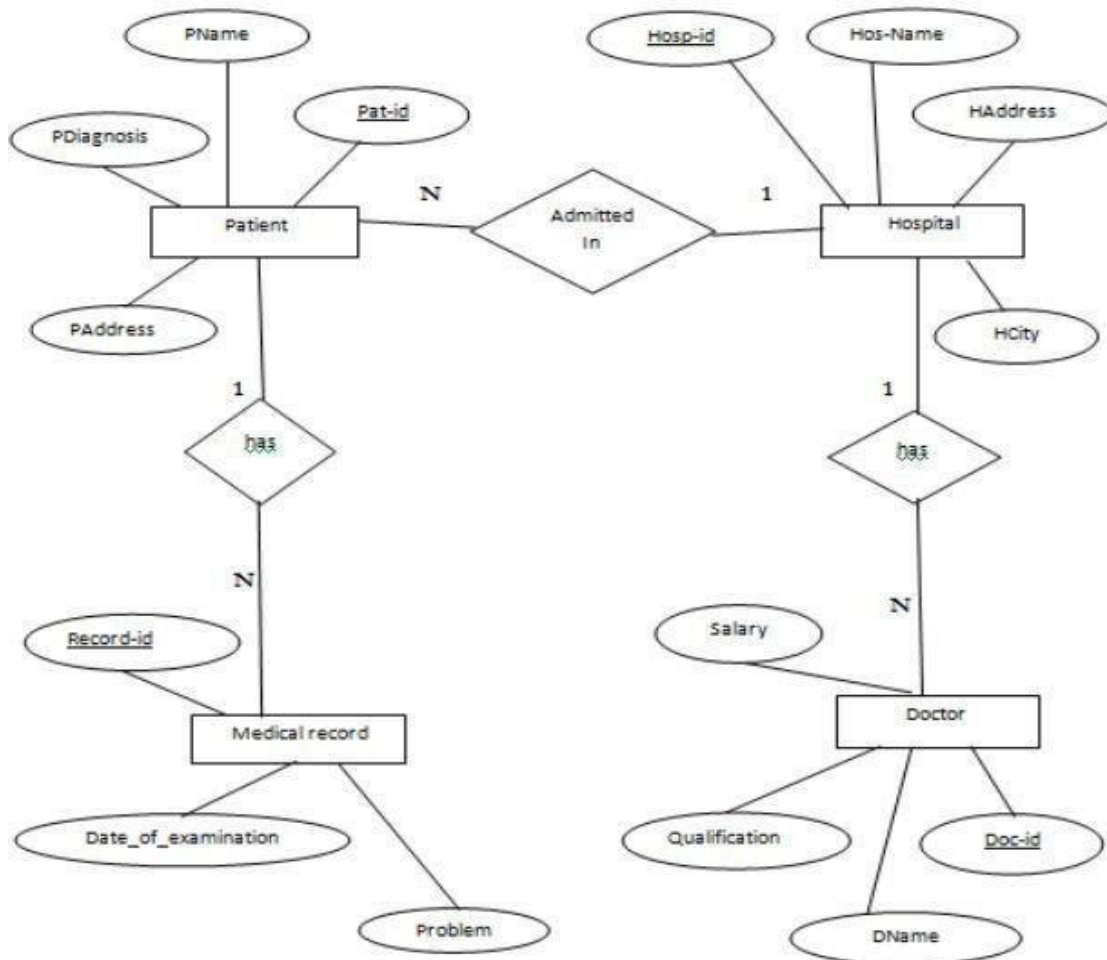


2. Assume we have the following application that models soccer teams, the games they play, and the players in each team. In the design, we want to capture the following:

- We have a set of teams, each team has an ID (unique identifier), name, main stadium, and to which city this team belongs.
- Each team has many players, and each player belongs to one team. Each player has a number (unique identifier), name, DoB, start year, and shirt number that he uses.
- Teams play matches, in each match there is a host team and a guest team. The match takes place in the stadium of the host team.
- For each match we need to keep track of the following:
 - o The date on which the game is played
 - o The final result of the match
 - o The players participated in the match. For each player, how many goals he scored, whether or not he took yellow card, and whether or not he took red card.
- o During the match, one player may substitute another player. We want to capture this substitution and the time at which it took place.
- Each match has exactly three referees. For each referee we have an ID (unique identifier), name, DoB, years of experience. One referee is the main referee and the other two are assistant referee. Design an ER diagram to capture the above requirements. State any assumptions you have that affects your design (use the back of the page if needed). Make sure cardinalities and primary keys are clear.



Assignment 2: Construct the ER diagram for Healthcare Industry which consists of "CORONA" Prevention entities along with suitable attributes. Assume the various constraints and cardinality ratios among entities. Note: Minimum 5 entities should be included.



3. What is meant by Composite attribute? Give an example

Attributes:

Attributes are the **properties which define the entity type**. For example, Roll_No, Name, DOB, Age, Address, Mobile_No are the attributes which defines entity type Student. In ER diagram, attribute is represented by an oval.

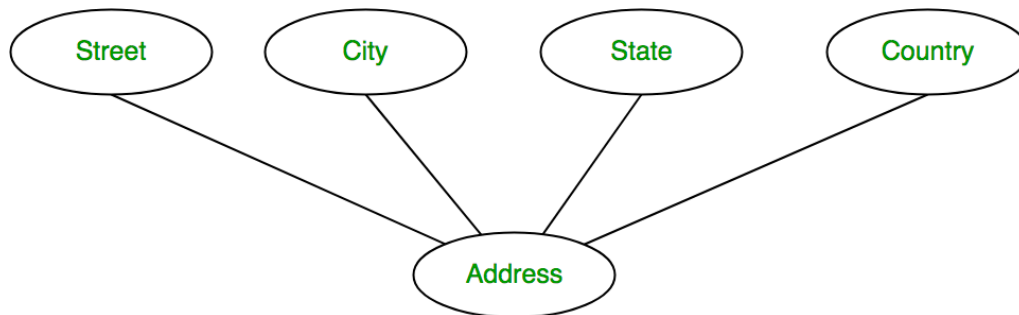
Composite Attribute :

An attribute **composed of many other attribute** is called as composite attribute. For example, Address attribute of student Entity type consists of Street, City, State, and Country. In ER diagram, composite attribute is represented by an oval comprising of ovals.

Typical examples for composite attribute are;

- Name – may be stored as first name, last name, middle initial
- Address – may be stored as door_no, street_name, area_name, city, pincode etc.

- DOB – may be stored as date, month and year and so on.



4. Define Entity. Give an example.

An entity set in DBMS is a set that collectively represents a group of entities of a similar type.

For Example: An entity set of cars, an entity set of bank accounts, etc. In DBMS, the whole table in the tabular representation of data is an entity set, while each row inside this table is an entity. Below is the tabular representation, i.e., entity set of bank accounts.

In entity-relationship diagrams, entity sets are represented by a rectangle, and the attributes of an entity set are represented by an ellipse.

Below is the representation of the bank entity accounts set in an entity-relationship diagram.

Entities are divided into two categories. These two categories of an entity are tangible entities and non-tangible entities.

1. **Tangible Entities** Tangible entities are the entities that physically exist in the real world. For example, the entity of cars, the entity of books, etc.
2. **Non-Tangible Entities** Nontangible entities are entities that do not physically exist in the real world. For example, entity of email id's, an entity of social media accounts, etc.

