

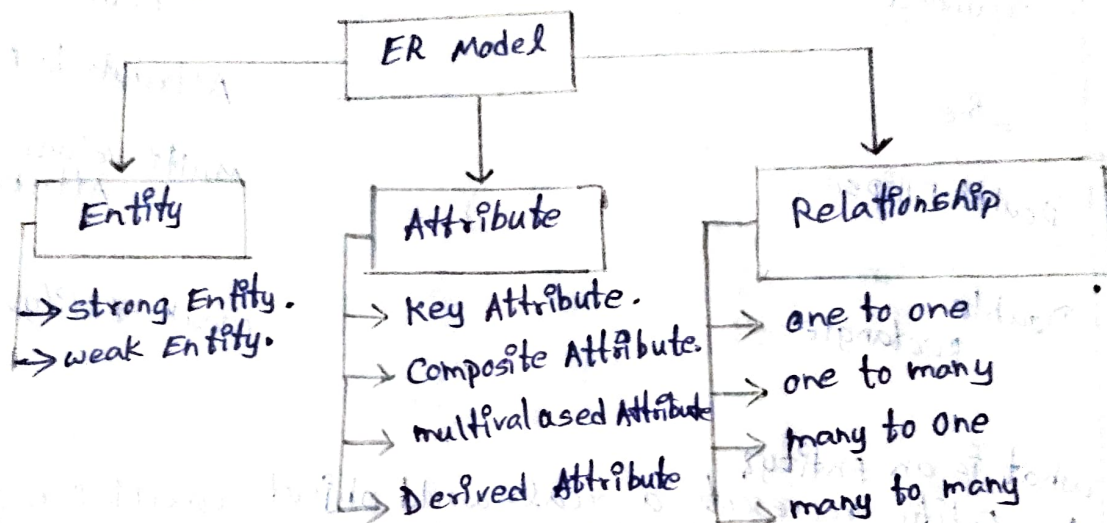
Introduction to ER Model:-

The Entity-Relationship Model (ER Model) is a conceptual model for design: a database this model represents the logical structures of a database, including entities, their attributes and relationship between them.

\* Entity:- An object that is stored as data such as student, course or company.

\* Attributes:- Properties that describes an entity such as student ID, Course Name, (or) Employee Email.

\* Relationship:- A Connection b/w entities such as "a student enrolls in a course".



\* The graphical Representation of the model is called an Entity-Relation Diagram (ERD).

ER Model is in Database Design process we typically follow the below steps for design a database for an application.

\* Gather the requirements (functional and data) by asking question to the database users.

\* Create a logical (or) conceptual design of the database. This is where ER model plays a role.

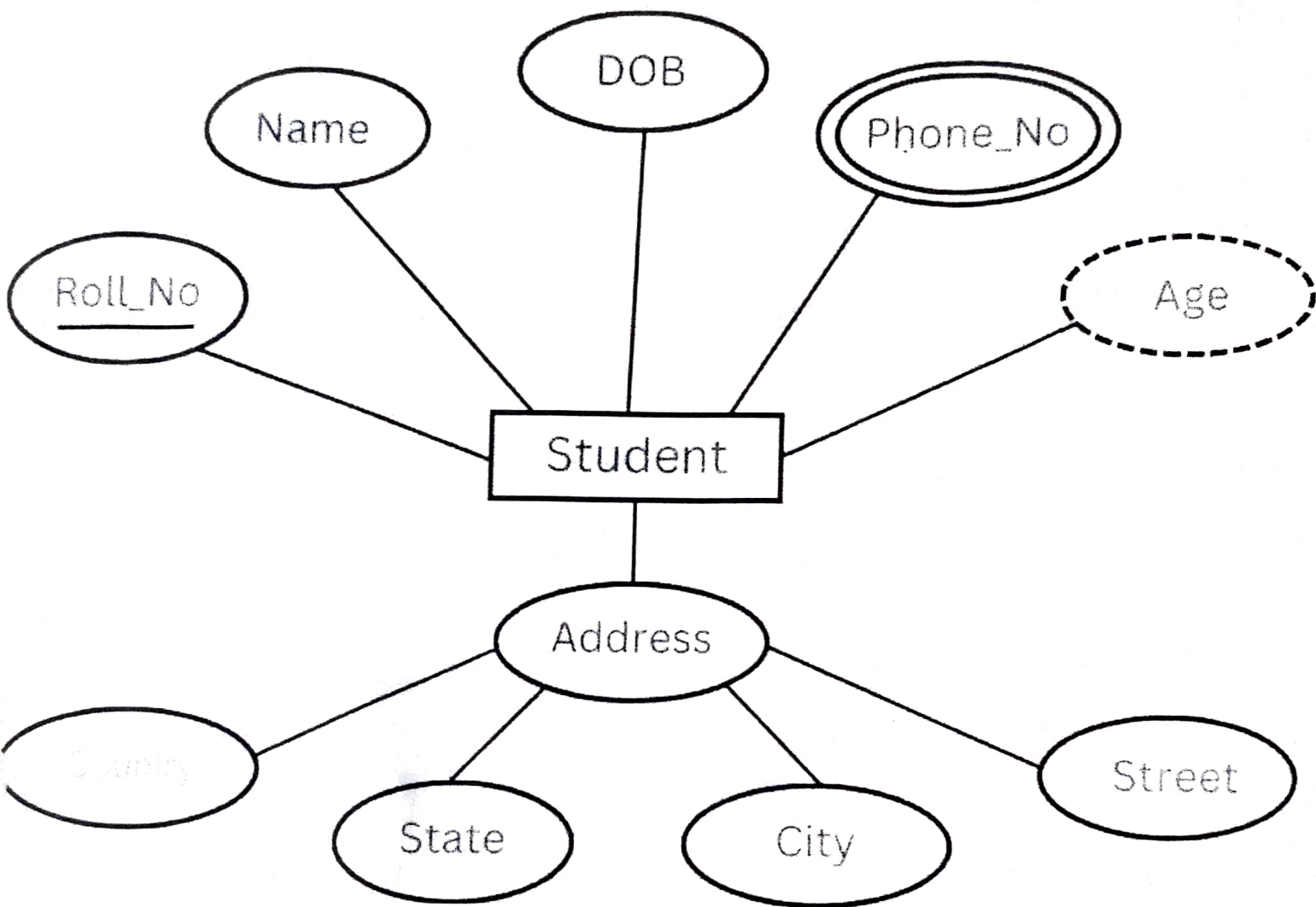
\* After this, focus on physical Database design (like indexing) and external design (like views)

Symbols used in ER Model

\* Rectangles:- It Represents entities in ER model.

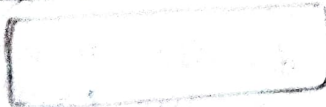





\* Ellipses:- It Represents attributes in ER model.

\* Diamond:- It Represents relationship among Entities.





- \* Lines :- Represents Attributes to Entities & things etc.
- \* Double Ellipse :- Represents multi-valued attributes.
- \* Double Rectangle :- Represents weak Entities, which depend on other entity for identification.

Rectangle		Entities in 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?

A) 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.

Example of Entities:-

- \* Real-world objects :- person, car, Employee etc.
- \* concepts :- course, Events 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 primary key that ensure its uniqueness and is represented by a ~~Rectangle~~ in an ER diagram.



## 2) weak Entity:-

A weak Entity cannot be uniquely identified by its 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 will be identifying entity type for dependent, which means it is strong Entity Type.

## Types of Attributes:-

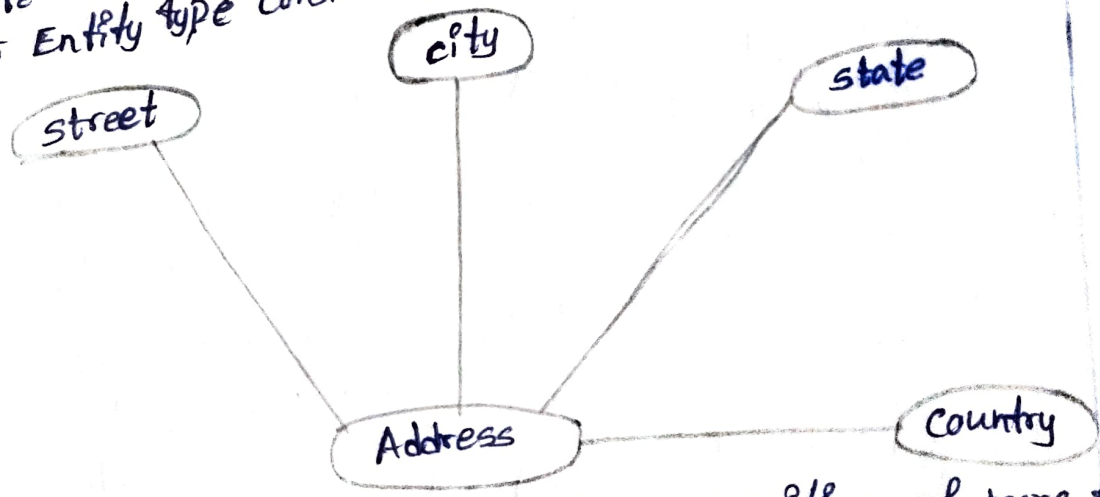
### 1. Key Attribute:-

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, streets 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 attributes

Result: Thus, the E-R Diagram has been implemented successfully.

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EX NO.	1
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	4
RECORD (5)	5
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