

# CS6106 - DATA BASE MANAGEMENT SYSTEMS

(Week 2 – 14.02.2024)

## OBSERVATION

### ENTITY RELATIONSHIP MODEL (E-R)

#### **Entity:**

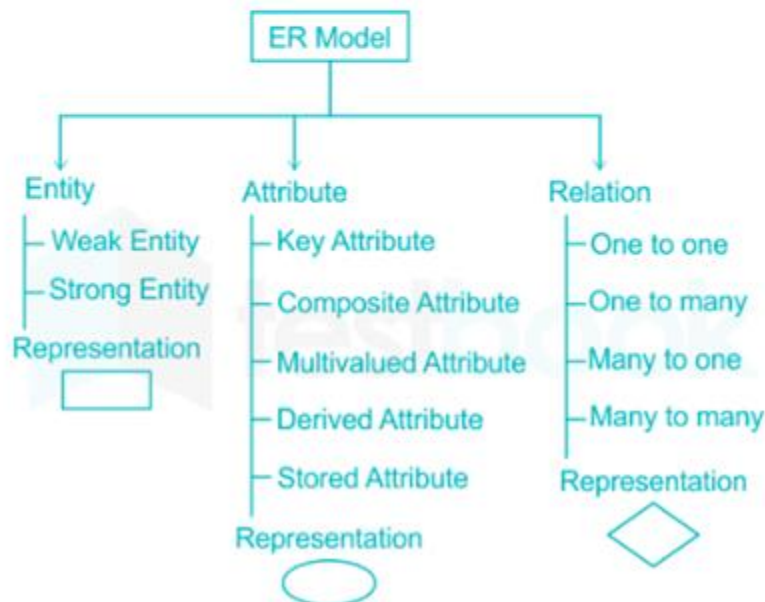
An entity is an object or component of data. An entity is represented as a rectangle in an ER diagram.

#### **Attributes:**

Attributes are the properties that define the entity type. In ER diagram, the attribute is represented by an oval.











#### **Relations:**

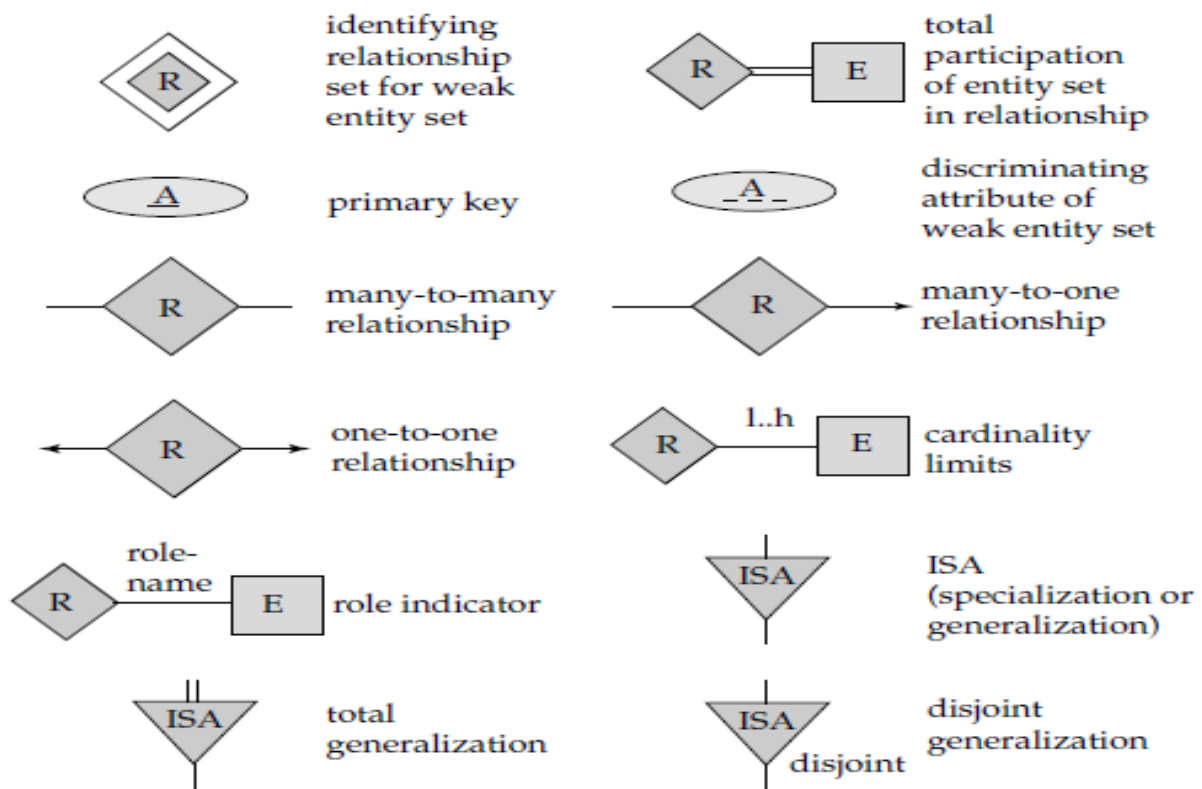
The diamond shape showcases a relationship in the ER diagram. It depicts the relationship between two entities.



## Symbols used in E-R notation

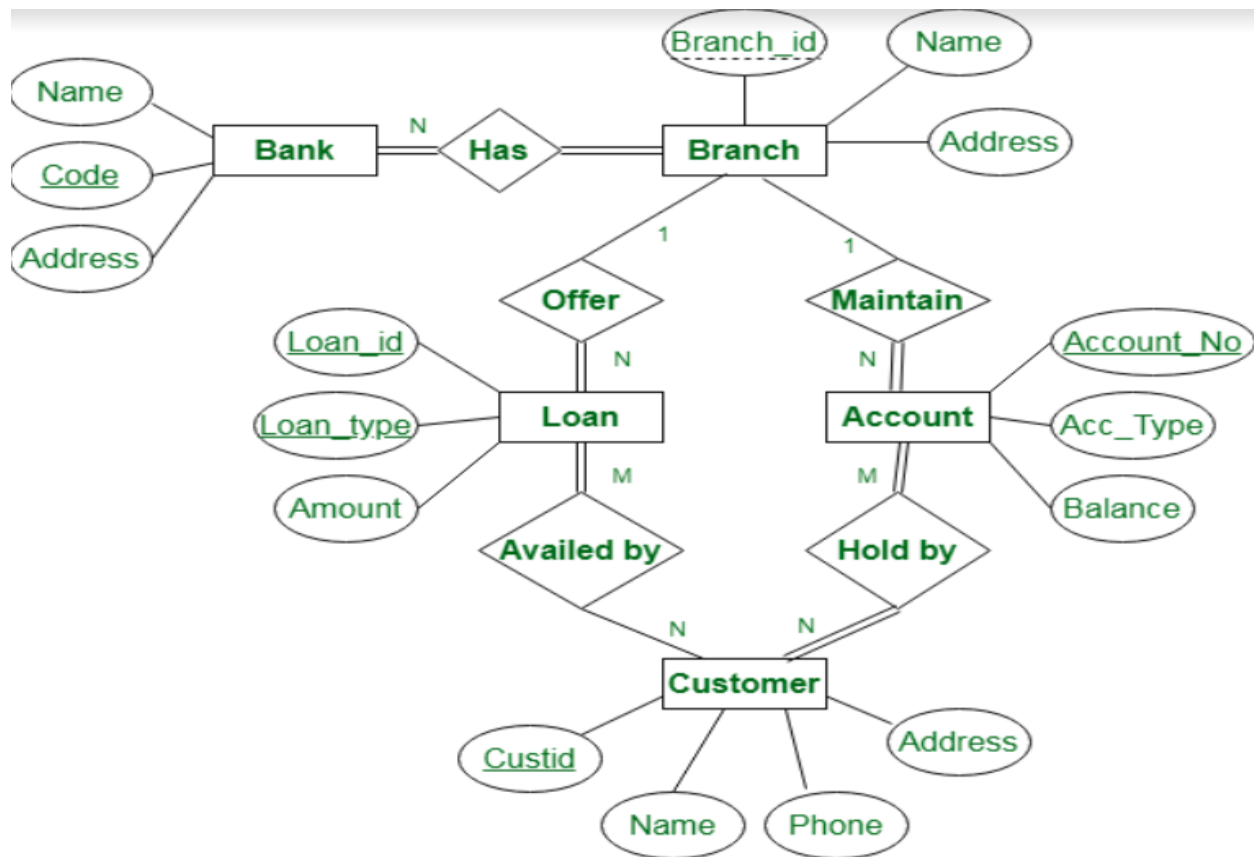
Symbols of ER Model.

Entity Symbol	Description
	Rectangles are used to represent entities. An entity is a physical object or concept about which you want to store data. Strong Entity has its own attribute. They will also have a primary key, distinguishing each occurrence of the entity.
	A weak entity is one that cannot be uniquely identified by its own attributes and must be defined by a foreign key relationship with another entity. Weak entities depend on some other entity type
	Associative entities relate the instances of several entity types
	Diamond shapes are used to represent relationships, which show how two entities share information in the database. Relationships are associations between or among entities.
	Weak Relationships are connections between a weak entity and its owner.
	Ovals are used to represent attributes. A key attribute is the entity's unique, distinguishing feature. Attributes are characteristics of an entity, a many-to-many relationship, or a one-to-one relationship.
	A multivalued attribute can have multiple values. An employee entity, for example, can have multiple skill values. Multivalued attributes are those that can take on more than one value.
	Derived attributes are attributes whose value can be calculated from related attribute values.
	Each entity is involved in the relationship. Total participation is represented by double lines.
	Not all entities are involved in the relationship. Partial participation is represented by single lines.



**Question:**

1. Construct an E-R diagram for a Banking system. Consider the entities and their Attributes.
  - a. **Bank Entity:** Attributes are bank name, code, and address.
  - b. **Customer Entity:** Attributes are customer\_id, name, phone number, and customer's address.
  - c. **Branch Entity:** Attributes are branch\_id, branch name, and branch address.
  - d. **Account Entity:** Attributes are account\_number, account\_type, and account balance.
  - e. **Loan Entity:** Attributes are loan\_id, loan\_type, and loan amount.



Add the below mentioned entities in the existing example and show the relation among them.

- f. **Payment Entity:** Payment number, Payment date, Payment amount
  - g. **Saving Account Entity:** Attributes are interest rate
  - h. **Current Account Entity:** Attributes are overdraft amount
- i. Show the relationship between loan and payment. Find what type of relationship and entity will be used in it. Justify it.
  - ii. Show the relationship between account entity, savings and checking account. Find what type of relationship used in it. Justify it.

**Note:** Without Disturbing the Structure of the Given E-R Model diagram. Add the additional entities and relationship accordingly.