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

1. A weak entity set is an entity set that does not have a primary key of its own, but depends on another entity set (called the owner or identifying entity set) for its existence. A weak entity set is represented by a double rectangle in an ER diagram, and the relationship with the owner entity set is represented by a double diamond. The weak entity set also has a partial key, which is a set of attributes that can uniquely identify weak entities that are related to the same owner entity. The partial key is underlined with a dotted line in an ER diagram. An example of a weak entity set is the payment entity in the loan-payment relationship. [A payment cannot exist without a loan, and it is identified by the loan number and the payment number.1](https://www.geeksforgeeks.org/weak-entity-set-in-er-diagrams/)

**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

A composite attribute is an attribute that can be divided into sub-attributes, each of which has its own meaning and domain. A composite attribute is represented by an oval with ovals branching off from it in an ER diagram. [An example of a composite attribute is the address attribute, which can be divided into sub-attributes such as street, city, state, and zip code](https://vertabelo.com/blog/weak-entity-example/)

4.Define Entity. Give an example.

An entity is anything that can be uniquely identified and has some properties or attributes that describe it. An entity can be a real-world object, such as a person, a car, or a book, or it can be an abstract concept, such as a course, an account, or a transaction. An entity is represented by a rectangle with the entity name inside it in an ER diagram. [An example of an entity is a student, who has attributes such as student ID, name, major, and GPA.2](https://vertabelo.com/blog/weak-entity-example/)