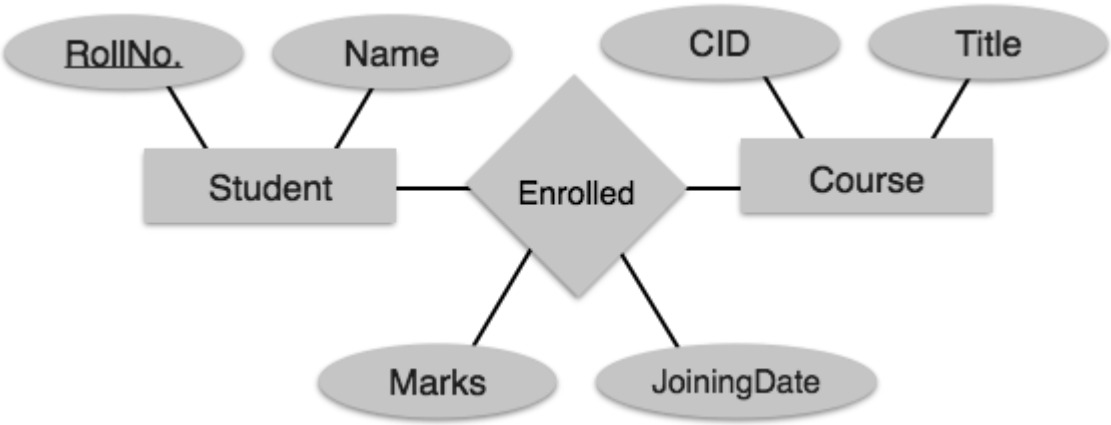
Mapping Relationship

A relationship is an association among entities.



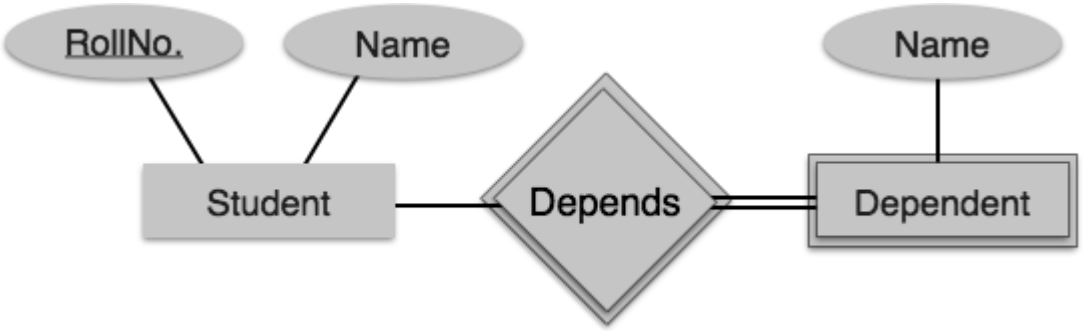
[*Image: Mapping relationship*]

Mapping Process:

- Create table for a relationship.
- Add the primary keys of all participating Entities as fields of table with their respective data types.
- If relationship has any attribute, add each attribute as field of table.
- Declare a primary key composing all the primary keys of participating entities.
- Declare all foreign key constraints.

Mapping Weak Entity Sets

A weak entity set is one which does not have any primary key associated with it.



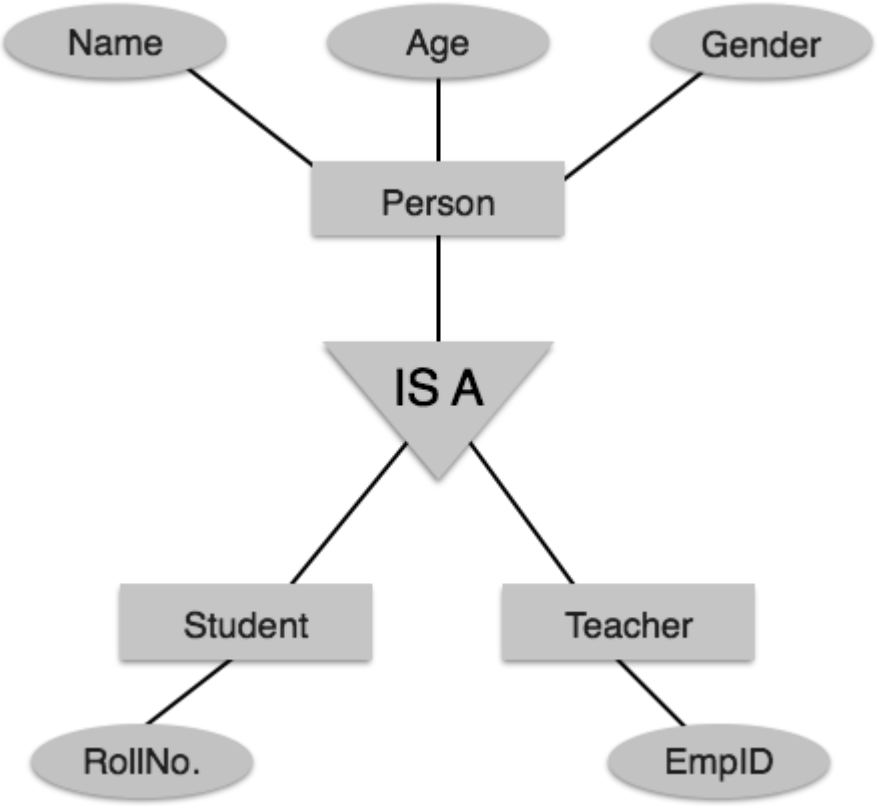
[*Image: Mapping Weak Entity Sets*]

Mapping Process:

- Create table for weak entity set.
- Add all its attributes to table as field.
- Add the primary key of identifying entity set.
- Declare all foreign key constraints.

Mapping Hierarchical Entities

ER specialization or generalization comes in the form of hierarchical entity sets.



[*Image: Mapping hierarchical entities*]

Mapping Process

- Create tables for all higher-level entities.
- Create tables for lower-level entities.
- Add primary keys of higher-level entities in the table of lower-level entities.
- In lower-level tables, add all other attributes of lower-level entities.
- Declare primary key of higher-level table and the primary key for lower-level table.

- Declare foreign key constraints.

13. SQL OVERVIEW

SQL is a programming language for Relational Databases. It is designed over relational algebra and tuple relational calculus. SQL comes as a package with all major distributions of RDBMS.

SQL comprises both data definition and data manipulation languages. Using the data definition properties of SQL, one can design and modify database schema, whereas data manipulation properties allows SQL to store and retrieve data from database.

Data Definition Language

SQL uses the following set of commands to define database schema:

CREATE

Creates new databases, tables, and views from RDBMS.

For example:

```
Create database tutorialspoint;
Create table article;
Create view for_students;
```

DROP

Drops commands, views, tables, and databases from RDBMS.

For example:

```
Drop object_type object_name;
Drop database tutorialspoint;
Drop table article;
Drop view for_students;
```

ALTER

Modifies database schema.

```
Alter object_type object_name parameters;
```

For example:

```
Alter table article add subject varchar;
```

This command adds an attribute in the relation **article** with the name **subject** of string type.

Data Manipulation Language

SQL is equipped with data manipulation language (DML). DML modifies the database instance by inserting, updating, and deleting its data. DML is responsible for all forms data modification in a database. SQL contains the following set of commands in its DML section:

- SELECT/FROM/WHERE
- INSERT INTO/VALUES
- UPDATE/SET/WHERE
- DELETE FROM/WHERE

These basic constructs allow database programmers and users to enter data and information into the database and retrieve efficiently using a number of filter options.

SELECT/FROM/WHERE

- **SELECT**

  This is one of the fundamental query command of SQL. It is similar to the projection operation of relational algebra. It selects the attributes based on the condition described by WHERE clause.

- **FROM**

  This clause takes a relation name as an argument from which attributes are to be selected/projected. In case more than one relation names are given, this clause corresponds to Cartesian product.

- **WHERE**

  This clause defines predicate or conditions, which must match in order to qualify the attributes to be projected.

For example:

```
Select author_name
From book_author
Where age > 50;
```