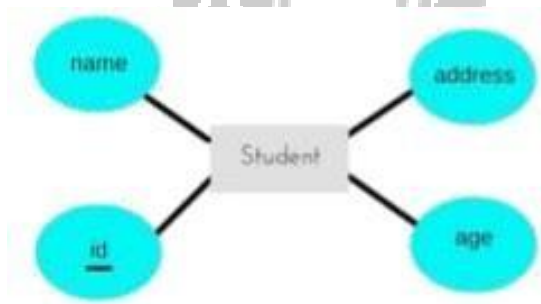**ER MODEL TO RELATIONAL MODEL**

ER Model can be represented using ER Diagrams which is a great way of designing and representing the database design in more of a flow chart form.

It is very convenient to design the database using the ER Model by creating an ER diagram and later on converting it into relational model to design your tables. Not all the ER Model constraints and components can be directly transformed into relational model, but an approximate schema can be derived. Few examples of ER diagrams and convert it into relational model schema, hence creating tables in RDBMS.

Entity becomes Table Entity in ER Model is changed into tables, or we can say for every Entity in ER model, a table is created in Relational Model. And the attributes of the Entity gets converted to columns of the table.

And the primary key specified for the entity in the ER model, will become the primary key for the table in relational model. For example, for the below ER Diagram in ER Model,

A table with name Student will be created in relational model, which will have 4 columns, id, name, age, address and id will be the primary key for this table.

Relationship becomes a Relationship Table, In ER diagram, we use diamond/rhombus to represent a relationship between two entities. In Relational model we create a relationship table for ER Model relationships too.

In the ER diagram below, we have two entities Teacher and Student with a relationship between them.

As discussed above, entity gets mapped to table, hence we will create table for Teacher and a table for Student with all the attributes converted into columns.

Now, an additional table will be created for the relationship, for example Student Teacher or give it any name you like. This table will hold the primary key for both Student and Teacher, in a tuple to describe the relationship, which teacher teaches which student.

If there are additional attributes related to this relationship, then they become the columns for this table, like subject name. Also proper foreign key constraints must be set for all the tables.

Mapping Entity

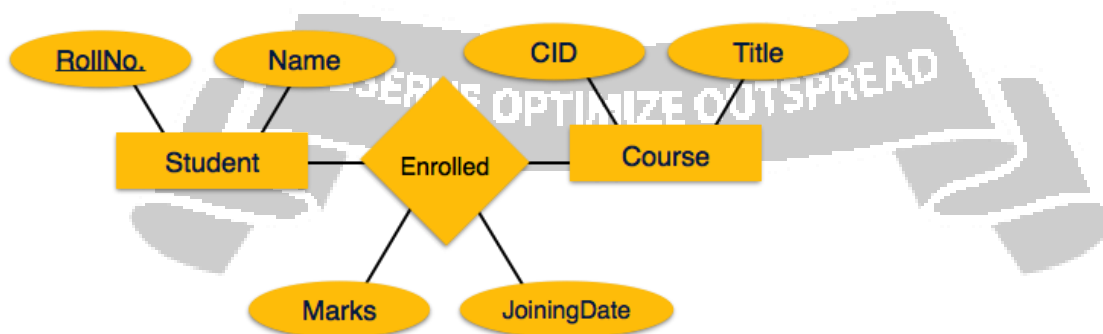An entity is a real-world object with some attributes.
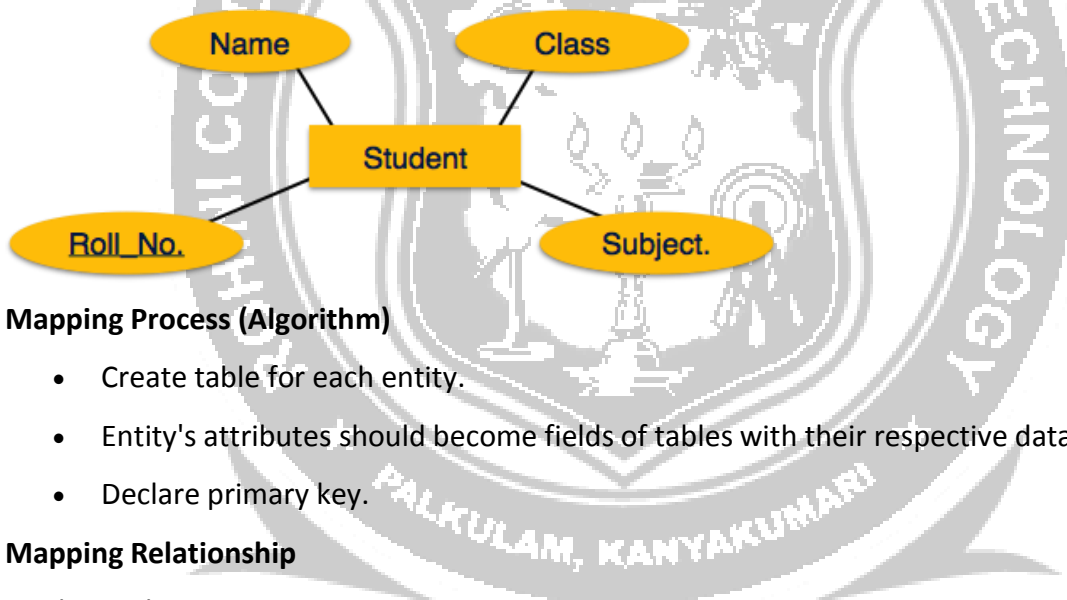
Mapping Process (Algorithm)

- Create table for each entity.
- Entity's attributes should become fields of tables with their respective data types.
- Declare primary key.

Mapping Relationship

A relationship is an association among entities.

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.
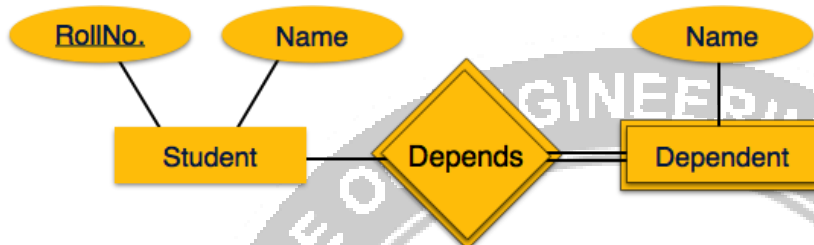
Mapping Process

- 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.
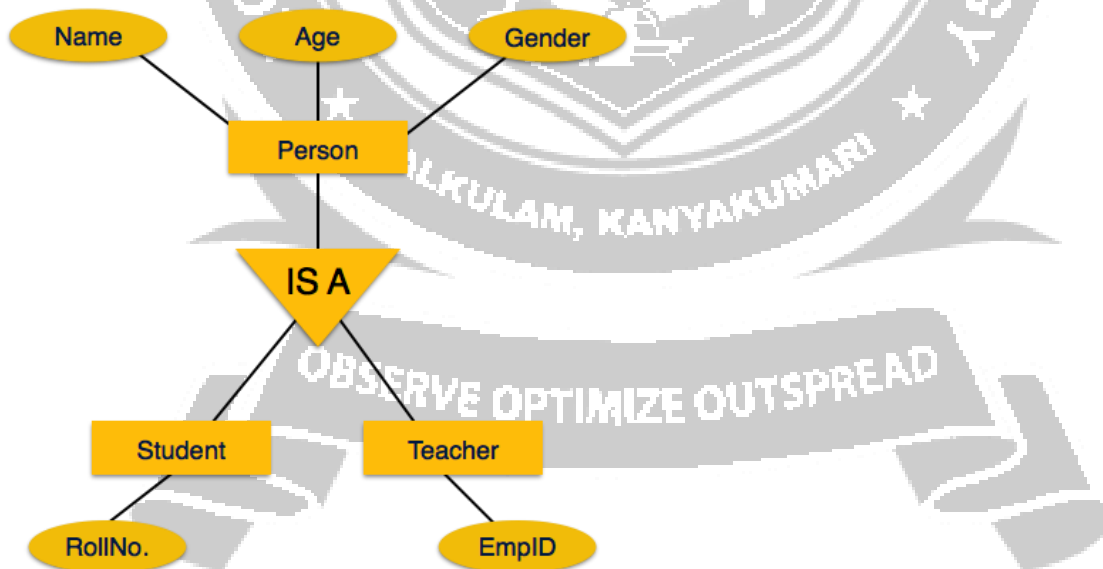
Mapping Process

- 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.