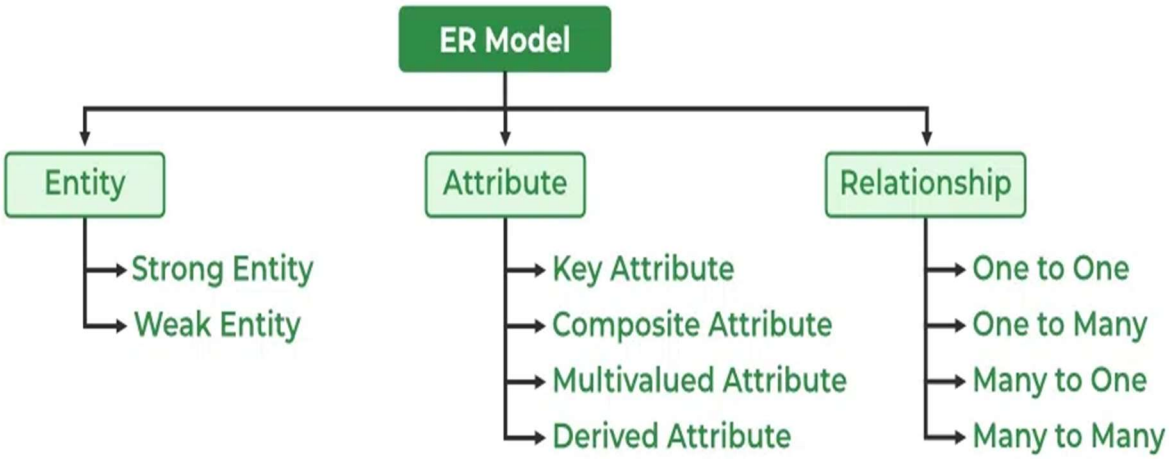
The Entity Relational Model is a model for identifying entities to be represented in the database and representation of how those entities are related. The ER data model specifies enterprise schema that represents the overall logical structure of a database graphically.

The main components of an ER diagram are:

1. Entities: An entity represents a real-world object, concept, or thing that can be uniquely identified. Entities are typically nouns and are the fundamental building blocks of an ER diagram. Examples of entities include "Customer," "Product," "Employee," etc.
2. Attributes: Attributes are the properties or characteristics of entities. They provide more detailed information about the entities and help define their characteristics. Attributes are usually depicted as ovals connected to the respective entities. For instance, attributes of a "Customer" entity could include "Name," "Address," "Email," etc.
3. Relationships: Relationships describe how entities are connected or associated with each other. They capture the interactions and dependencies between entities. Examples of relationships are "Owns," "Works For," "Buys," etc.



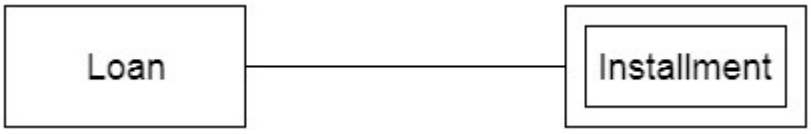
Types of Entity->

a. Strong Entity

A strong entity is an entity that is not dependent on any other entity. It contain primary key.

b. Weak Entity

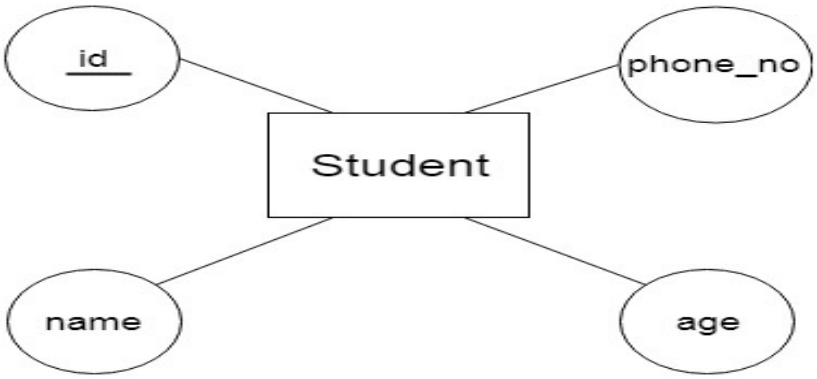
An entity that depends on another entity called a weak entity. The weak entity doesn't contain any key attribute of its own. The weak entity is represented by a double rectangle.



Types of Attributes->

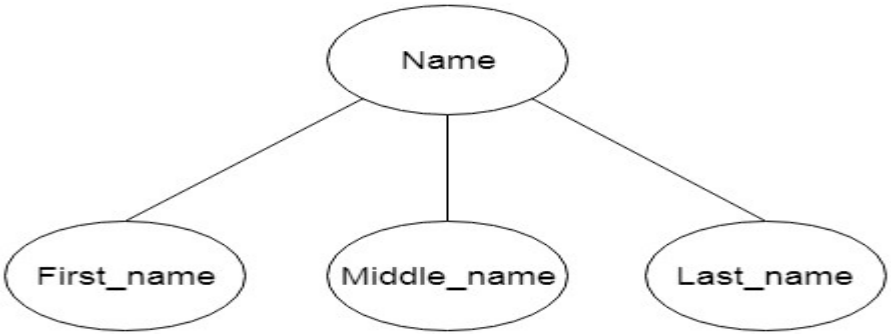
a. Key Attribute

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

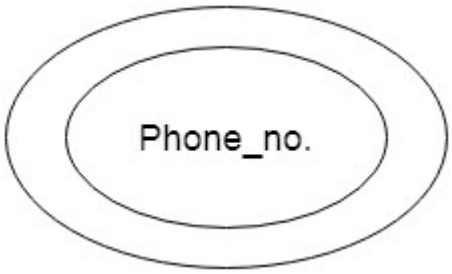
An attribute that composed of many other attributes is known as a composite attribute. The composite attribute is represented by an ellipse, and those ellipses are connected with an ellipse.



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.

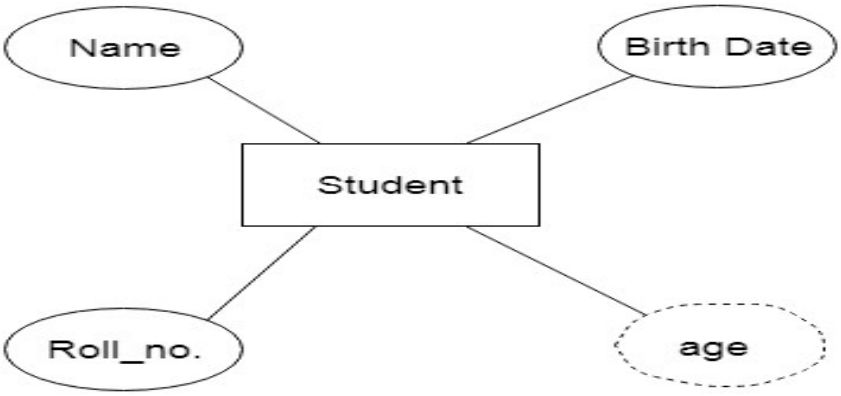
For example, a student can have more than one phone number.



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.



Types of relationship ->

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.

For example, A female can marry to one male, and a male can marry to one female.

b. One-to-many relationship

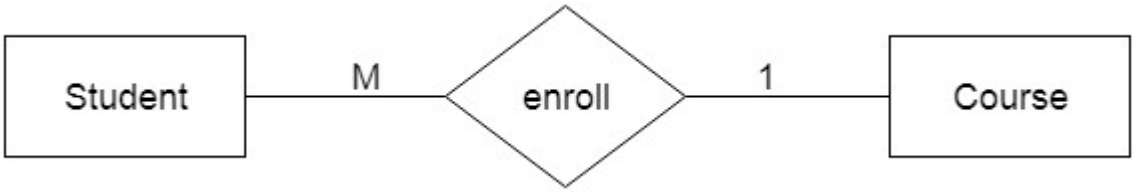
When only one instance of the entity on the left, and more than one instance of an entity on the right associates with the relationship then this is known as a one-to-many relationship.

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.

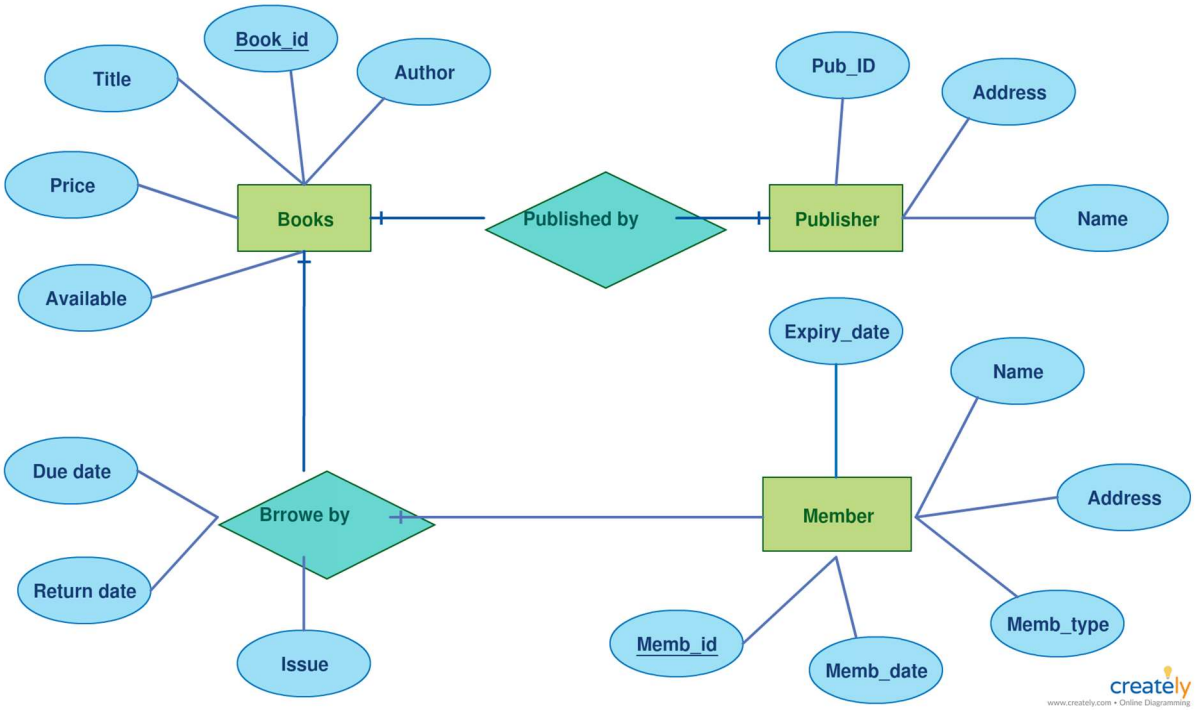


d. Many-to-many relationship

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.

E-R Diagram for Library Management System



E-R Diagram for Pharmacy Store Information