DATABASE MANAGEMENT SYSTEM(ITC303)

Subject Incharge

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ER Model

Content

- Conceptual Modeling of a database
- Entity-Relationship Model
- Entity
- Entity Set
- Attributes
- Type of Entity Sets and
- Type of Attributes

ER Model

- Conceptual data model, **describes the database at a very high level and is useful to understand the needs or requirements of the database**.
- It is used in the requirement gathering process i.e., before the Database Designers start making a particular database.

ER Model

- ER model is a conceptual model by which you can understand the structure of database ,maintain relationship between components and Identifies the key constraints that occurs in the integrated design of complete DBS

There are three components in ER Model

- Entity
- Attributes
- Relationship

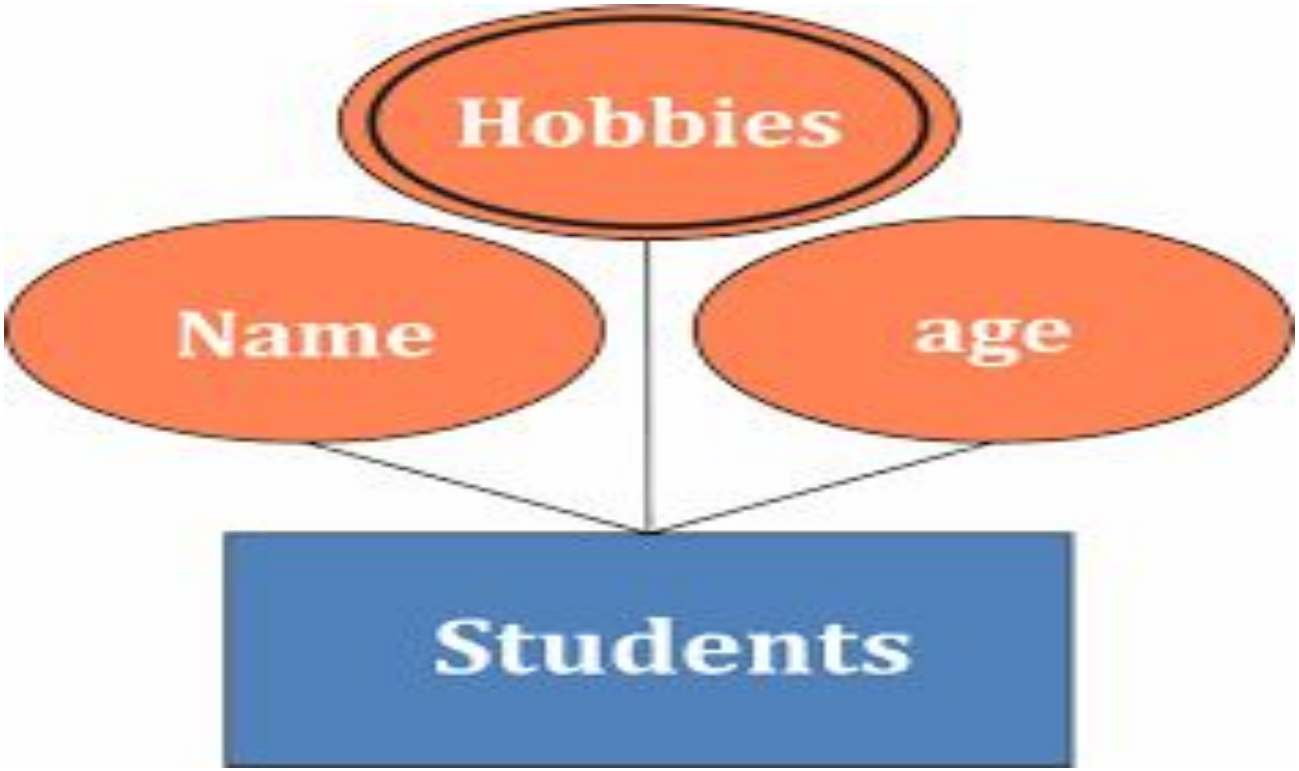
Entity

Entity is a real world **object** that can be distinguishable from other entities

Ex: Book is an entity set, where DBMS,Java program,PCPF are the entities

Entity set: is a collection of **similar entities that share same properties.**

Example for Entity



Attribute

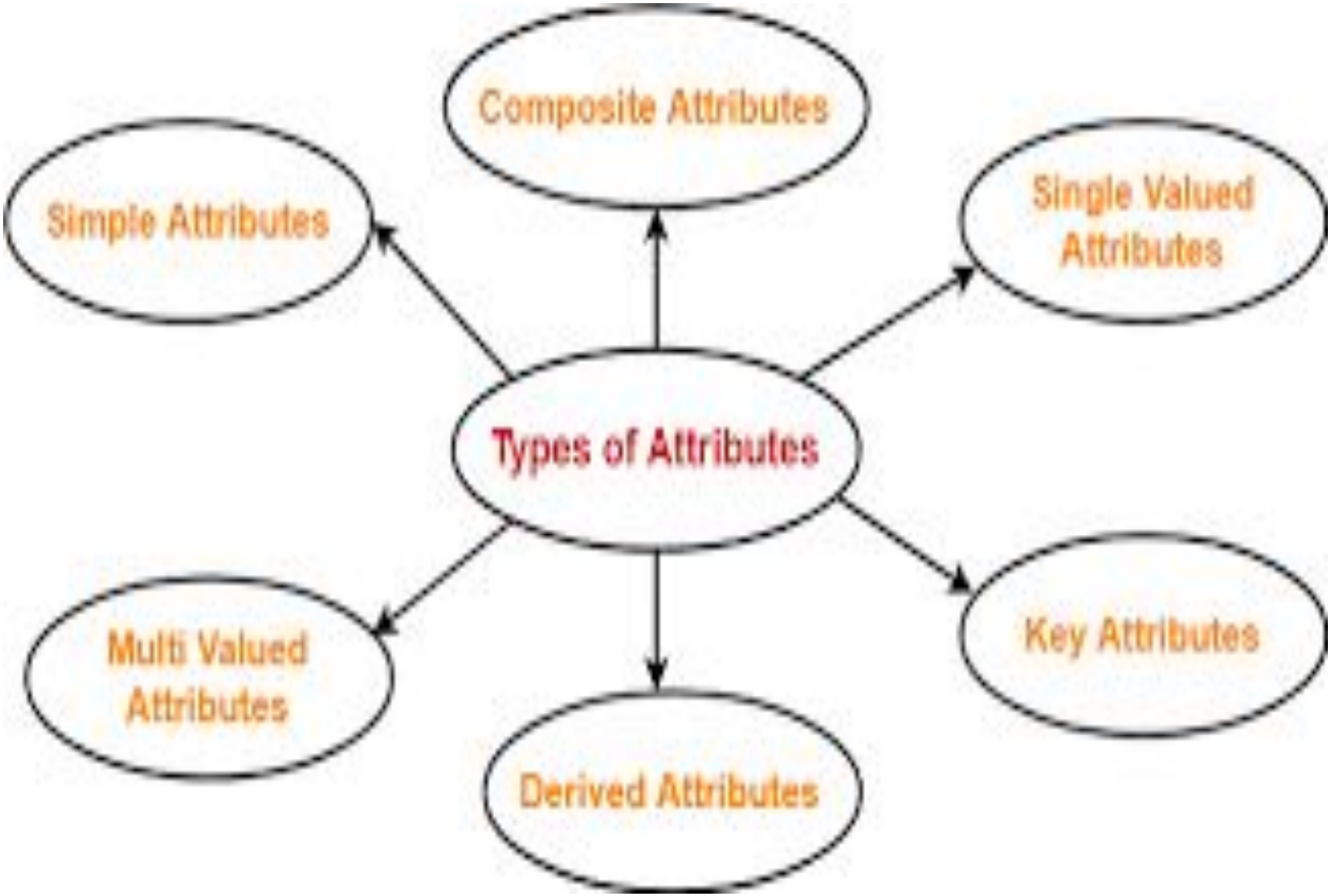
Attribute is a specific part of an entity structure.

or

Attribute are properties which define an Entity type

or

Attribute is a mapping from an Entity set to its domain value


Composite Attributes
Simple Attributes
Single Valued Attributes
Types of Attributes
Multi Valued Attributes
Key Attributes
Derived Attributes

Symbols used for ER Diagram

Represents Entity

Represents Attribute

Represents Relationship

Links Attribute(s) to entity set(s) or
Entity set(s) to Relationship set(s)

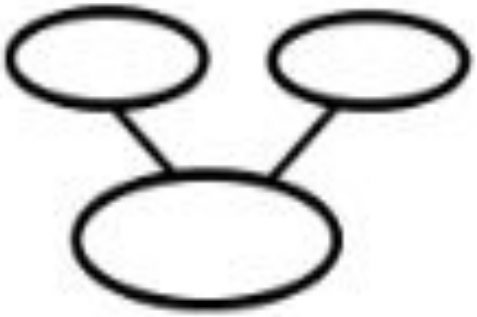
Represents Multivalued Attributes

Represents Derived Attributes

Represents Total Participation of Entity

Symbols used for ER Diagram

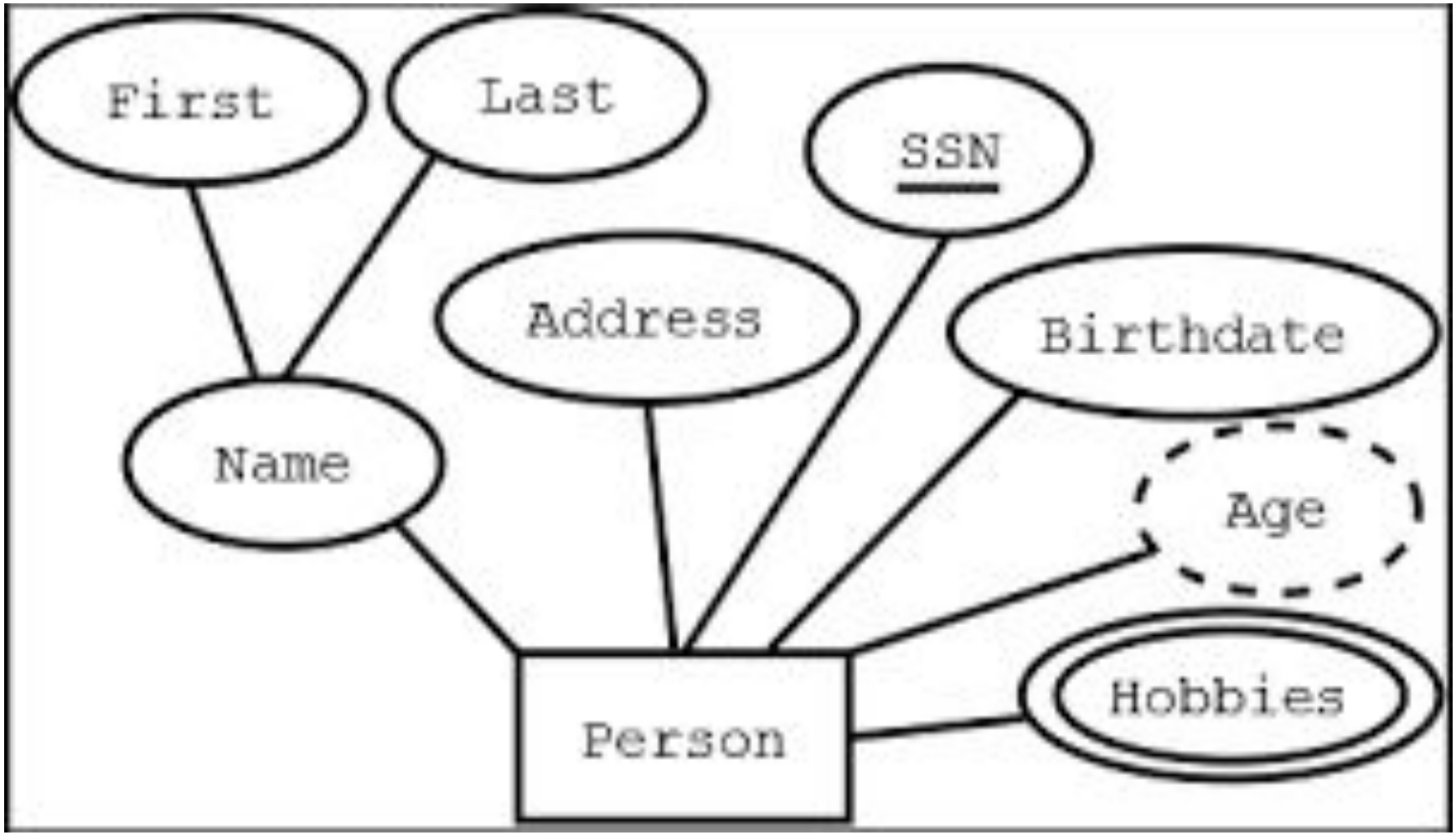
Represents Weak Relationships



Represents Composite Attributes

Represents Key Attributes / Single Valued Attributes

Example for entity set and attributes

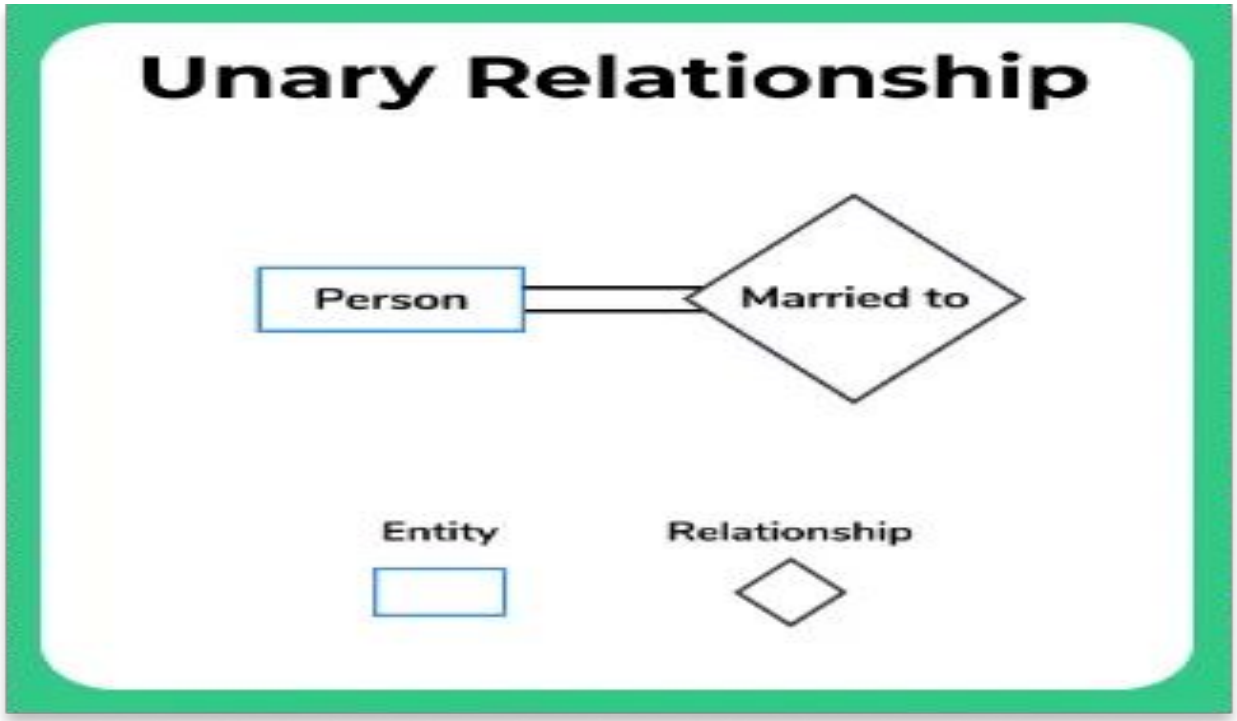


Types of Relationships

- **The relationship also *shows the different entity sets that are participating in a relationship,* these relationships are very much useful for analyzing the design process of the system.**
- **There are 5 types of relationships**
  a. **Unary Relationship**
  b. **Binary Relationship**
  c. **n-ary Relationship**
  d. **Ternary Relationship**

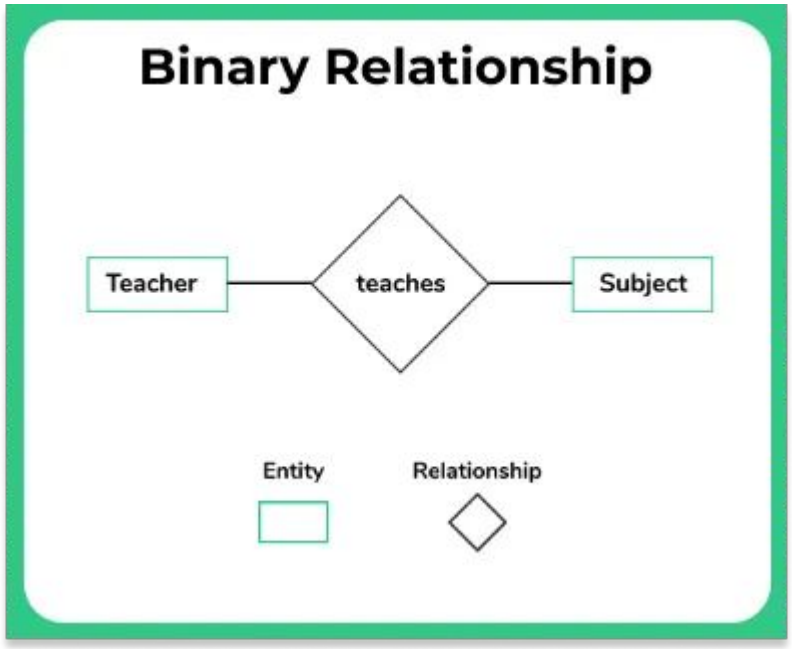
Unary relationship

When there is only one entity set participating in a relationship then such type of relationship is called unary relationship

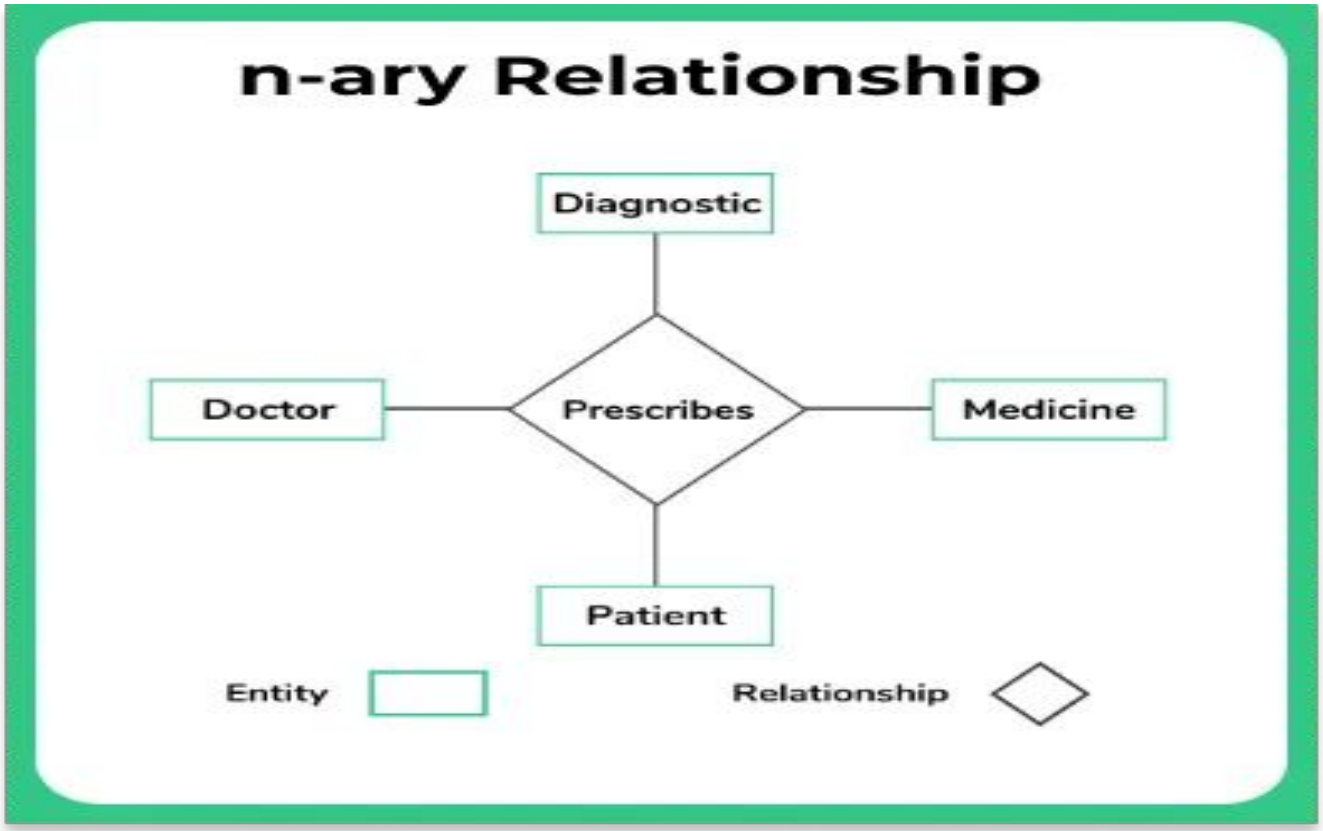


Binary relationship

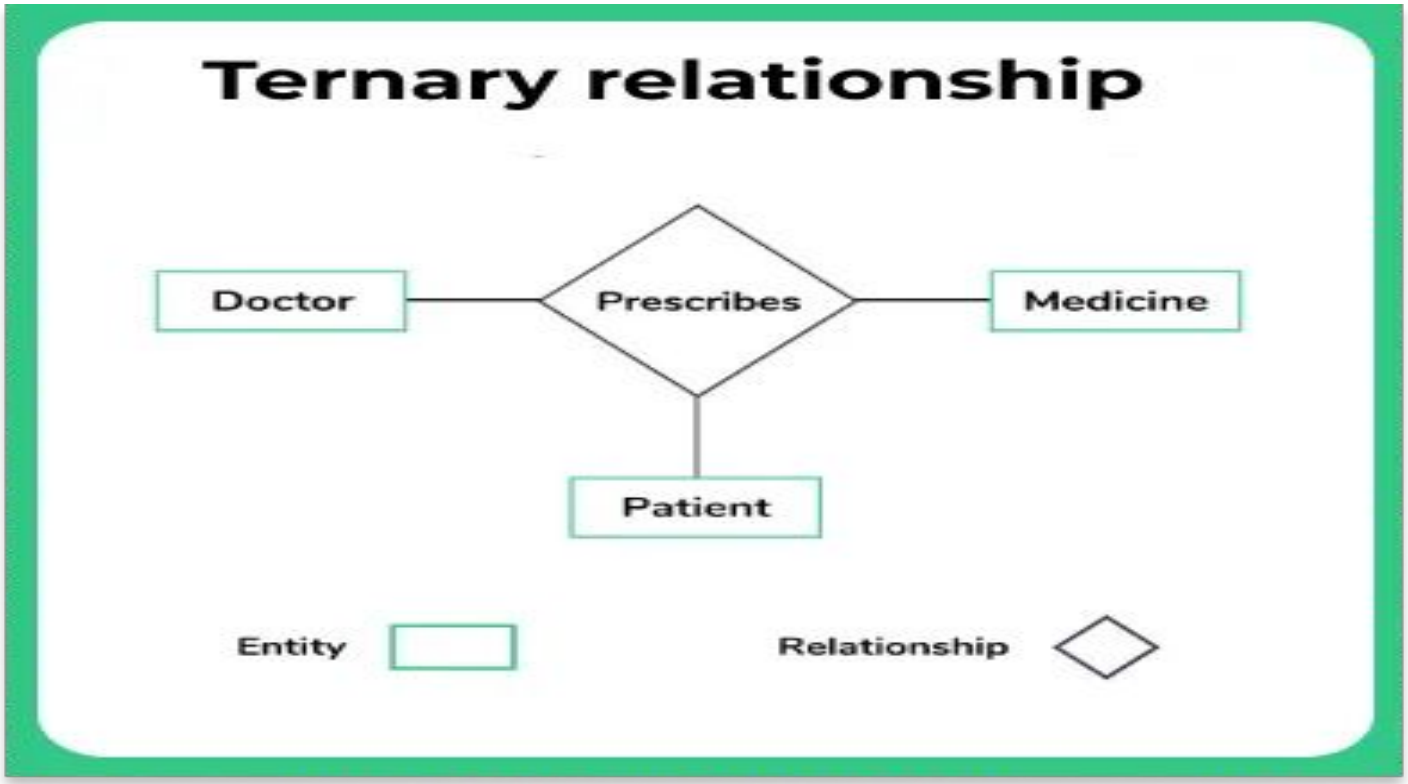
When there are exactly two entity sets participating in a relationship then such type of relationship is called binary relationship



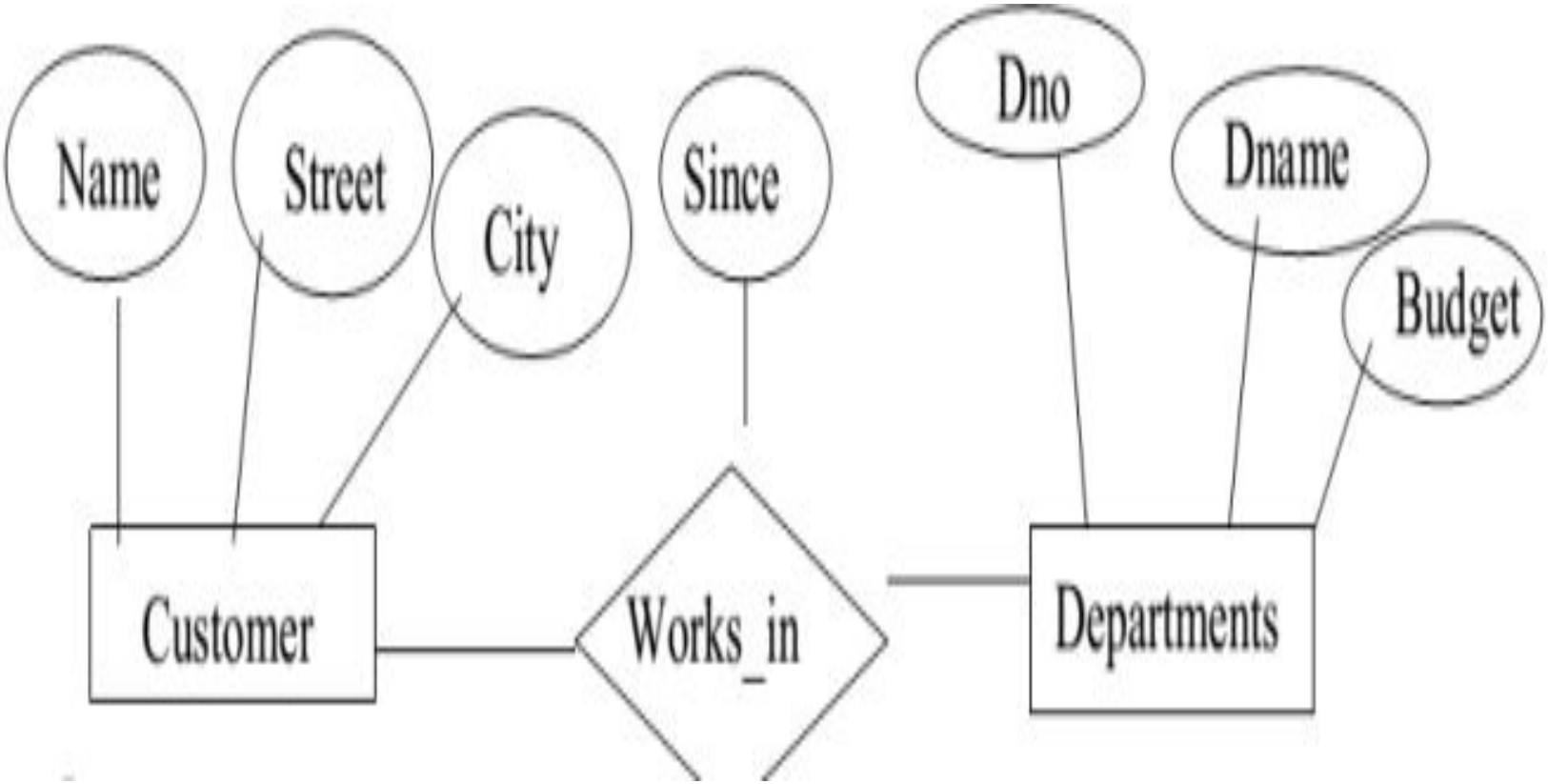
When a large number of entity sets are participating in a relationship, then such type of relationship is called an n-ary relationship



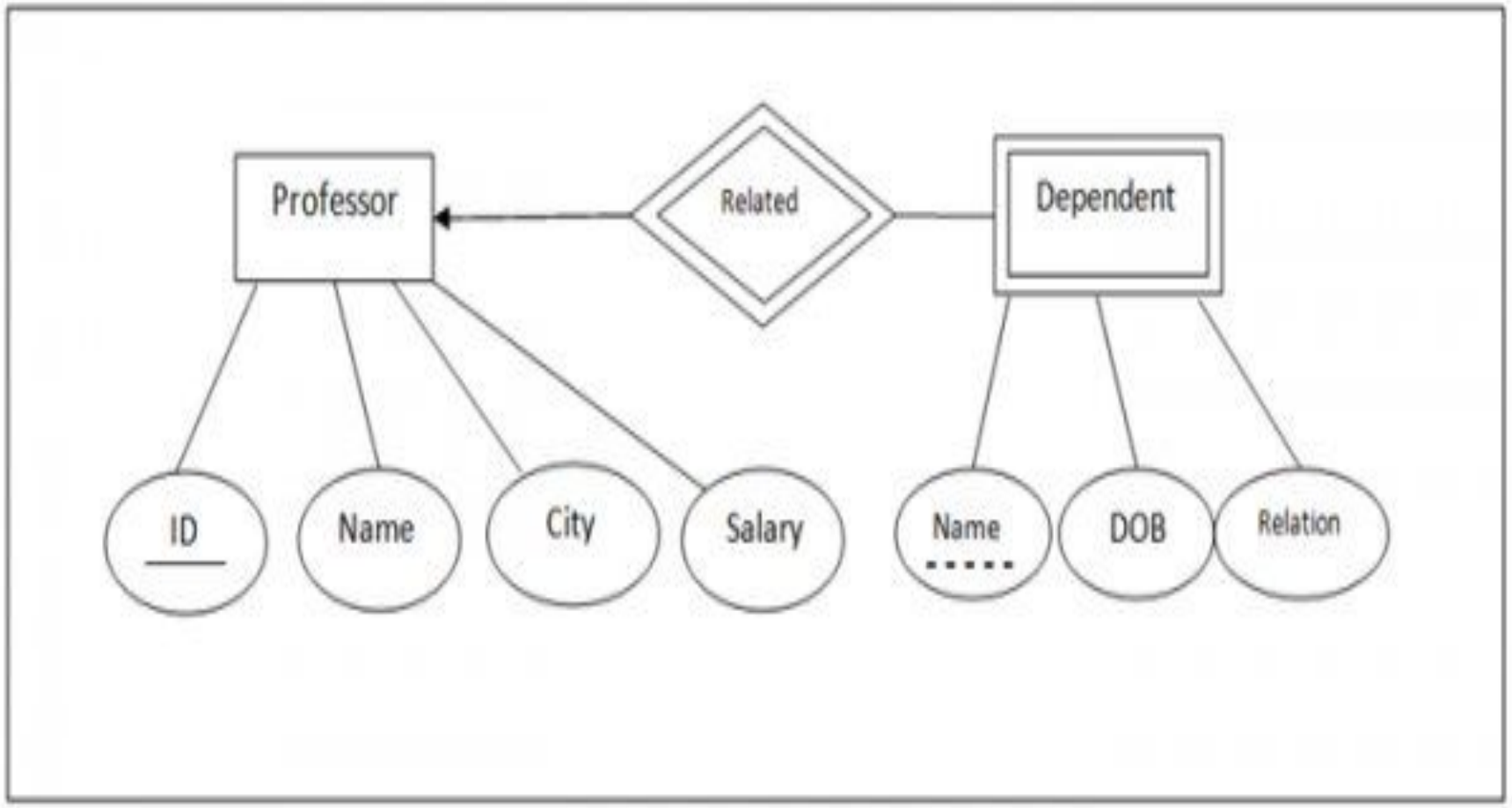
When there are exactly three entity sets participating in a relationship then such type of relationship is called ternary relationship



Descriptive attribute



Example for Strong and Weak Entity set



Degree of Relationshipset

Number of different entity sets participate in a relationship set is called as degree of Relationship set.