DBMS

Entity-Relationship(E-R) Model

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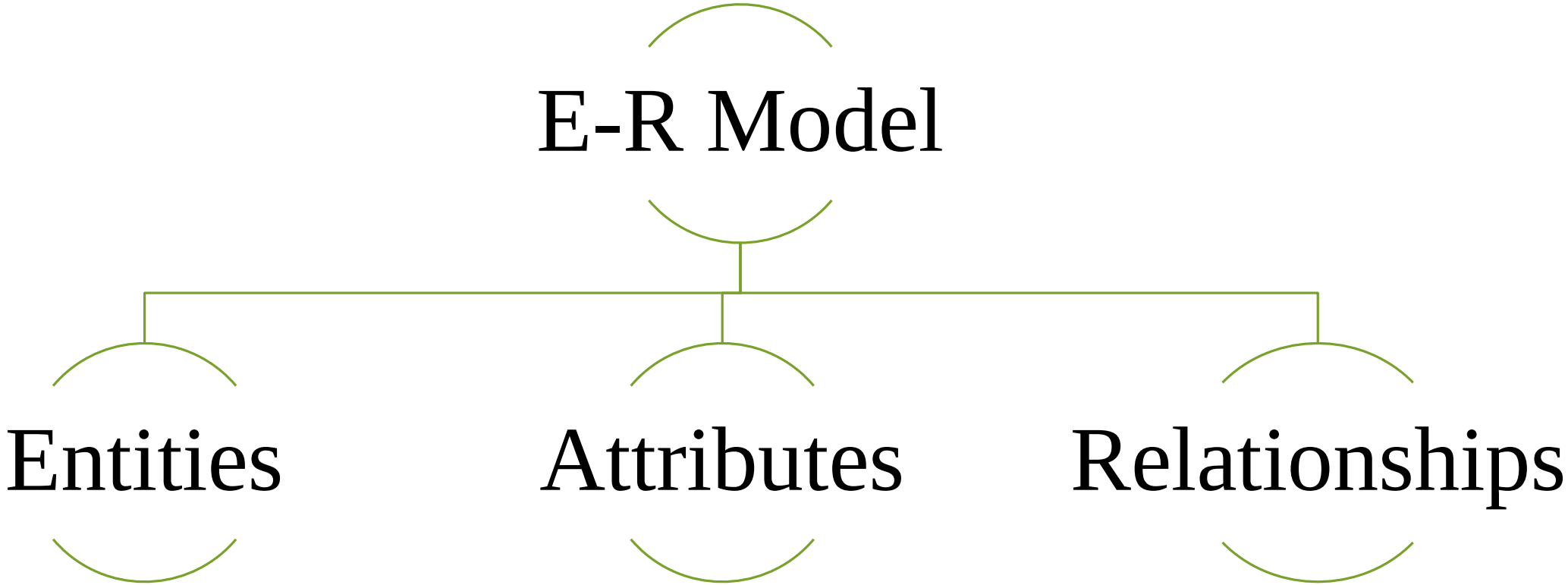
What is E-R Diagram?

It is a kind of flowchart that represents how entities in the database related with each other.

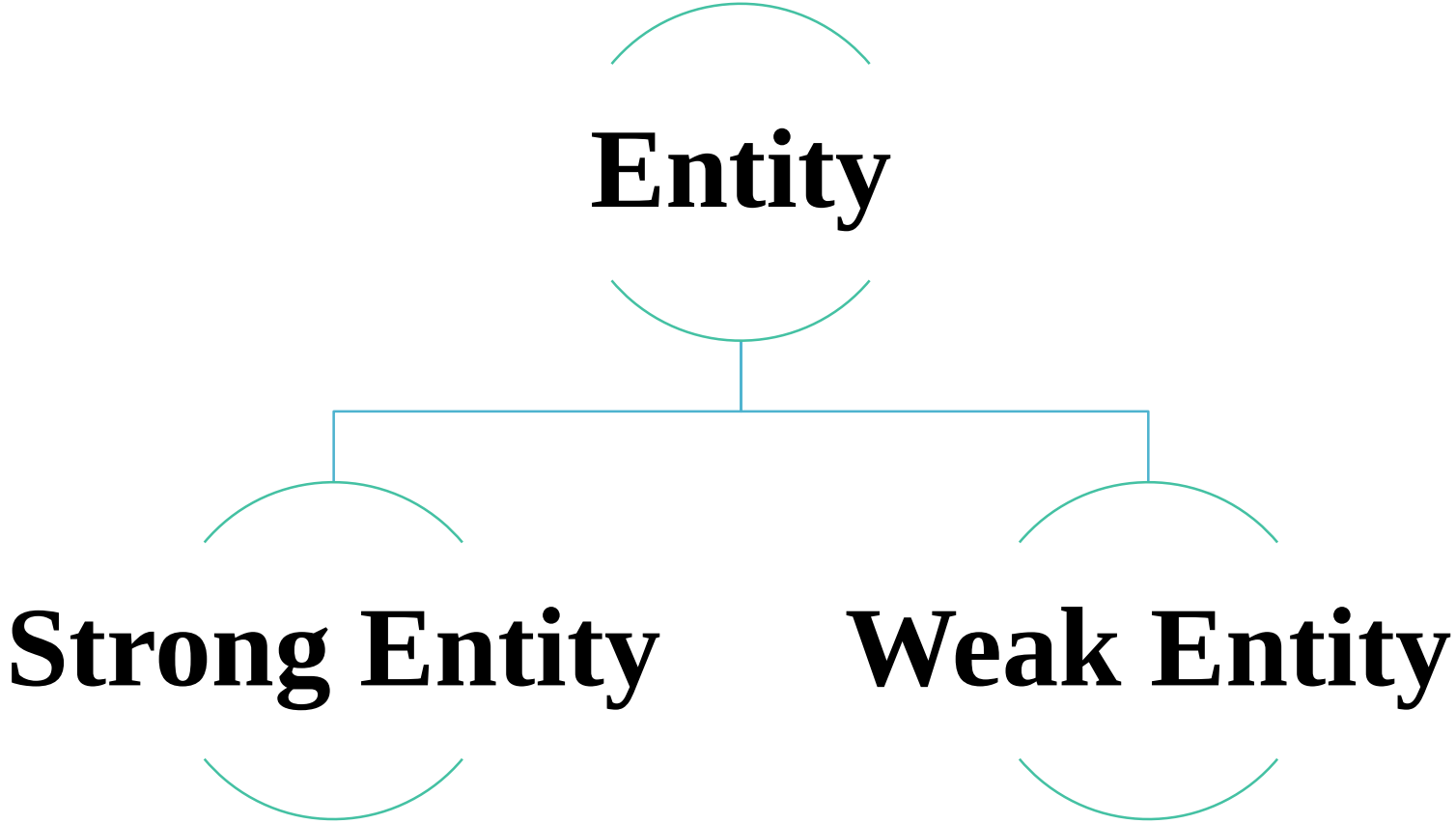
E-R Model Components



Entity

An Entity may be an object with a physical or conceptual existence e.g. person, car, house, a company, a job, or a university course.

Types of Entity



Strong Entity

- It has a primary key, that helps in identifying it uniquely.
- It is represented by rectangle.

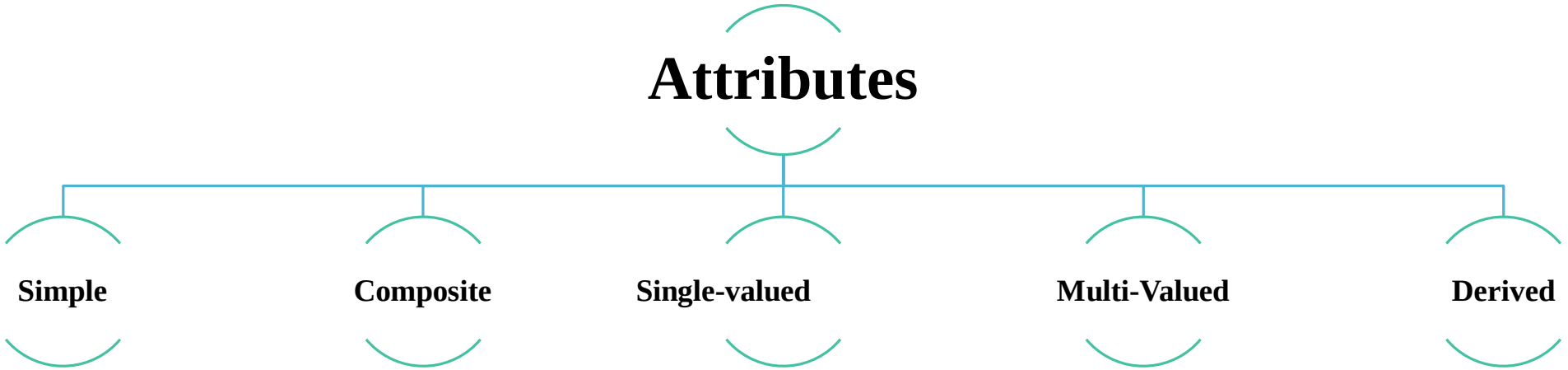
Weak Entity

- An entity that can't be identified by its own attributes alone or a weak entity does not have any primary key.
- It is represented by double rectangle.

Attributes

- A piece of data that gives more information about the entity or used to describe the entity.
- It represented in an elliptical shape.

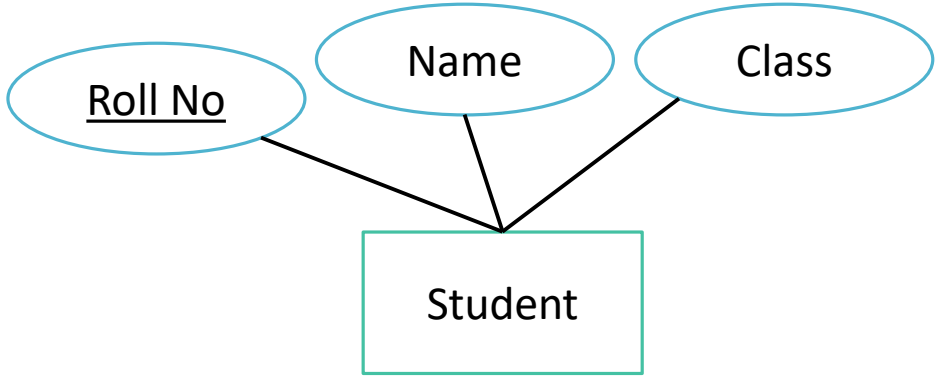
Types of Attributes



Simple Attribute

An attribute that cannot be further subdivided into components is a simple attribute.

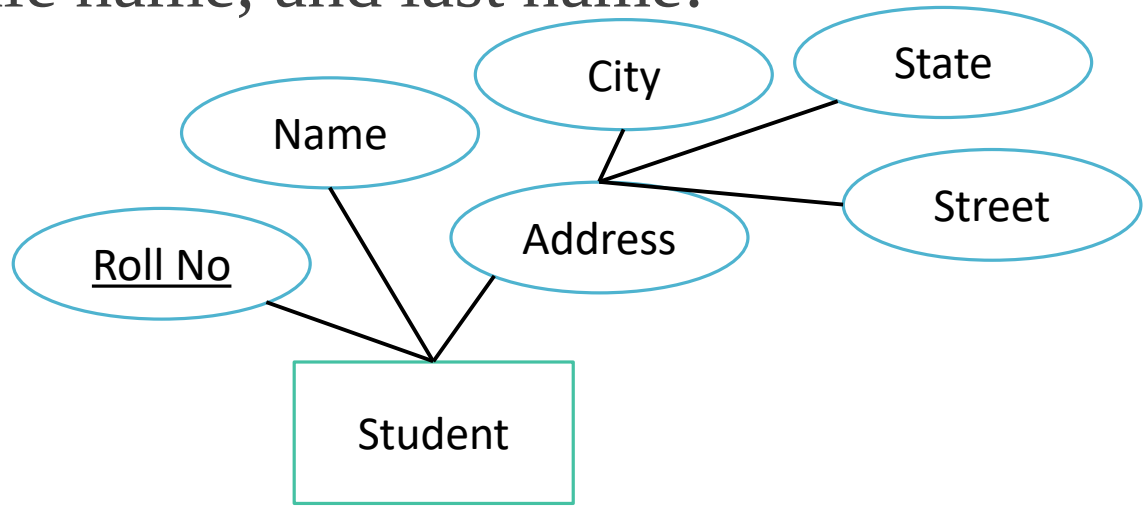
Example: The roll number of a student, the ID number of an employee, gender, and many more.



Composite Attribute

An attribute that can be split into components is a composite attribute.

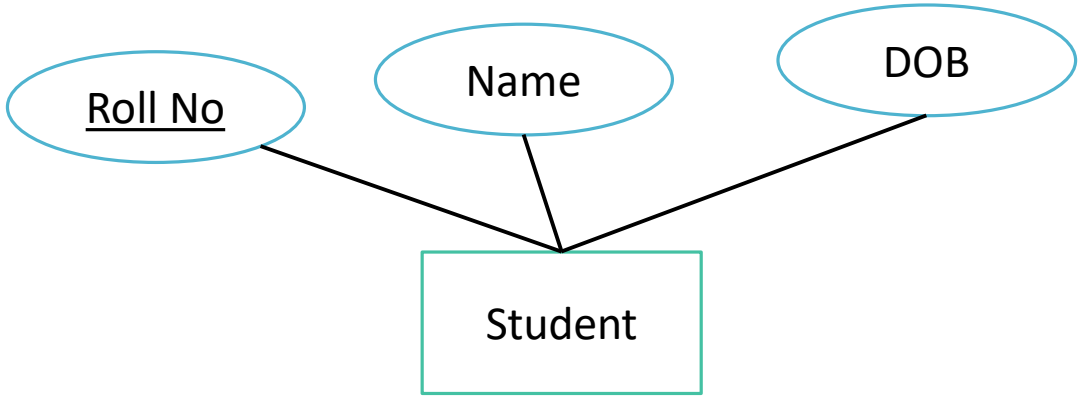
Example: The address can be further split into house number, street number, city, state, country, and pin code, the name can also be split into first name middle name, and last name.



Single-Valued Attribute

The attribute which takes up only a single value for each entity instance is a single-valued attribute.

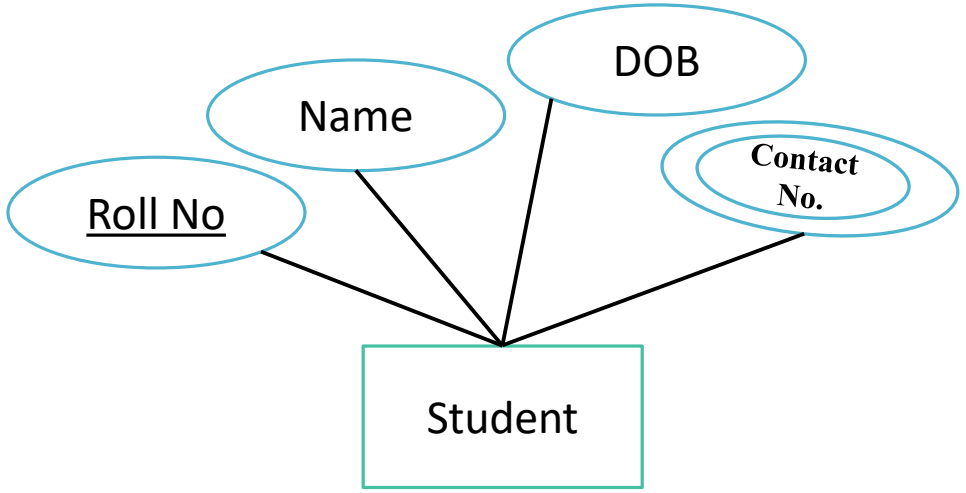
Example: The age of a student, Aadhar card number.



Multi-Valued Attribute

The attribute which takes up more than a single value for each entity instance is a multi-valued attribute. And it is represented by double oval shape.

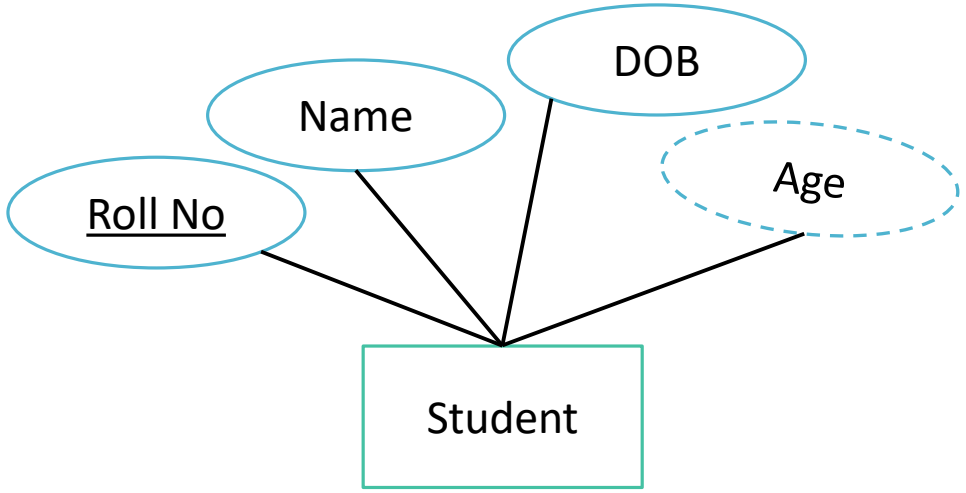
Example: Phone number of a student: Landline and mobile.



Derived Attribute

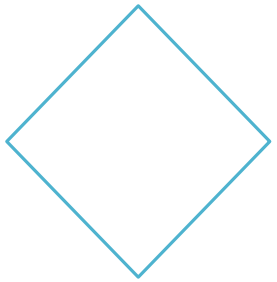
An attribute that can be derived from other attributes is derived attributes. And it is represented by dotted oval shape.

Example: Total and average marks of a student, age of an employee that is derived from date of birth.



Relationships

- The way two or more tables are connected, or the way they behave toward each other or a logical association between two or more tables.
- These are represented by Diamond-Shaped symbol.

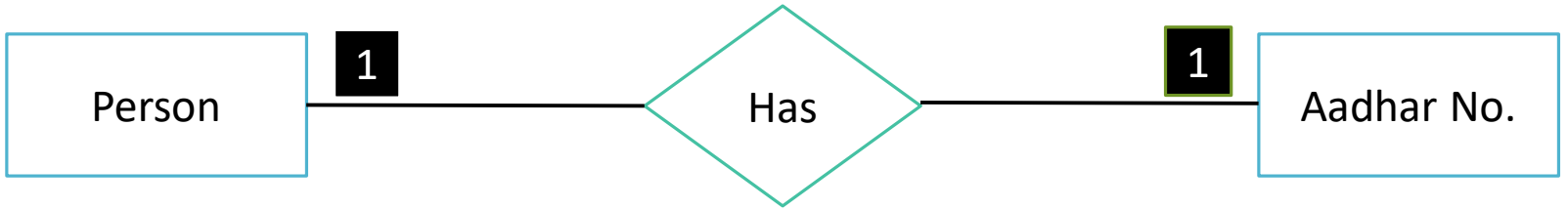


Types Of Relationships In Database

- One-to-One (1:1) Relationship
- One-to-Many(1:M) Relationship
- Many-to-Many (M:M) Relationship

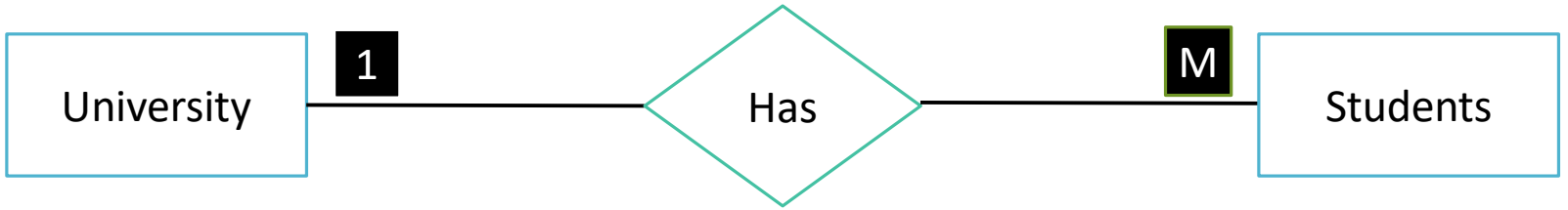
One-to-One (1:1) Relationship

When each record in one table corresponds to only one record in the other table.



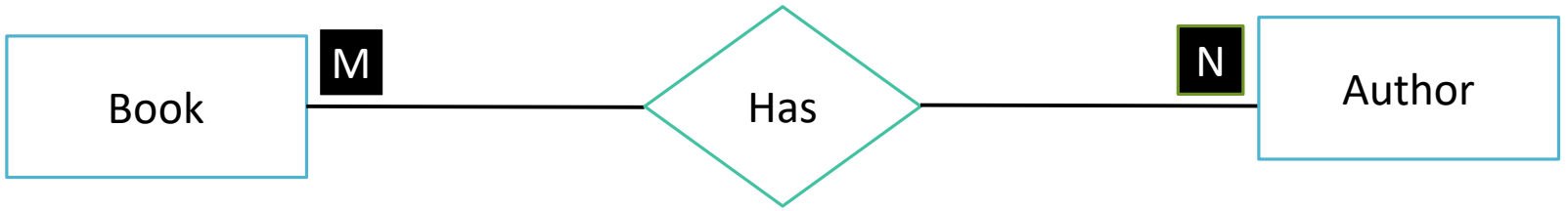
One-to-Many(1:M) Relationship

Where one entity is associated with multiple instances of the other entity but each instance of second entity is associated with only one instance of first entity.



Many-to-Many (M:M) Relationship

Many-to-Many relationship in DBMS is a relationship between more than one instance of an entity with more than one instance of another entity i.e. both the entities can have many relationships between each other.



Thank You!