1. What is Entity Relationship Diagram?
2. What are attributes in ER Model? Explain Multivalued and Derived attribute?

Entity-Relationship Diagram (ER Diagram):

An **Entity-Relationship Diagram (ERD)** is a visual representation of entities, their attributes, and the relationships between them in a database system. It is a conceptual design used during the database design process to illustrate the structure of data and its relationships.

Key Components

1.Entities:

- Objects or concepts that can have data stored about them in the database.
- Represented as rectangles.
- Examples: Employee, Department, Product.
2. Attributes:
    - Characteristics or properties of an entity.
    - Represented as ovals connected to their respective entities.
    - Examples: Employee Name, Salary, Department ID.
3. Relationships:
    - Define how entities are related to each other.
    - Represented as diamonds.
    - Examples: Works For, Manages, Belongs To.
4. Primary Keys:
    - Unique identifiers for an entity.
    - Often underlined in the ER diagram.

Attributes in the ER Model:

Attributes describe the properties or characteristics of an entity or relationship. Attributes are classified into different types based on their behavior and usage.

Types of Attributes:

1. **Simple Attribute**:
   - Atomic and cannot be broken down further.
   - Example: Name, Age.
2. **Composite Attribute**:
   - Can be divided into smaller sub-parts.
   - Example: Full Name can be split into First Name and Last Name.
3. **Single-Valued Attribute**:
   - Holds a single value for each instance of an entity.
   - Example: Age, Salary.
4. **Multi-Valued Attribute**:
   - Can hold multiple values for a single entity instance.
   - Represented by a double oval in ER diagrams.
   - Example: Phone Numbers for an employee.
5. **Derived Attribute**:
   - Not stored directly in the database; instead, it is derived from other attributes.
   - Represented by a dashed oval in ER diagrams.
   - Example: Age derived from Date of Birth.
6. **Key Attribute**:
   - Unique identifier for an entity.
   - Example: Employee ID.

Multivalued Attribute:

- **Definition**: An attribute that can have multiple values for a single entity instance.
- **Example**:
  - For an entity Student, the attribute Phone Numbers may store multiple values like +1234567890 and +9876543210.
- **Representation**: A double oval connected to the entity in an ER diagram.

Derived Attribute:

- **Definition**: An attribute that can be computed from other attributes or stored data.

- **Example**:
    - For an entity Employee, the attribute Age can be derived from the attribute Date of Birth using the current date.
- **Representation**: A dashed oval connected to the entity in an ER diagram.