ACPatil
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Experiment Evaluation Sheet

Experiment No.: 1

Experiment Name:
Identify the case and detail statement of problems.
Design an Entity-Relationship (ER) / Extended
Entity-Relationship (EER) Model.

Sr No.	Evaluation Criteria	Marks (Out of 9)	Performance Date	Correction Date and Signature of Instructor
1	Experiment Performance			
2	Journal Performance			
3	Punctuality			
	Total			

Aim : Identify the case and detail statement of problems. Design an Entity-Relationship (ER) / Extended Entity-Relationship (EER) Model.

Theory :

What is an Entity Relationship Diagram (ER Diagram)?
An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. Lets have a look at a simple ER diagram to understand this concept.

A simple ER Diagram:

In the following diagram we have two entities Student and College and their relationship. The relationship between Student and College is many to one as a college can have many students however a student cannot study in multiple colleges at the same time. Student entity has attributes such as Stu_Id, Stu_Name & Stu_Addr and College entity has attributes such as Col_ID & Col_Name.
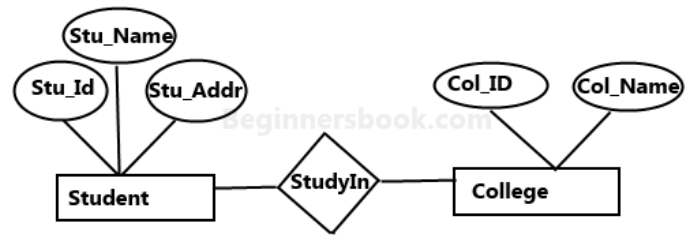
Rectangle: Represents Entity sets.
Ellipses: Attribute**s**
Diamonds: Relationship Set
Lines: They link attributes to Entity Sets and Entity sets to Relationship Set
Double Ellipses: Multivalued Attributes
Dashed Ellipses: Derived Attributes
Double Rectangles: Weak Entity Sets
Double Lines: Total participation of an entity in a relationship set

Components of a ER Diagram:
1. Entity:-
An entity is an object or component of data. An entity is represented as rectangle in an ER diagram. For example: In the following ER diagram we have two entities Student and College and these two entities have many to one relationship as many students study in a single college. We will read more about relationships later, for now focus on entities.
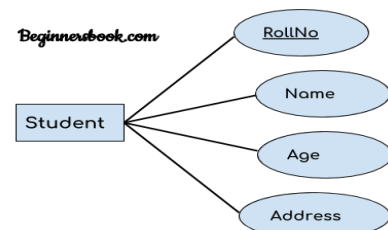
2. Attribute:-
An attribute describes the property of an entity. An attribute is represented as Oval in an ER diagram. There are four types of attributes:.

2.1 Key attribute:
A key attribute can uniquely identify an entity from an entity set. For example, student roll number can uniquely identify a student from a set of students. Key attribute is represented by oval same as other attributes however the text of key attribute is underlined

2.2. Composite attribute:
An attribute that is a combination of other attributes is known as composite attribute. For example, In student entity, the student address is a composite attribute as an address is composed of other attributes such as pin code, state, country.

Address is a composite attribute

2.3. Multivalued attribute:
An attribute that can hold multiple values is known as multivalued attribute. It is represented with double ovals in an ER Diagram. For example – A person can have more than one phone numbers so the phone number attribute is multivalued

2.4. Derived attribute:
A derived attribute is one whose value is dynamic and derived from another attribute. It is represented by dashed oval in an ER Diagram. For example – Person age is a derived attribute as it changes over time and can be derived from another attribute (Date of birth).
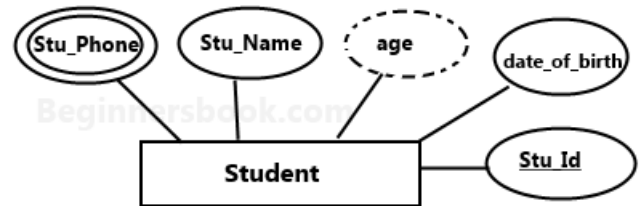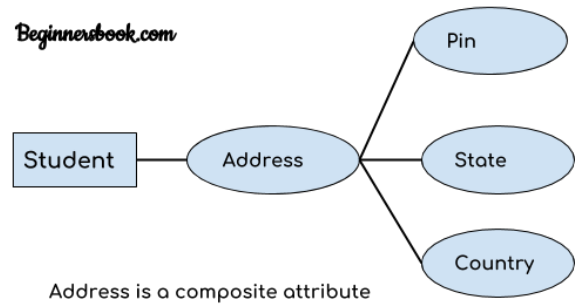
3. Relationship
A relationship is represented by diamond shape in ER diagram, it shows the relationship among entities. There are four types of relationships:

3.1. One to One Relationship
When a single instance of an entity is associated with a single instance of another entity then it is called one to one relationship. For example, a person has only one passport and a passport is given to one person.

3.2. One to Many Relationship
When a single instance of an entity is associated with more than one instances of another entity then it is called one to many relationship. For example – a customer can place many orders but a order cannot be placed by many customers.

3.3. Many to One Relationship
When more than one instances of an entity is associated with a single instance of another entity then it is called many to one relationship. For example – many students can study in a single college but a student cannot study in many colleges at the same time.
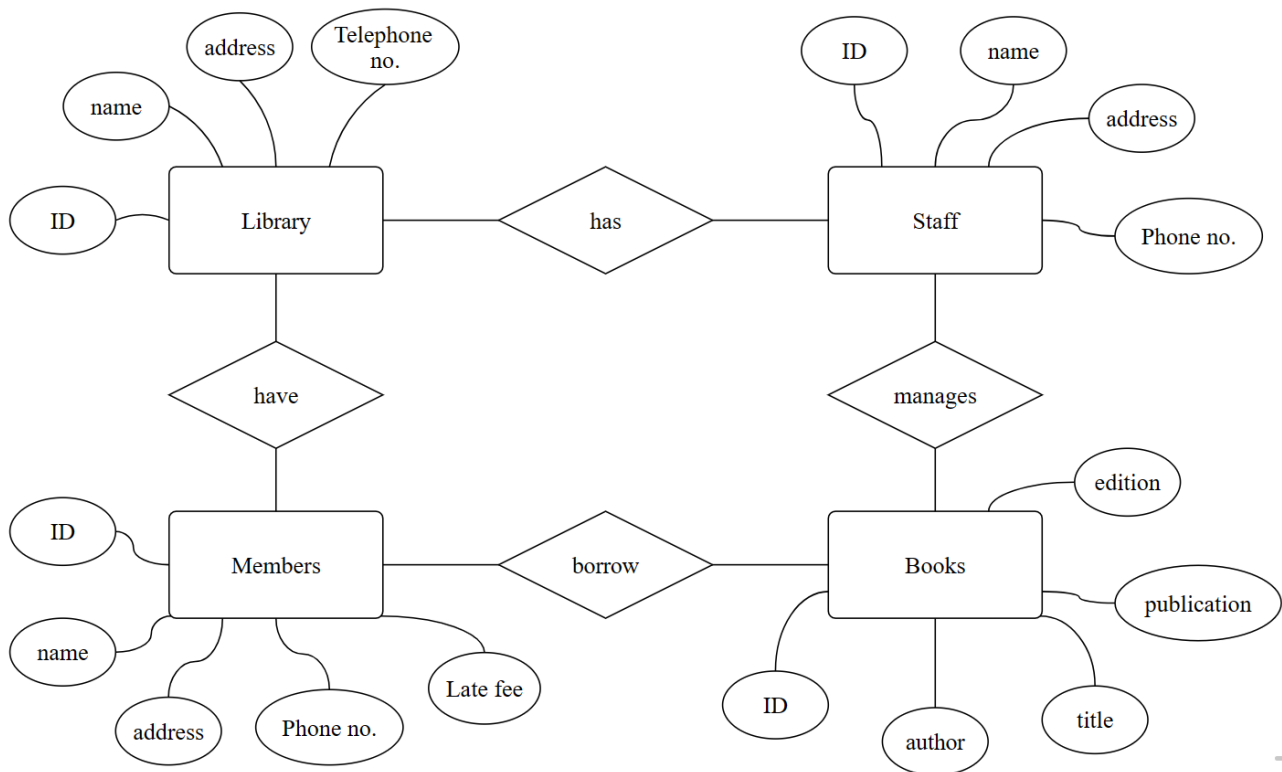

3.4. Many to Many Relationship
When more than one instances of an entity is associated with more than one instances of another entity then it is called many to many relationship. For example, a can be assigned to many projects and a project can be assigned to many students.

Q. Draw an ER Diagram of Library Managment system.

Change as per your question