DEPARTMENT OF CSE H

COURSE NAME: DBMS

COURSE CODE:23AD2102R

TOPIC: ENTITY-RELATIONSHIP (ER) MODELLING CONCEPTS

Session - 4

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CATEGORY 1 UNIVERSITY BY MHRD, Govt. of India
43 YEARS OF EDUCATIONAL LEADERSHIP

AIM OF THE SESSION

To familiarize students with the basic concept of Data Modelling

INSTRUCTIONAL OBJECTIVES

This Session is designed to: Notation used in ER Diagram

LEARNING OUTCOMES

At the end of this session, you should be able to: Draw ER Diagram

ER MODEL IN DBMS

ER (Entity Relationship) model in DBMS

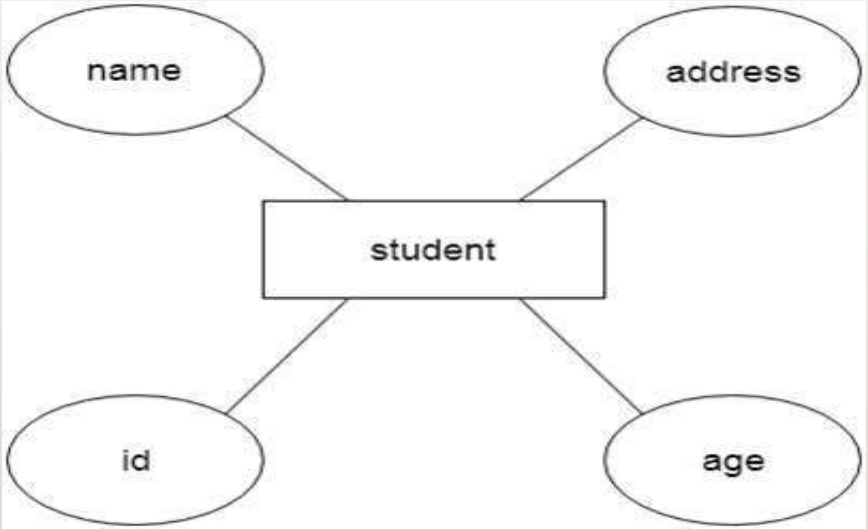
•ER model stands for an Entity-Relationship model. It is a high-level data model.

•This model is used to define the data elements and relationship for a specified system.

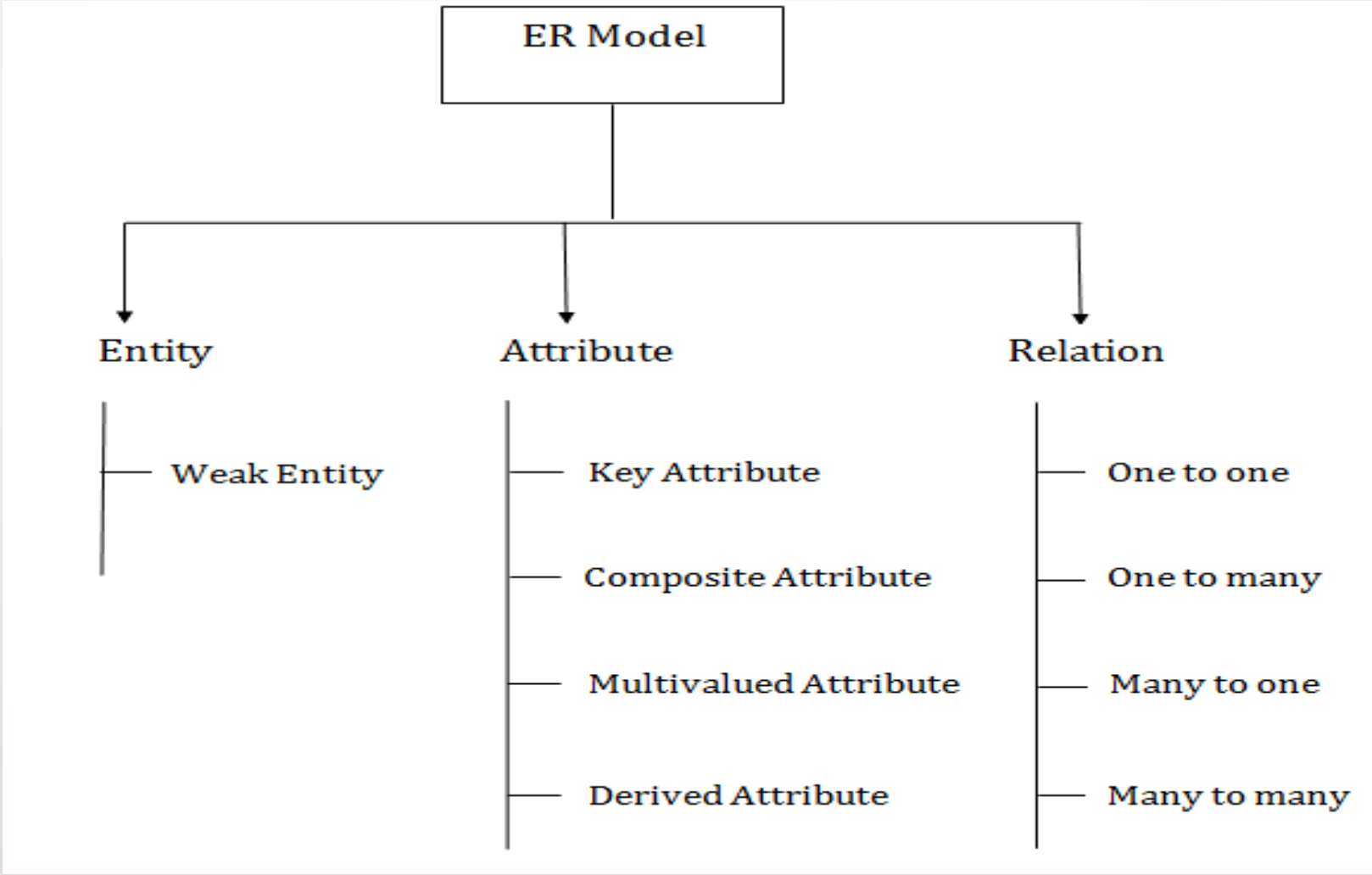
•It develops a conceptual design for the database. It also develops a very simple and easy to design view of data.

•In ER modeling, the database structure is portrayed as a diagram called an entity-relationship diagram.

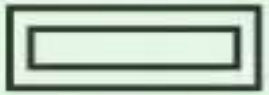
For example, Suppose we design a school database. In this database, the student will be an entity with attributes like address, name, id, age, etc. The address can be another entity with attributes like city, street name, pin code, etc and there will be a relationship between them.



COMPONENTS OF ER DIAGRAM



NOTATION OF ER DIAGRAM

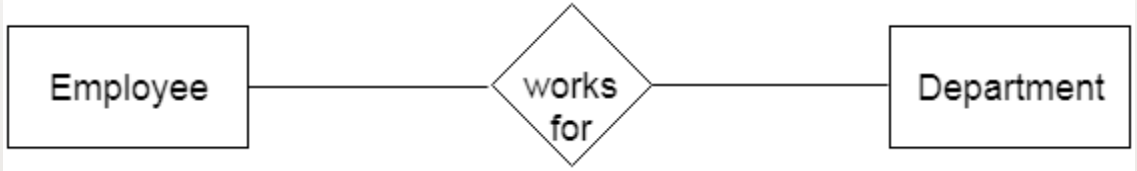
Figures	Symbols	Represents
Rectangle		Entities in ER Model
Ellipse		Attributes in ER Model
Diamond		Relationships among Entities
Line		Attributes to Entities and Entity Sets with Other Relationship Types
Double Ellipse		Multi-Valued Attributes
Double Rectangle		Weak Entity

ER DIAGRAM NOTATIONS

1. Entity:

An entity is any object, class, person or place. In the ER diagram, an entity can be represented as rectangles.

Consider an organization as an example- manager, product, employee, department etc. can be taken as an entity.



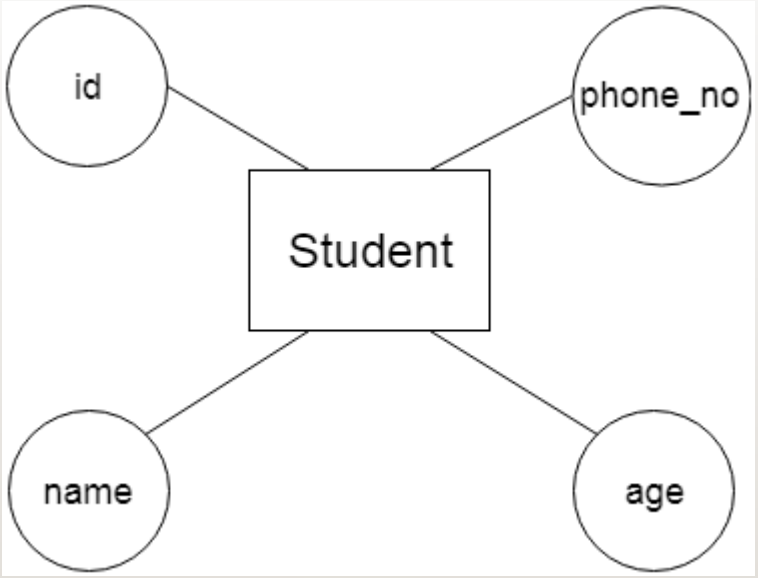
a. Weak Entity

ER DIAGRAM NOTATOINS

2. Attribute

The attribute is used to describe the property of an entity. Eclipse is used to represent an attribute.

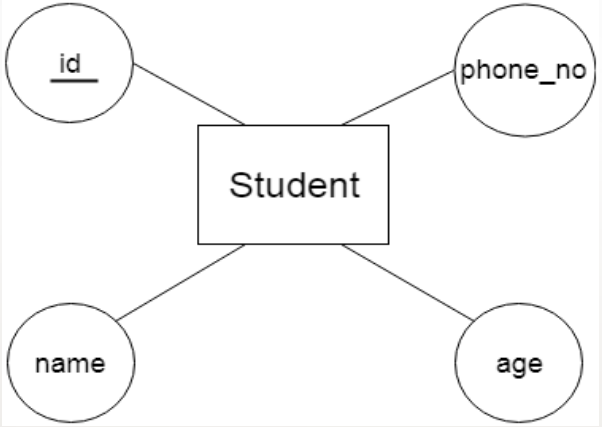
For example, id, age, contact number, name, etc. can be attributes of a student.



ER DIAGRAM NOTATIONS

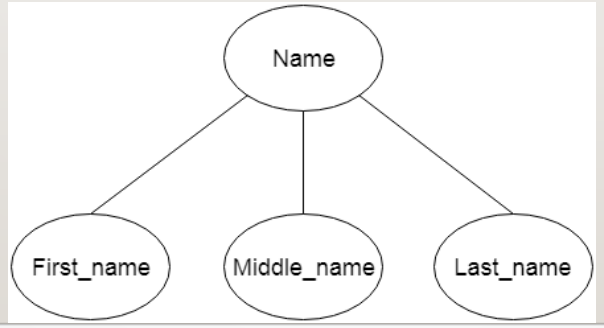
a. Key Attribute

The key attribute is used to represent the main characteristics of an entity. It represents a primary key. The key attribute is represented by an ellipse with the text underlined.



b. Composite Attribute

An attribute that composed of many other attributes is known as a composite attribute. The composite attribute is represented by an ellipse, and those ellipses are connected with an ellipse.



c. Multivalued Attribute

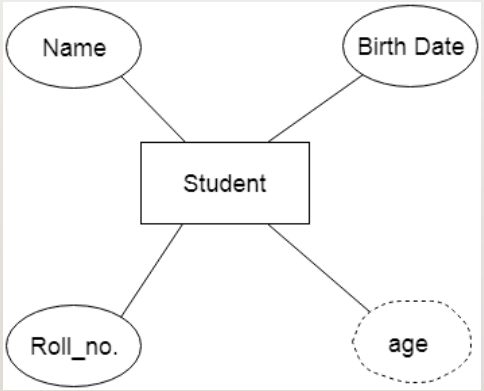
An attribute can have more than one value. These attributes are known as a multivalued attribute. The double oval is used to represent multivalued attribute.

For example, a student can have more than one phone number.

d. Derived Attribute

An attribute that can be derived from other attribute is known as a derived attribute. It can be represented by a dashed ellipse.

For example, A person's age changes over time and can be derived from another attribute like Date of birth.



ER DIAGRAM NOTATIONS

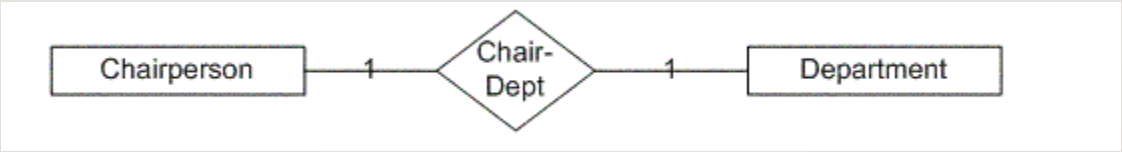
3. Relationship

A relationship is used to describe the relation between entities. Diamond or rhombus is used to represent the relationship.

Types of relationship are as follows:

a. One-to-One Relationship

When only one instance of an entity is associated with the relationship, then it is known as one-to-one relationship.



ER DIAGRAM NOTATIONS

b. One-to-many relationship

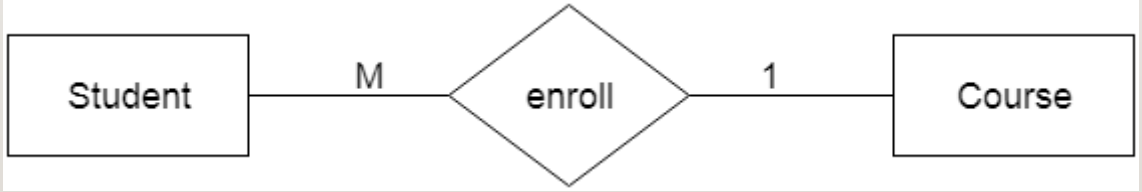
When only one instance of the entity on the left, and more than one instance of an entity on the right associates with the relationship then this is known as a one-to-many relationship.

For example, Scientist can invent many inventions, but the invention is done by the only specific scientist.

c. Many-to-one relationship

When more than one instance of the entity on the left, and only one instance of an entity on the right associates with the relationship then it is known as a many-to-one relationship.

For example, Student enrolls for only one course, but a course can have many students.

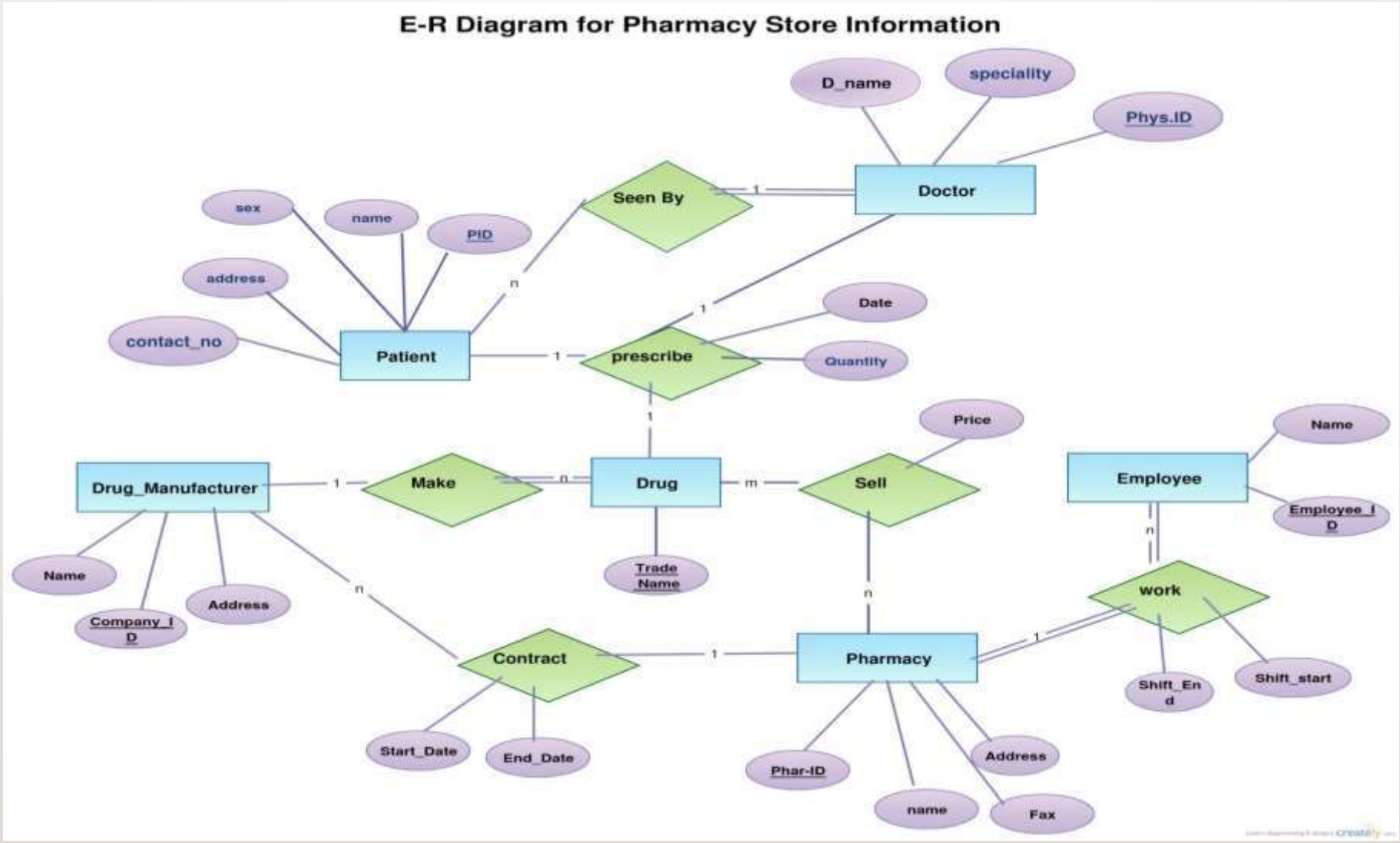


d. Many-to-many relationship

When more than one instance of the entity on the left, and more than one instance of an entity on the right associates with the relationship then it is known as a many-to-many relationship.

For example, Employee can assign by many projects and project can have many employees.

EXAMPLES


E-R Diagram for Pharmacy Store Information
D_name
speciality
Phys.ID
Doctor
Seen By
sex
name
PID
address
contact_no
Patient
prescribe
Date
Quantity
Drug_Manufacturer
Make
Drug
Sell
Price
Name
Company_ID
Address
Trade Name
Contract
Start_Date
End_Date
Pharmacy
Phar-ID
name
Fax
Employee
Employee_ID
work
Shift_End
Shift_start

SUMMARY

- ER Model in DBMS stands for an Entity-Relationship model
- The ER model is a high-level data model diagram
- ER diagrams are a visual tool which is helpful to represent the ER model
- ER diagrams in DBMS are blueprint of a database
- Entity relationship diagram DBMS displays the relationships of entity set stored in a database
- ER diagrams help you to define terms related to entity relationship modeling
- ER Model in DBMS is based on three basic concepts: Entities, Attributes & Relationships
- An entity can be place, person, object, event or a concept, which stores data in the database (DBMS)
- Relationship is nothing but an association among two or more entities
- A weak entity is a type of entity which doesn't have its key attribute
- It is a single-valued property of either an entity-type or a relationship-type
- It helps you to defines the numerical attributes of the relationship between two entities or entity sets
- ER- Diagram DBMS is a visual representation of data that describe how data is related to each other
- While Drawing ER diagrams in DBMS, you need to make sure all your entities and relationships are properly labeled.

SELF-ASSESSMENT QUESTIONS

1. ----are some problems that can occur when creating an ER model

(a) Connection traps
(b) Transition traps
(c) Group traps
(d) Data traps

2. Which of the following diagram is used for an attribute in ER model

(a) rectangle
(b) oval
(c) diamond
(d) lime

TERMINAL QUESTIONS

1. Describe ER model

2. List out ER Notations

REFERENCES

Reference Books:

1. Fundamentals of Database Systems by Elmasri Navathe

Sites and Web links:

1. DBMS Notation for ER diagram - javatpoint

THANK YOU

(DEEMED TO BE UNIVERSITY)

Team – DBMS