DATABASE MANAGEMENT SYSTEM
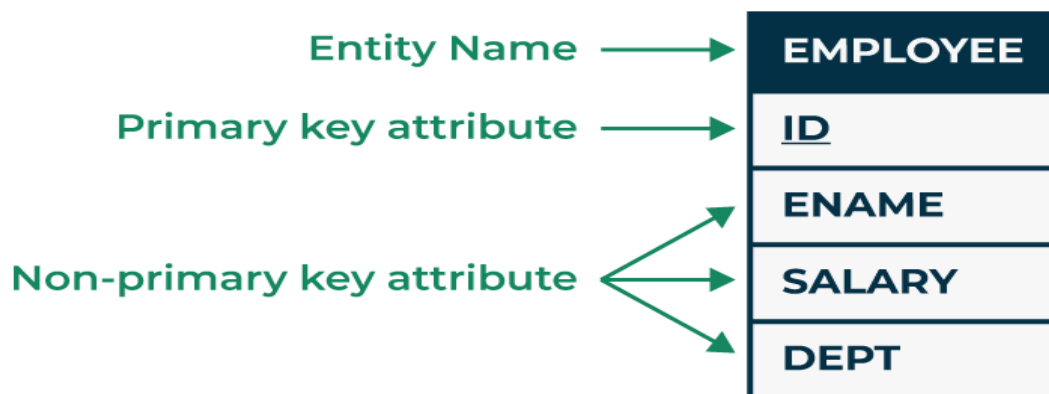
2 Marks Questions

1. What is entity? Explain with example.

Ans – It is any real world thing / idea for which data can be stored. Collection of same data type of entity is called as entity sets.

2. Explain weak and strong entity.

Ans –   1) Weak Entity :- Entity which does not contains key attribute or primary key is weak entity. Weak entity set depends on another entity double rectangle.
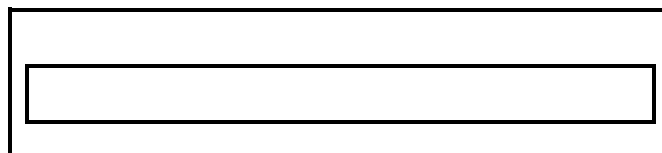
2) Strong Entity :- Entity which contains key attributes or primary key is strong entity. Strong entity set contains such attribute that records can be uniquely identify. It is represent by single rectangle.
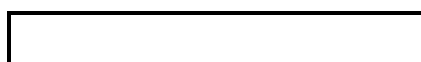
3. **What is minimum and maximum cardinality.**

Ans :- Minimum number of participation & Maximum number of participation can be represented by minimum cardinality & maximum cardinality.
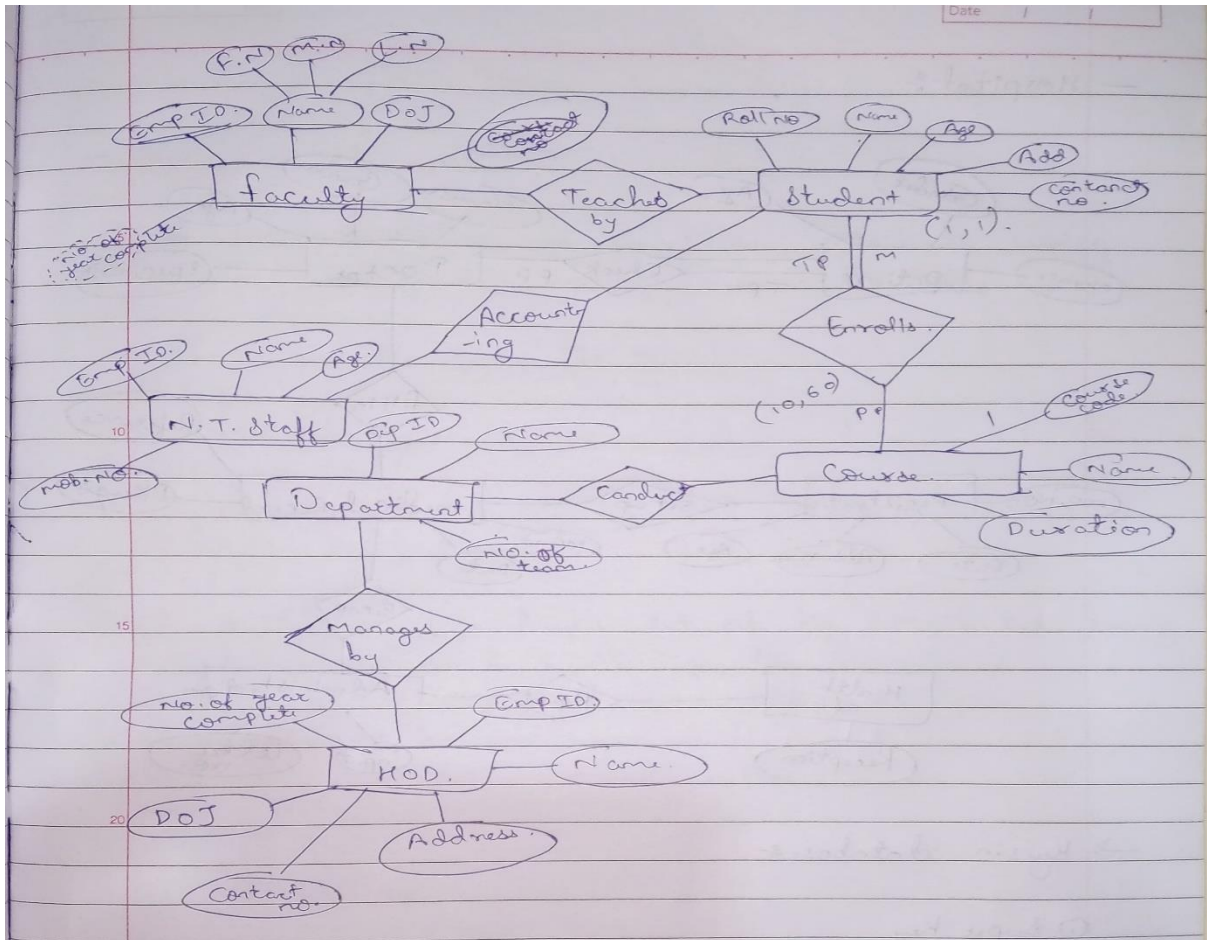
4. **What is participation constraint? Explain partial and total participation.**

Ans :- A participation constraint in a database design context refers to the requirement that every entity in a relationship must participate or be involved in that relationship in some way.

1) **Partial Participation: This means that some entities may choose not to participate in the relationship. In other words, an entity can exist without being associated with any other entity through the relationship.**
2) **Total Participation: This implies that every entity in the entity set must participate in the relationship. No entity can exist without being associated with another entity via the relationship.**
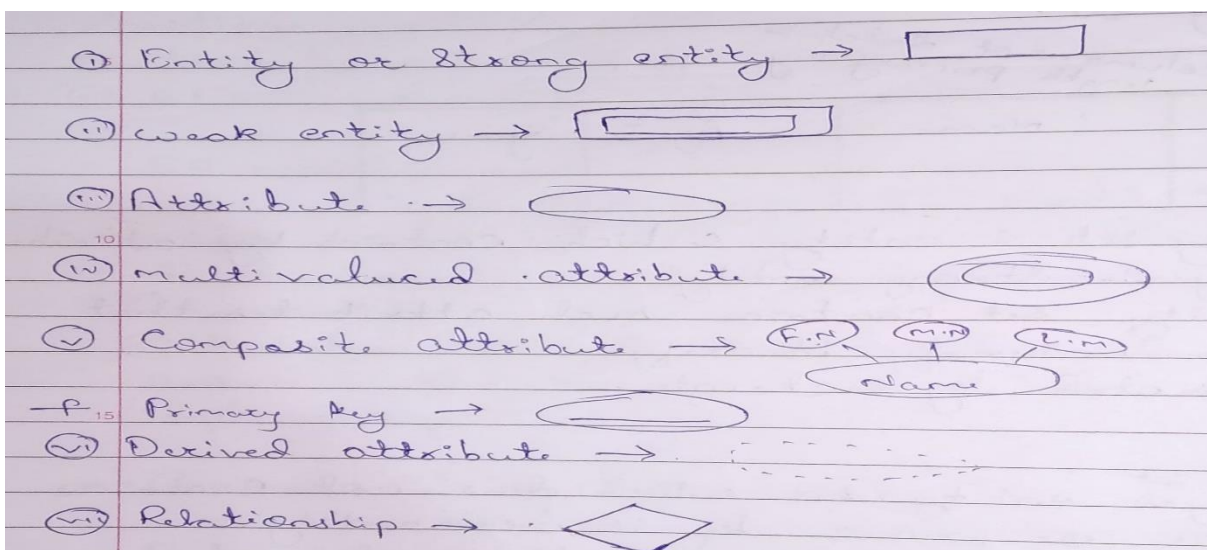
5. Draw E-R diagram of college.

Ans :

6. What are the notations for E-R diagram.

Ans :

(i) Entity or strong entity → ▭

(ii) weak entity → ▭

(iii) Attribute → ⬭

(iv) multivalued attribute → ◎

(v) Composite attribute → F.N, M.N, L.N, Name

(vi) Primary key → ⬭

(vii) Derived attribute → ⬭ (dashed)
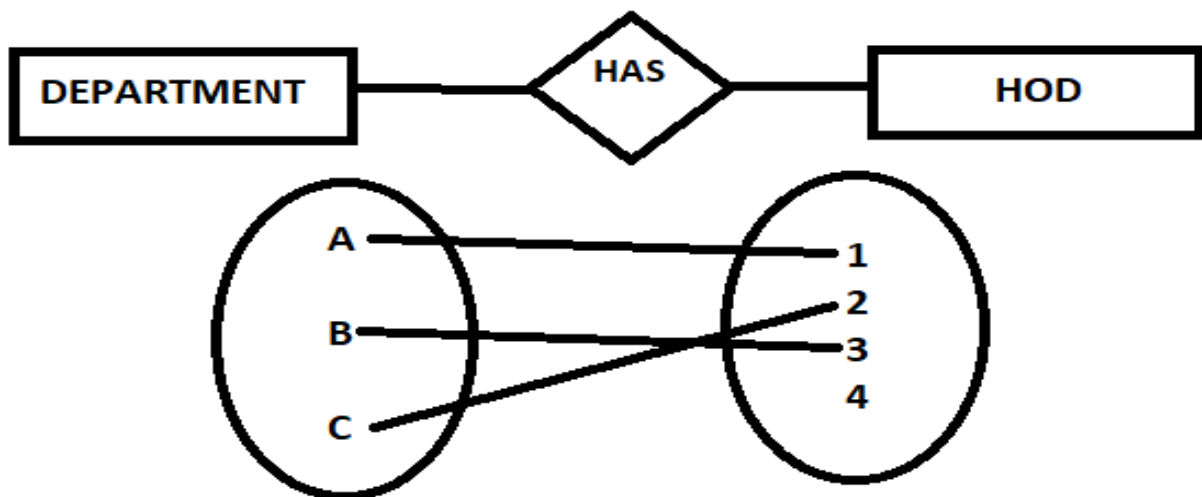
(viii) Relationship → ◇

10 Marks Questions

**1. What is relationship? Explain its types with examples.**

Ans : It is association between entity. Relationship is represented by diamond / rhombus cardinality.
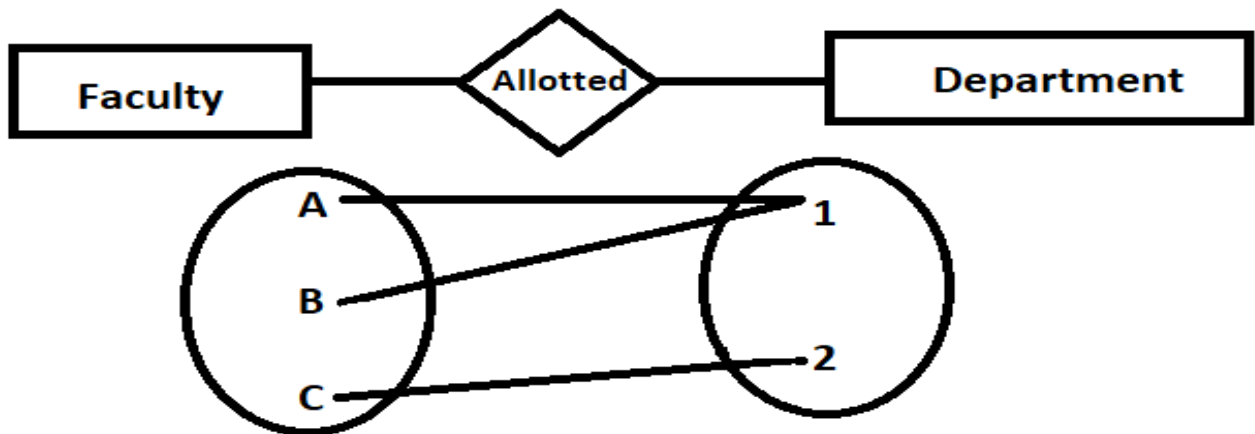**Relationship is of 4 types :-**

1) 1 to 1 Relationship (1:1) :- When 1 instants element of an entity is associated with only 1 instant of other entity then it is 1 to 1 relationship. For example :-


2) 1 to Many Relationship (1:M) :- When 1 instant element of an entity is associated with multiple or more than 1 instant of other entity. Then it is 1 to Many Relationship. For example :-
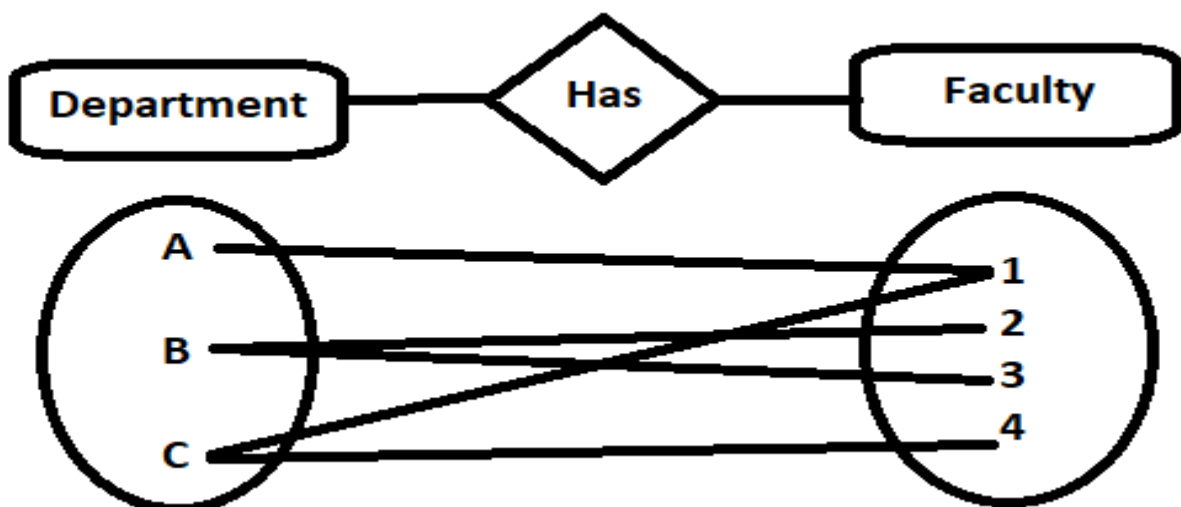
3) Many to 1 Relationship (M:1) :- When more than 1 instant of an entity is associated with only 1 instant of other (right). Then it is Many to 1 relationship. For example :-


4) Many to Many Relationship (M:M) :- When more than 1 instant of an entity is associated with more than 1 instant of other entity. Then it is Many to Many relationship. For example :-
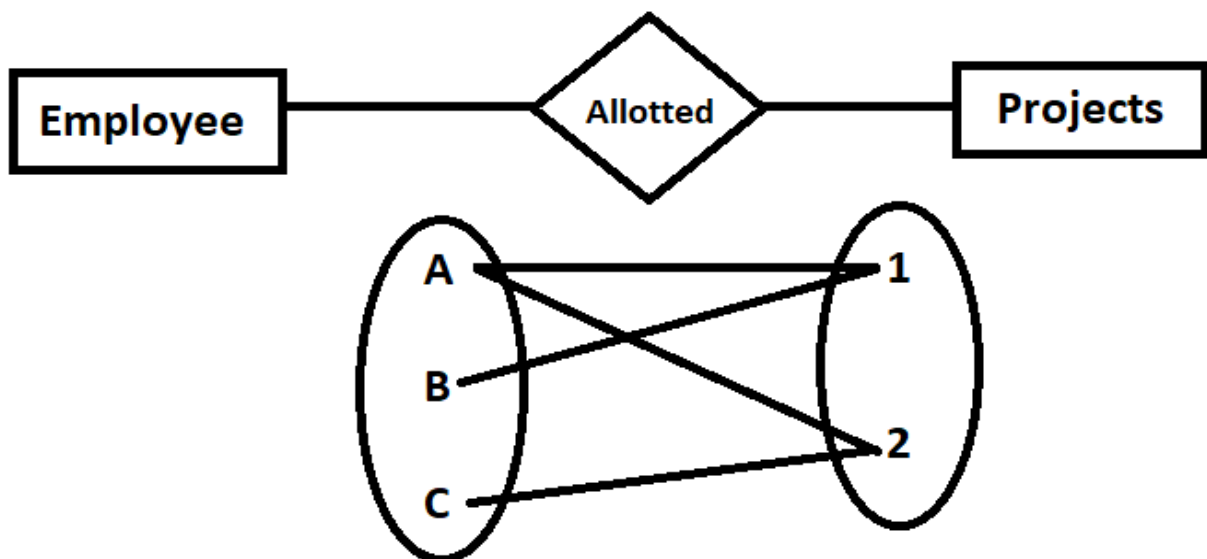
2) What are attributes? Explain its types.

Ans : A attributes is nothing but properties that describes the entity. Attributes can be of different types :-

1) Composite attribute :- The attribute which can be divided further. Example :-
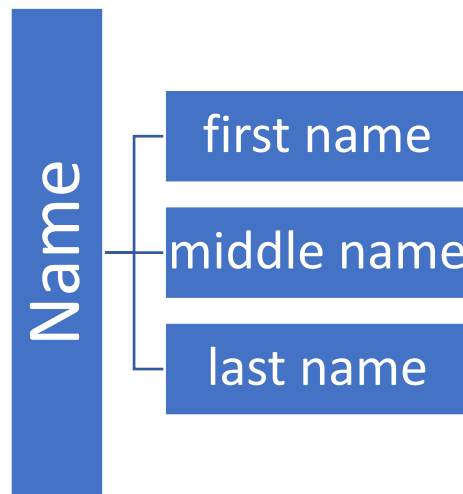
2) Simple attribute :- The attribute which can not be divided further. Example :- Age , Weight.

3) Single value attribute :- The attribute which have single value for a particular entity. Example :- DOB, Roll No.

4) Multi value attribute :- The attribute which can have multiple values for particular entity. Example :- Phone No, Address

5) Derive attribute & stored attribute :- The derived attribute are those which are derived from another stored attribute.
Example :- DOB – Stored , Age – Derive.

3) What is key in database? Explain its types with examples.

Ans :- Key attribute in tables are those attribute using which we can uniquely identify records in table.

There are total 5 types of keys :-

1) Super Key :- It is super set of key attribute using which we can uniquely identify the record. It is set of 1 or more attributes. For

example :- Key attribute --

Roll no	Name	Age

There are 4 super keys :- 1) Roll no. 2) Roll no + Name 3) Roll no + Age   4) Roll no + Name + Age .

2) Candidate key :- It I subset of super key where key contains no extra attribute / redundant. It is minimum super key. It consist of maximum possible attribute which uniquely identify records with no attribute / redundant. For example :-

Roll no	Name	Age

There is 1 candidate key :- 1) Roll no.

3) Primary key :- it is 1 of the candidate key using which we can uniquely identify the records in a table. Primary key must be unique & cannot be null.

Super key
Composite key
Primary key
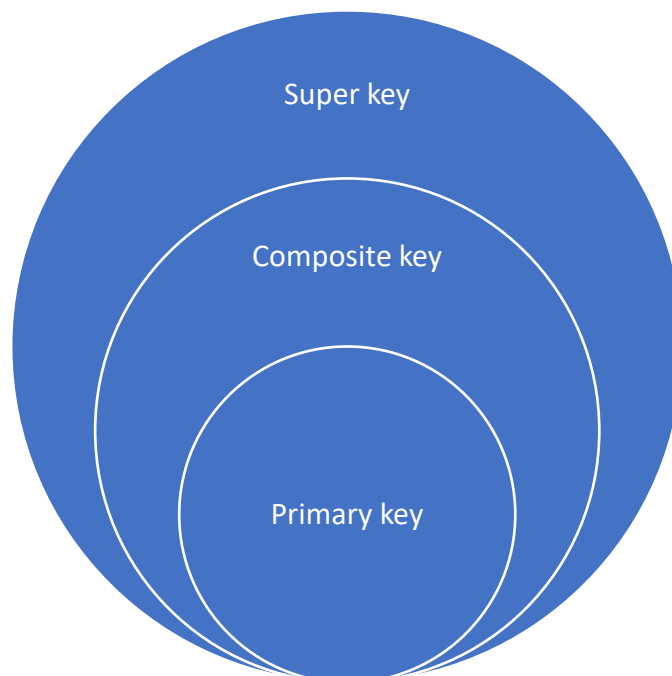
4) Composite key :- when primary key consist of more than attribute then it is composite key.

5) foreign key :- when primary key of 1 table is added to another table then it is foreign key.

4) What is relationship set? Explain degree of relationship set with examples.

Ans :- It is collection of relationship of same type relationship set as 3 components.

    1) Name.
    2) Degree of relationship.
    3) Relationship constraint.

1) Degree of relationship :- it is number of entity participation in relationship. Most of the relationship are Binary. Degree of relationship can be Binary, Unary, Ternary, N nary.

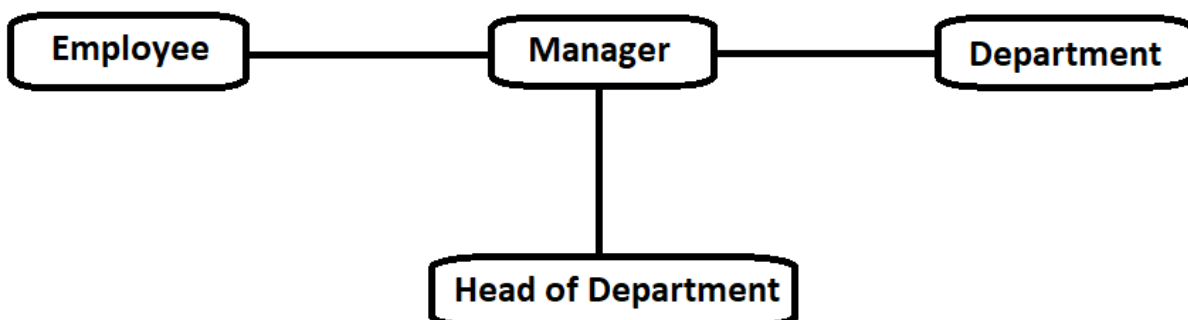**Unary :- Only 1 entity is involved in relationship then it is Unary. Ex:**

Binary :- When 2 entity is involved in relationship then it is Binary. Ex :-

**Ternary :- When 3 entity is involved in relationship then it is Ternary. Ex :-**

N nary :- Any number of entity can be involved in relationship but particular it is very difficult to implement hence max, ternary relationship are used in ER diagram.

5) Explain Generalization, Specialization and Aggregation in Extended E-R model.

Ans :- **Generalization**

Generalization is the process of extracting common properties from a set of entities and creating a generalized entity from it. It is a bottom-up approach in which two or more entities can be generalized to a higher-level entity if they have some attributes in common. For Example, STUDENT and FACULTY can be generalized to a higher-level entity called PERSON as shown in Figure 1. In this case, common attributes like P_NAME, and P_ADD become part of a higher entity (PERSON), and specialized attributes like S_FEE become part of a specialized entity (STUDENT).
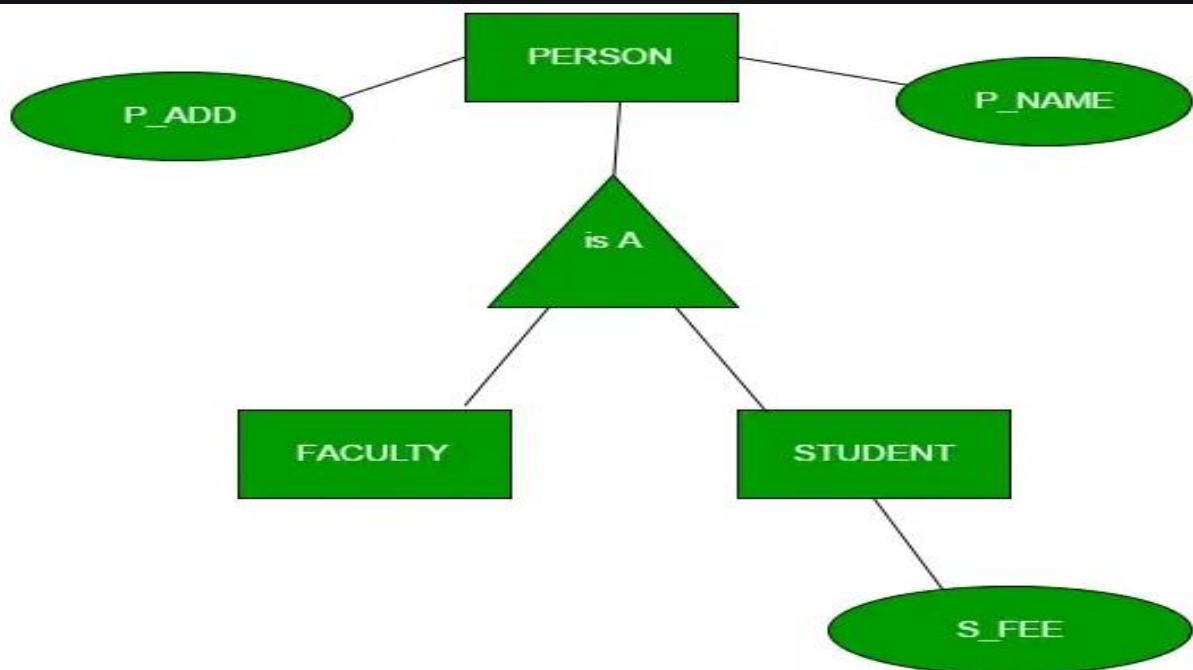
Specialization

In specialization, an entity is divided into sub-entities based on its characteristics. It is a top-down approach where the higher-level entity is specialized into two or more lower-level entities. For Example, an EMPLOYEE entity in an Employee management system can be specialized into DEVELOPER, TESTER, etc. as shown in Figure 2. In this case, common attributes like E_NAME, E_SAL, etc. become part of a higher entity (EMPLOYEE), and specialized attributes like TES_TYPE become part of a specialized entity (TESTER).
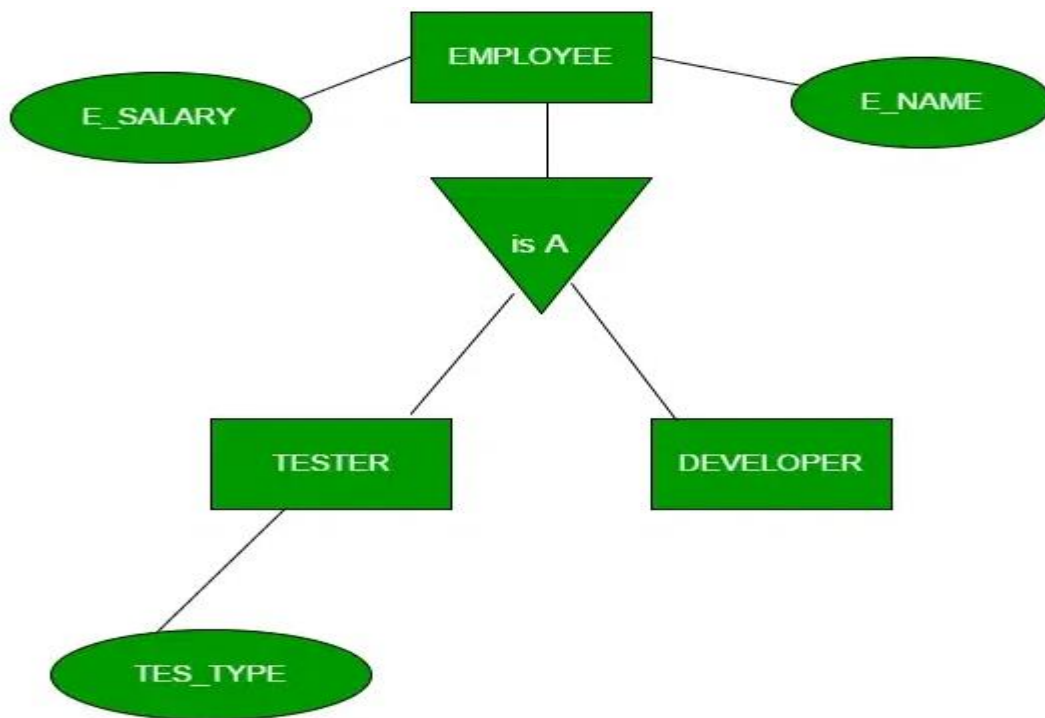
Aggregation

An ER diagram is not capable of representing the relationship between an entity and a relationship which may be required in some scenarios. In those cases, a relationship with its corresponding entities is aggregated into a higher-level entity. Aggregation is an abstraction through which we can represent relationships as higher-level entity sets.For Example, an Employee working on a project may require some machinery. So, REQUIRE relationship is needed between the relationship WORKS_FOR and entity MACHINERY. Using aggregation, WORKS_FOR relationship with its entities EMPLOYEE and PROJECT is aggregated into a single entity and relationship REQUIRE is created between the aggregated entity and MACHINERY.