Experiment 02 – ER Diagram

Learning Objective: Draw ER Diagram for any case study.

Tools: StarUML , etc.

Theory:

ER Diagram:

- **What is an ER Diagram** ?

  An Entity-Relationship (ER) diagram is a visual representation of the entities within a system and the relationships between those entities. It is commonly used in database design and modeling to illustrate the structure of a database and how different data elements relate to one another.

- **What is Entity in ER Diagram ?**

  These are objects or concepts that can have data stored about them. Examples include "Customer," "Order," or "Product." Entities are typically represented by rectangles.

- **What is Relationship in ER Diagram ?**

  These show how entities are related to one another. For example, a "Customer" might place an "Order." Relationships are typically represented by diamonds and are connected to the entities involved. The types of relationships are as follows:

  1. One-to-One (1:1)
  2. One-to-Many (1:M)
  3. Many-to-One (M:1)
  4. Many-to-Many (M:N)

Components of an ER Diagram :

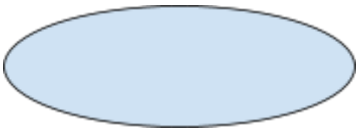
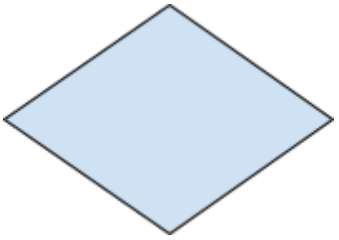
- **Attributes**: These are the data we want to store for each entity. For instance, a "Customer" entity might have attributes such as "CustomerID," "Name," and "Email." Attributes are usually represented by ovals connected to their entity.

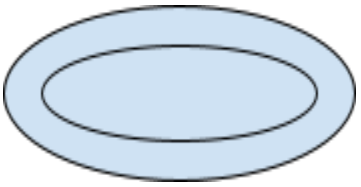
- **Primary Keys**: These are unique identifiers for entities. For instance, "CustomerID" might be the primary key for the "Customer" entity. Primary keys are often underlined.

- **Foreign Keys**: These are attributes that create a link between two entities. For example, an "Order" might have a "CustomerID" that links back to the "Customer" entity.

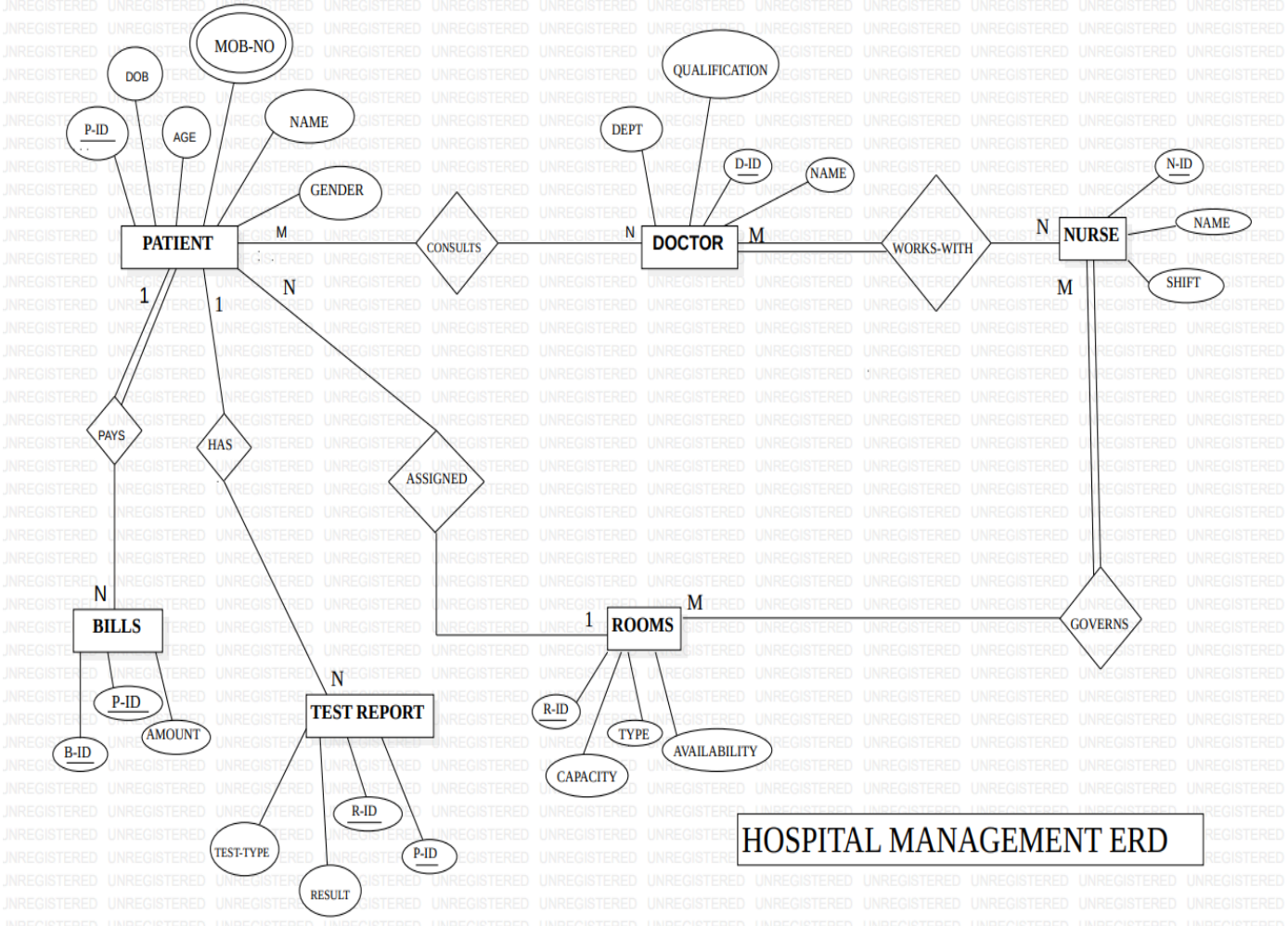
- **Participations :** Participation refers to the extent to which entities in a relationship must participate. There are two main types of participation:
    1. Total Participation
    2. Partial Participation

Symbols & Their Meaning in ER Diagram:

Figure Name	Symbol	Description
Rectangle		**Represents Entity in ER Diagram.**
Ellipse		**Represents Attributes in ER Diagram.**
Diamond	 -	**Represents Relationship in ER Diagram.**

Double Ellipse		**Represents Multivalued Attributes in ER Diagram.**
Single Line		**Represents Partial Participation in ER Diagram.**
Double Line		**Represents Total Participation in ER Diagram.**

ER Diagram:



Learning Outcomes: The student should have the ability to

LO1: **construct** ER Diagram for case study.

Course Outcomes: Upon completion of the course students will be able to understand the basics of ER diagram and its construction.

Conclusion:

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For Faculty Use

Correction Parameters	**Formative Assessment [40%]**	**Timely completion of Practical [40%]**	**Attendance / Learning Attitude [20%]**	
Marks Obtained				