

# *What is E-R diagram?*

- **E-R Diagram:** (Entity-Relationship Diagram)
- It is **Graphical Representation** of Database.
- It uses different types of **Symbols** to represent different **Objects** of database.

# Entity

- An Entity is a **Person**, a **Place** or an **Object**.
- An Entity is represented by a **Rectangle** which contains the name of an entity.
- Example: Entities of a college database are:
  - Student
  - Professor/Faculty
  - Course
  - Department
  - Result
  - Class
  - Subject



Entity Name

Symbol



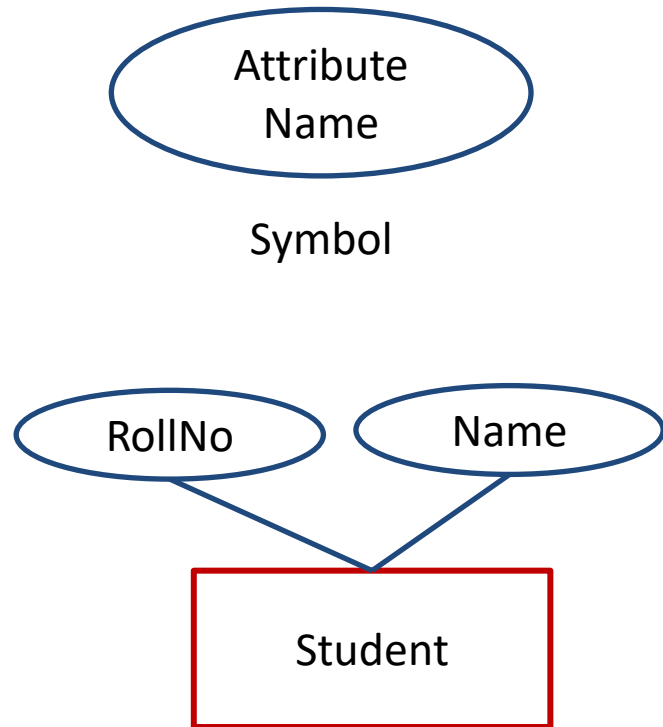
Student

# Entity Set

- It is a **Set (Group) of Entities** of same type.
- Examples:
  - All persons having an account in a bank
  - All the students studying in a college
  - All the professors working in a college
  - Set of all accounts in a bank

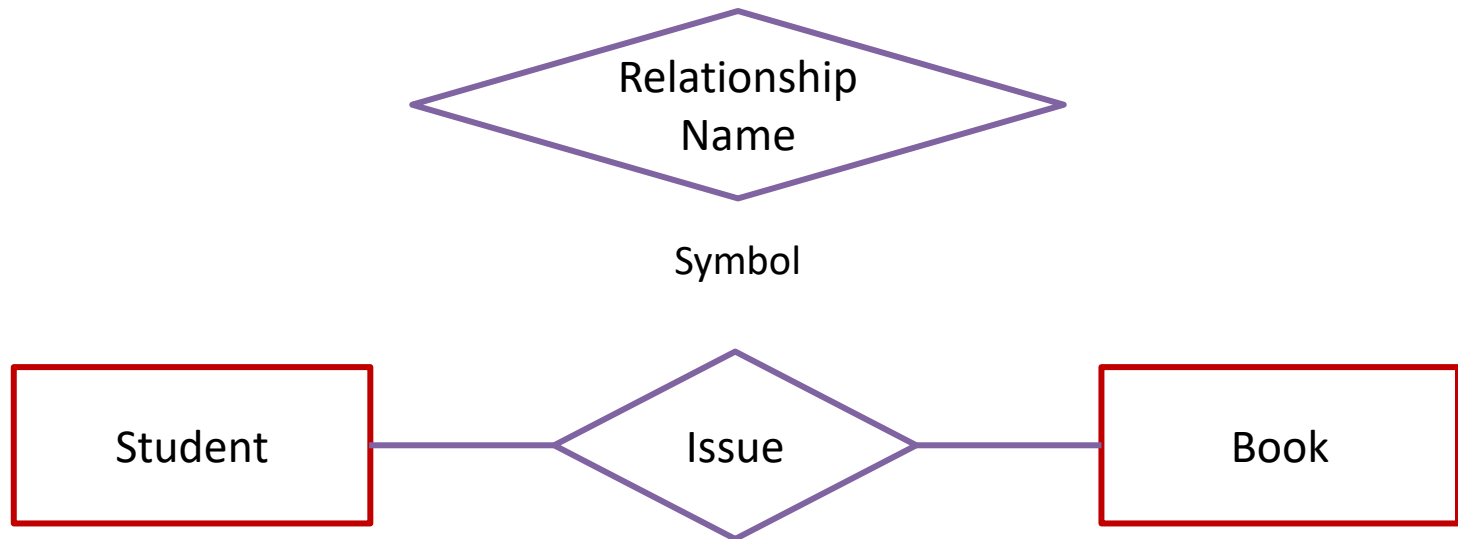
# Attributes

- Attribute is **Properties** or Details about an Entity.
- An attribute is represented by an **oval** containing name of an attribute.
- Attributes of Student are:
  - Roll No
  - Student Name
  - Branch
  - Semester
  - Address
  - Mobile No
  - Age
  - SPI
  - Backlogs

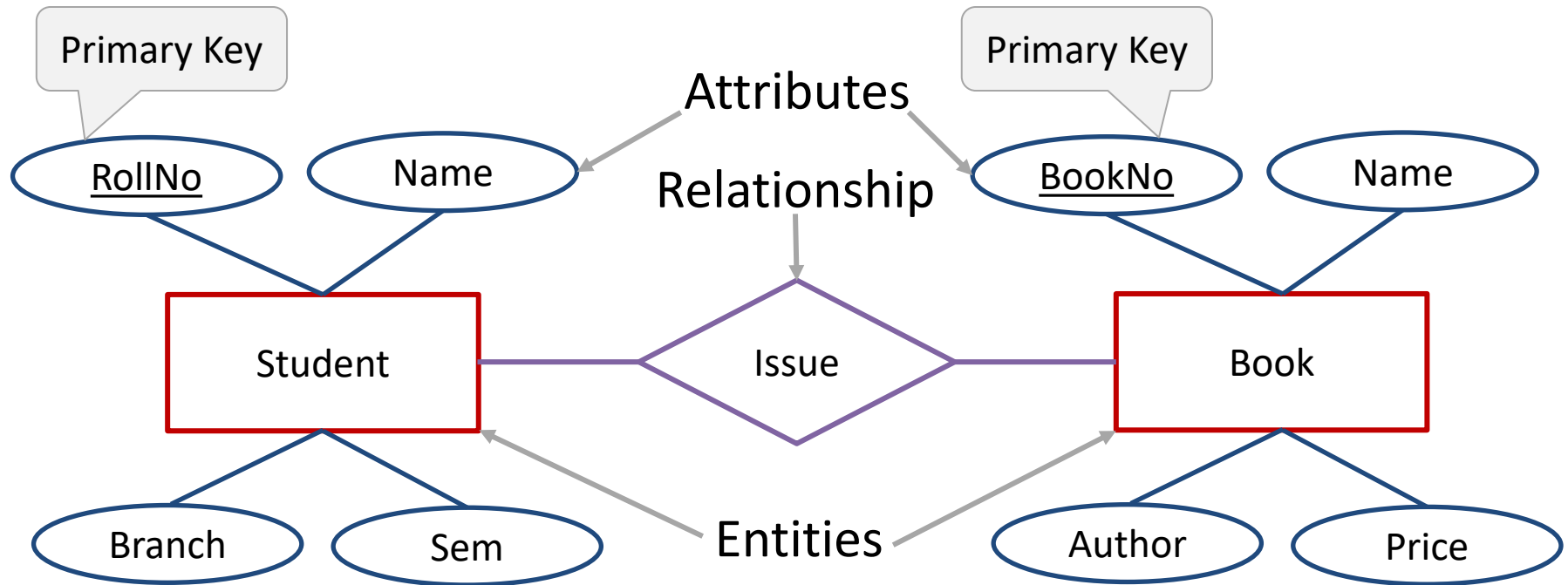


# Relationship


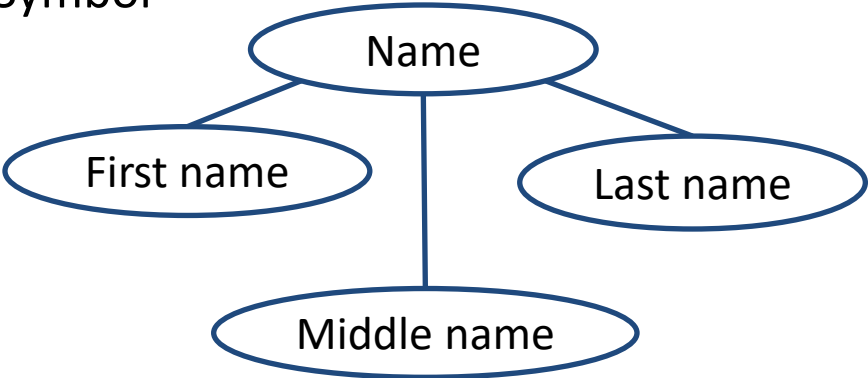
- Relationship is an **Association (Connection)** between several entities.
- It should be placed between two entities and a line connecting it to an entity.
- A relationship is represented by a **Diamond** containing relationship's name.





# E-R Diagram of a Library Management System





# Types of Attribute

Simple Attribute	Composite Attribute
<b>Cannot be divided</b> into subparts	<b>Can be divided</b> into subparts
E.g. RollNo, CPI	E.g. Name (first name, middle name, last name)  Address (street, road, city)
Symbol 	Symbol 

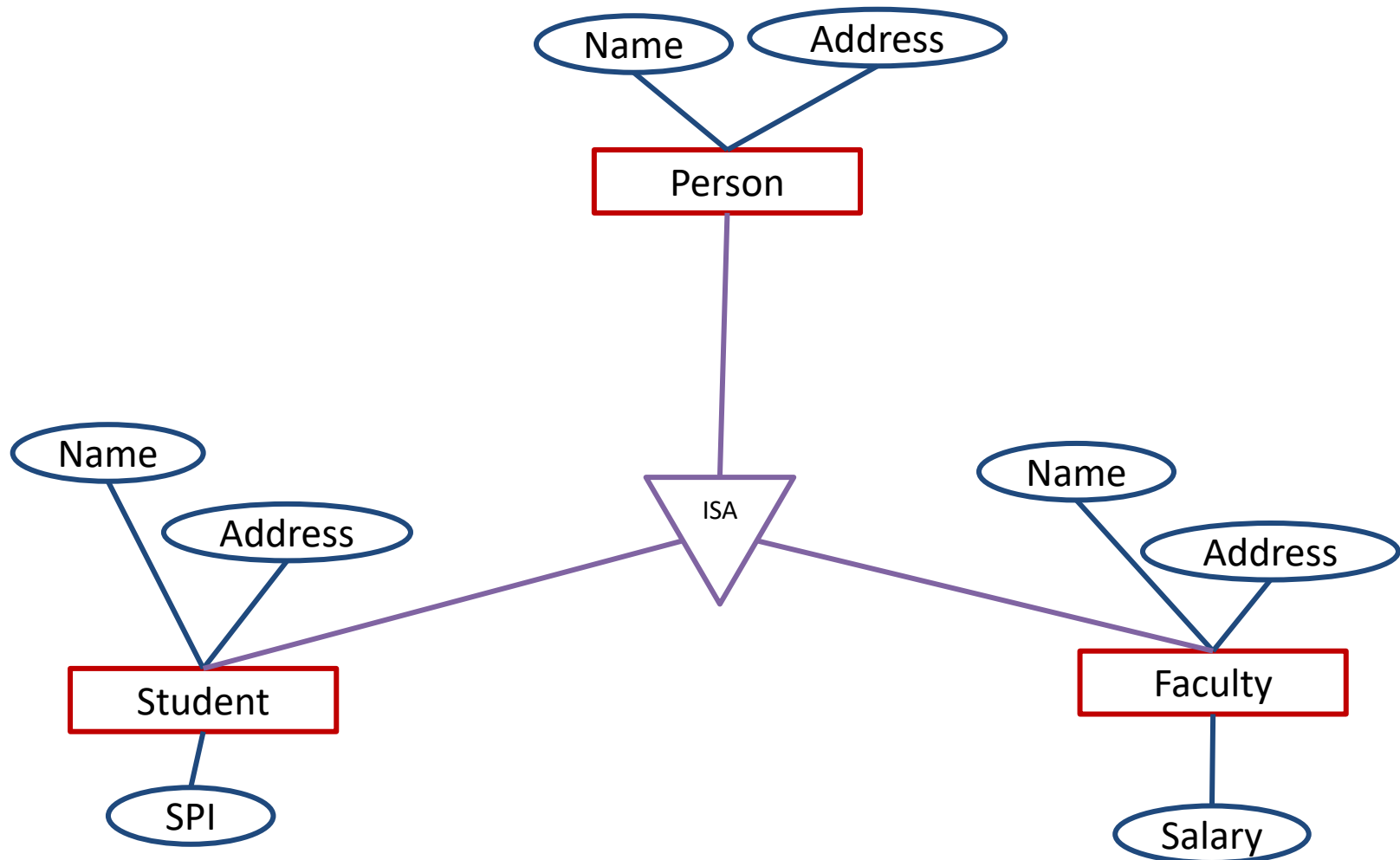
Single-valued Attribute	Multi-valued Attribute
Has <b>single value</b>	Have <b>multiple value</b>
E.g. Rollno, CPI	E.g. Phoneno (person may have multiple phone nos)  EmailID (person may have multiple emails)
Symbol 	Symbol 



Stored Attribute	Derived Attribute
It's value is <b>stored manually</b> in database	It's value is <b>derived</b> or <b>calculated</b> from other attributes.
E.g. Birthdate	E.g. Age (can be calculated using current date and birthdate)
Symbol 	Symbol 

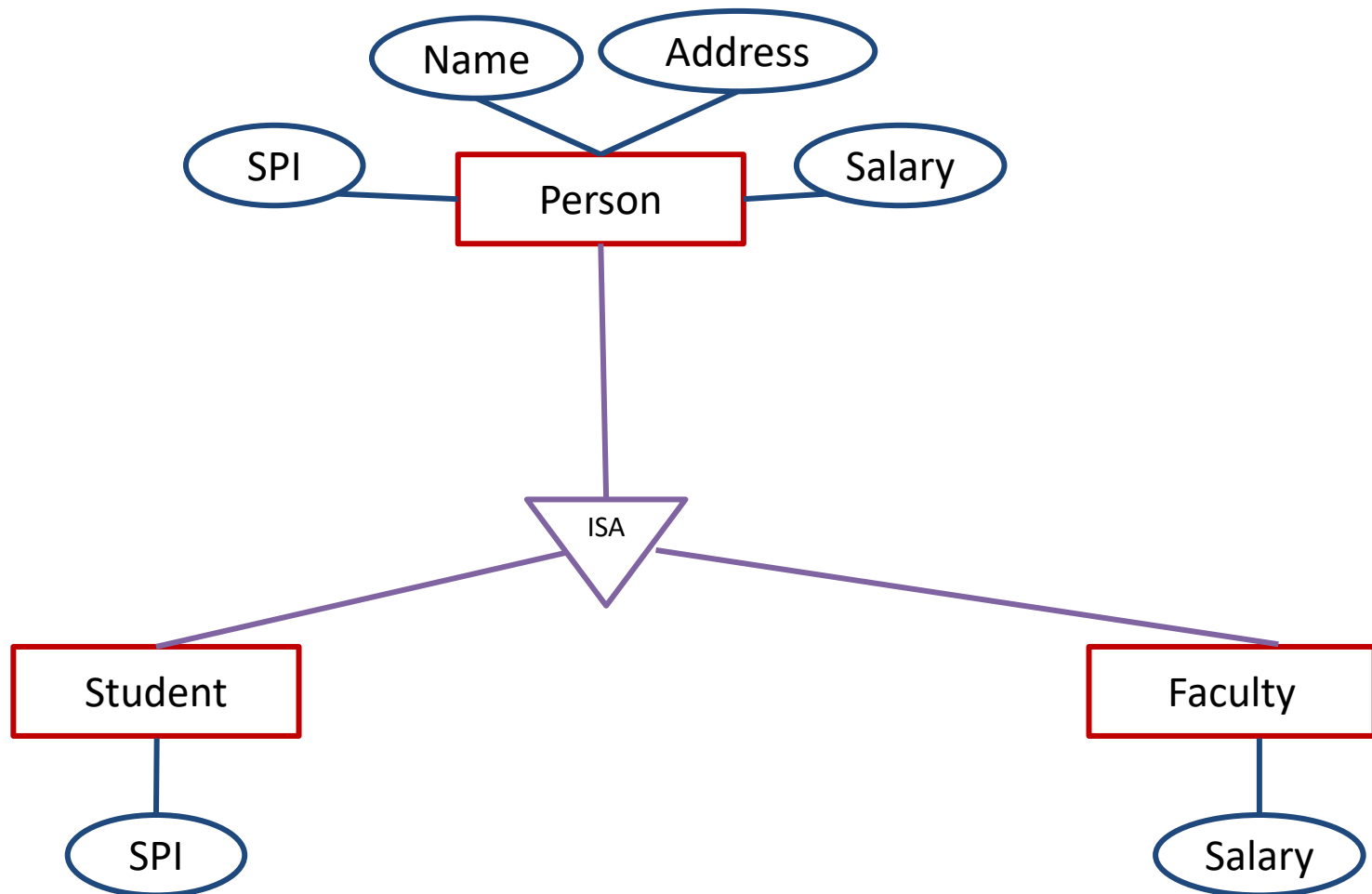
# Generalization

- The process of creation of group from various entities is called Generalization.
- It **extracts the common features** of **multiple entities** to **form a new entity**.



# Specialization

- The process of creation of **sub-groups within an entity** is called Specialization.
- It **splits an entity** to **form multiple new entities** that **inherit some feature of the splitting entity**.



# E-R Diagram of Hospital Management System

