

# Task 1: Introduction of ER Model

## Introduction to ER Model

The entity Relationship Model (ER Model) is a conceptual models for designing a database. This Model represents the logical structures of a database, including entities, their attributes and relationships between them.

• Entity: An object that is stored as data such as student, course (or) company.

• Attribute: Properties that describes an entity such as studentID, courseName, (or) Employee Email.

• Relationship: A connection b/w entities such as "a student enrolls in a course".

## ER Model

### Entity

→ Strong entity

→ Weak entity

### Attribute

→ Key Attribute

→ Composite Attribute

→ Multivalued Attribute

→ Derived Attribute

### Relationship

→ one to one

→ one to many

→ Many to one

→ Many to Many

• The graphical representation of this Model is called an Entity - Relation Diagram (ERD).

## ER Model in Database design process.

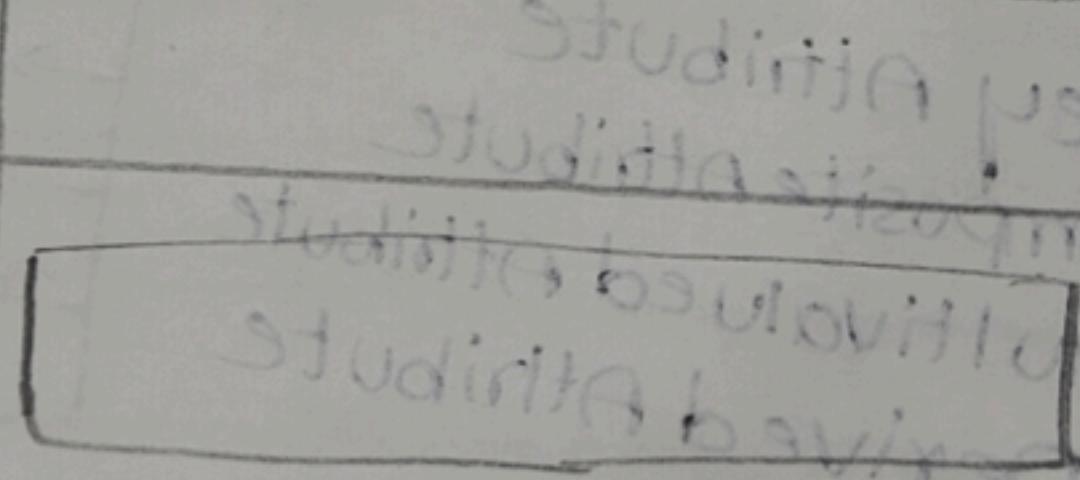
We typically follow the below steps for designing a database for an application

- Gather the requirements (functional and data) by asking questions to the database users.
- Create a logical/conceptual design of the database. This is where ER Model plays a role.
- After this, focus on physical database design (like indexing) and external design (like views).

Symbols used in ER Model:-

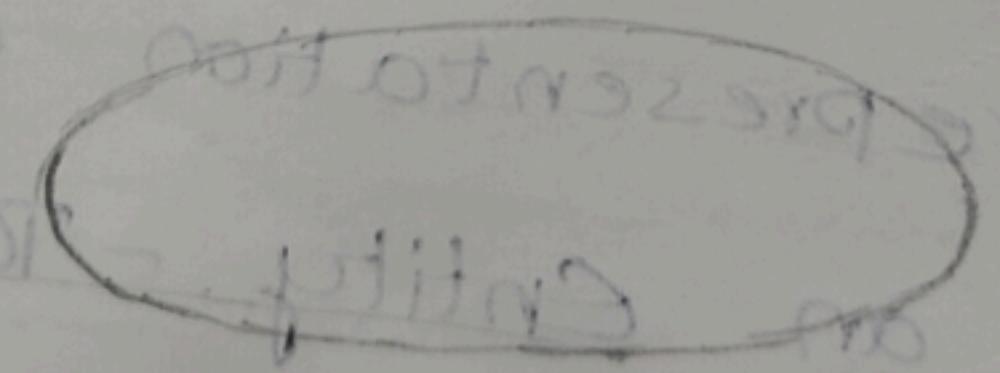
- Rectangles : It Represents entities in ER Model.
- Ellipses : It Represents attributes in ER Model.
- Diamond : It Represents Relationship among entities.
- Lines : Represents attributes to entities & entity sets.
- Double Ellipse : Represents multivalued attributes.
- Double Rectangles : Represents weak entities, which depend on other entities for identification.

Rectangle



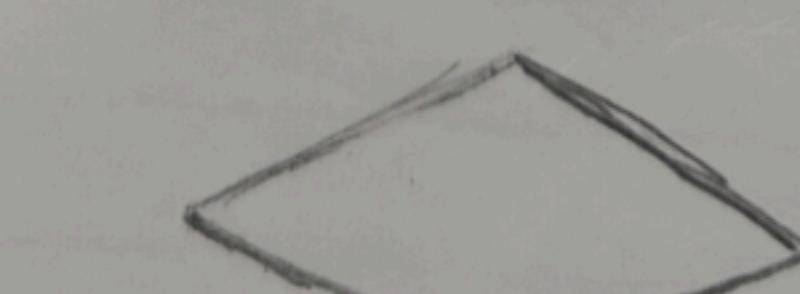
Entities ER Model

Ellipse



Attributes in ER Model

Diamond



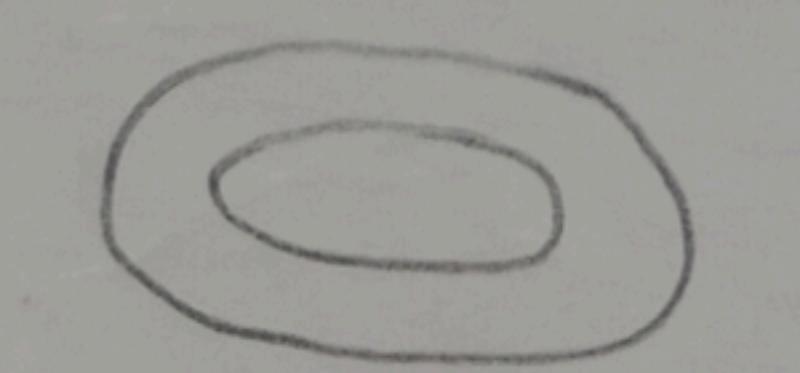
Relationship Among Entities

Line



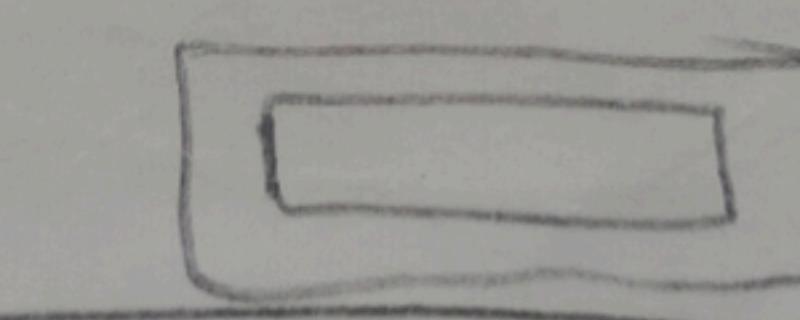
Attribute to entities

Double Ellipse



Multi valued attributes

Double Rectangle



weak entity

What is an entity?

An entity represents a real-world objects concept  
(or) thing about which data is stored in a database

It act as building block of a database

Examples of entities:

Real-world objects: Person, car, employee etc.

Concepts: course, event, Reservation etc.

Things: Product, document, device etc.

1. Strong entity:

A strong entity is a type of entity that has a key attribute that can uniquely identify each instance of the entity. A strong entity does not depend on any other entity in the schema for its identification. It has a primary key that ensures its uniqueness and is represented by a rectangle in an EER diagram.

2. Weak entity:

A weak entity cannot be uniquely identified by own attributes alone. It depends on a strong entity to be identified. A weak entity are represented by a double rectangle. The participation of weak entity types is always total.

Ex: A company may store the information of dependents of an employee. But the dependents can't exist without the employee. So the employee will be identifying entity type for dependent, which means it is strong entity type.

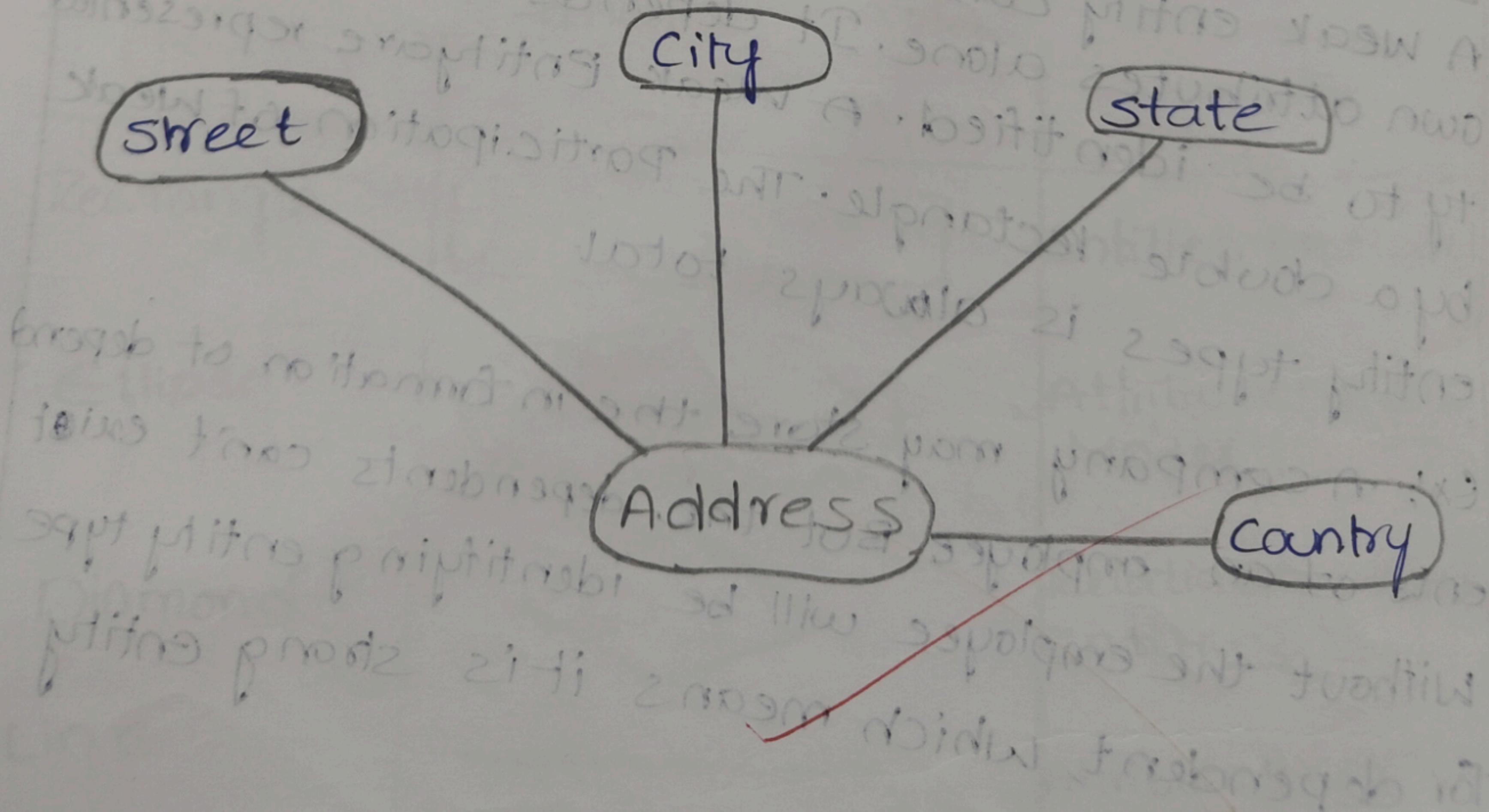
**Types of Attributes:-** Spilitarao 2i todos  
key attribute

The attribute which uniquely identifies each entity in the entity set is called key attribute. For example, Roll-No will be unique for each student.

Roll-No

## 2. Composite Attribute:-

An attribute composed of many other attributes is called a composite attribute. For example, the address attribute of the student Entity type consists of street, city, state and country.



### 3. Multivalued Attribute:

An attribute consisting of more than one value for a given entity for example, Phone-NO can be more than one for a given student

Phone - NO

### 4. Derived Attribute:

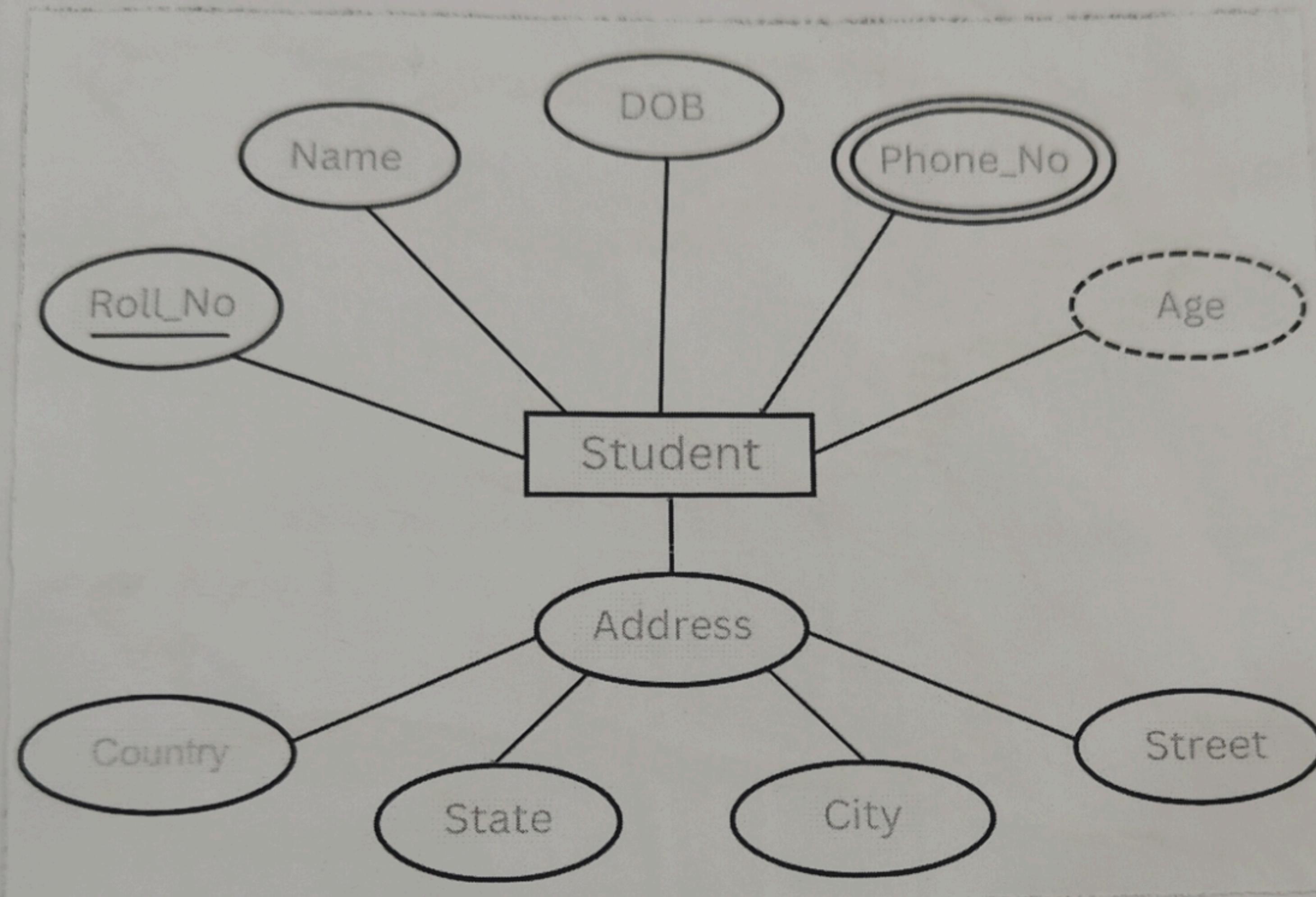
An attribute that can be derived from other attributes of the entity type is known as a derived attribute. e.g.: Age

Age

25/7/25

## Task 1(B) using creately tool

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VEL TECH - CSE	
EX NO.	1
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	20
SIGN WITH DATE	✓ 10/8/25

Result:-

Thus, the ER Diagram executes by using  
the creately tool successfully