## Converting ER Diagrams to Tables-

- ER diagram is converted into the tables in relational model.
- This is because relational models can be easily implemented by RDBMS like MySQL , Oracle etc.

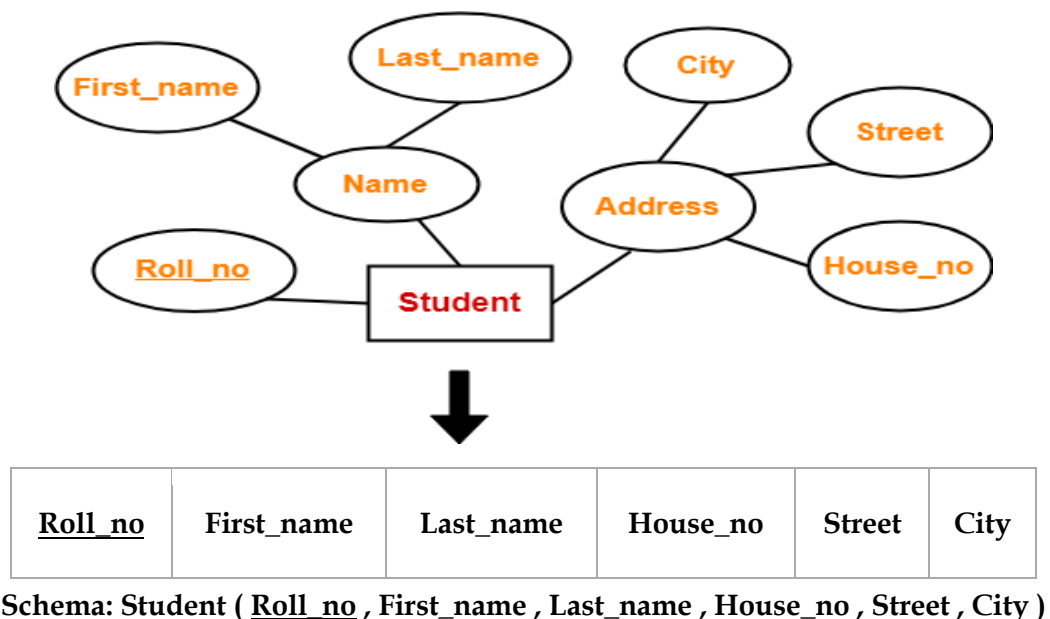## Rule-01: For Strong Entity Set with Only Simple Attributes-

A strong entity set with only simple attributes will require only one table in relational model.

- Attributes of the table will be the attributes of the entity set.
- The primary key of the table will be the key attribute of the entity set.

Roll_no	Name	Sex

Schema: Student (Roll_no , Name , Sex)
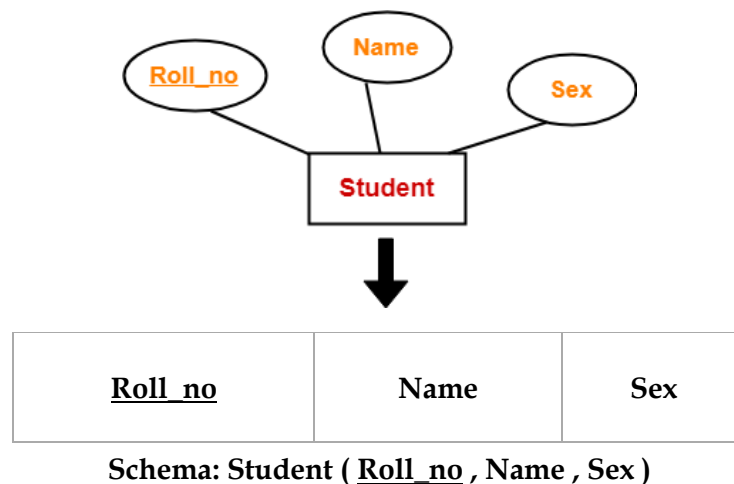
Rule-02: For Strong Entity Set with Composite Attributes-

- A strong entity set with any number of composite attributes will require only one table in relational model.
- While conversion, simple attributes of the composite attributes are taken into account and not the composite attribute itself.

Roll_no	First_name	Last_name	House_no	Street	City

Schema: Student (Roll_no , First_name , Last_name , House_no , Street , City)

Rule-03: For Strong Entity Set With Multi Valued Attributes-

A strong entity set with any number of multi valued attributes will require two tables in relational model.

- One table will contain all the simple attributes with the primary key.
- Other table will contain the primary key and all the multi valued attributes.
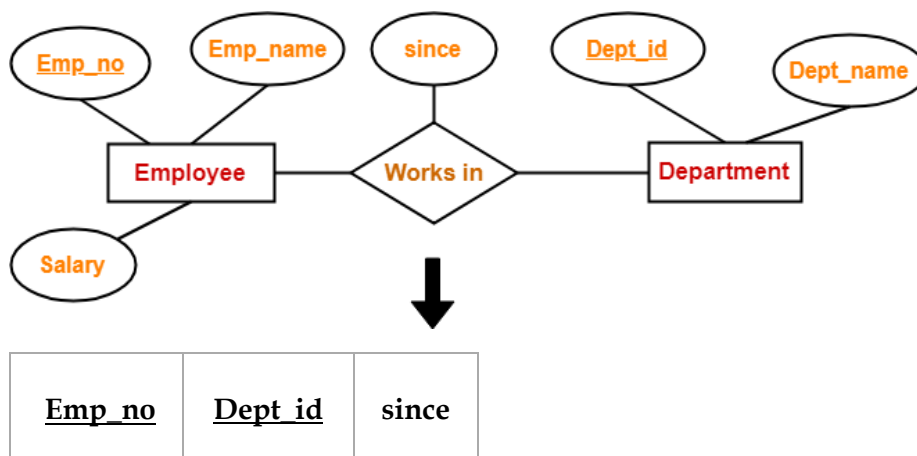

Roll_no	City

Roll_no	Mobile_no
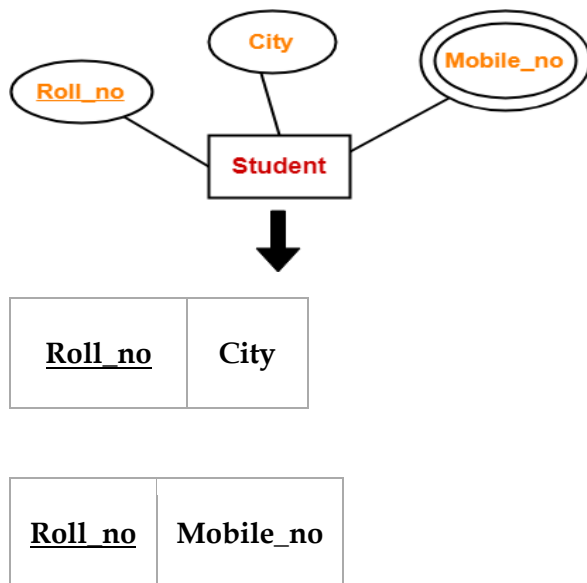
Rule-04: Translating Relationship Set into a Table-

A relationship set will require one table in the relational model.

Attributes of the table are-

- Primary key attributes of the participating entity set
- Its own descriptive attributes if any.

Set of non-descriptive attributes will be the primary key.

Emp_no	Dept_id	since

Schema: Works in (Emp_no , Dept_id , since)

NOTE-

If we consider the overall ER diagram, three tables will be required in relational model-

- One table for the entity set "Employee"
- One table for the entity set "Department"
- One table for the relationship set "Works in"

Rule-05: For Binary Relationships with Cardinality Ratios-
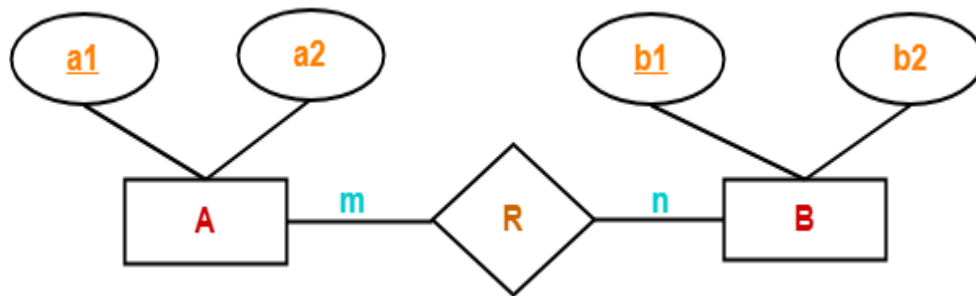
The following four cases are possible-

Case-01: Binary relationship with cardinality ratio m:n

Case-02: Binary relationship with cardinality ratio 1:n

Case-03: Binary relationship with cardinality ratio m:1

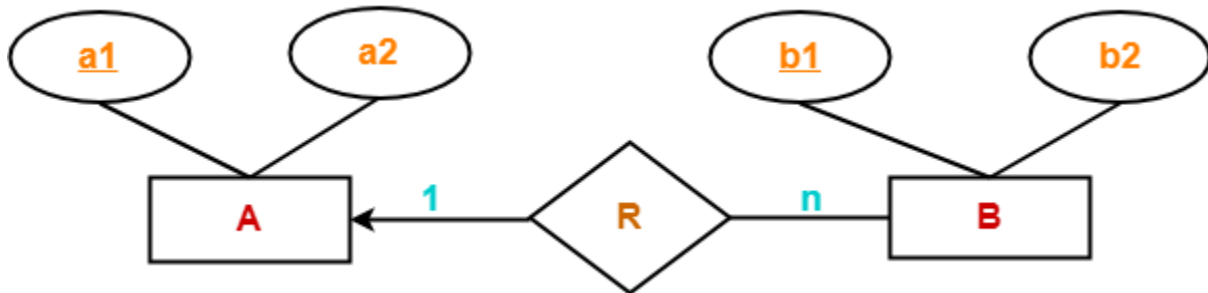**Case-04:** Binary relationship with cardinality ratio 1:1

Case-01: For Binary Relationship With Cardinality Ratio m:n

Here, three tables will be required-

1. A (a1 , a2)
2. R (a1 , b1)
3. B (b1 , b2)

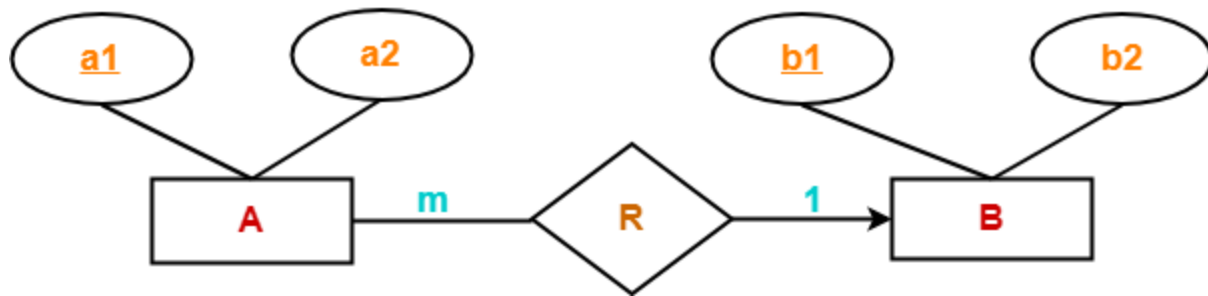### Case-02: For Binary Relationship With Cardinality Ratio 1:n

Here, two tables will be required-

1. A (a1 , a2)
2. BR (a1 , b1 , b2)

NOTE- Here, combined table will be drawn for the entity set B and relationship set R.

Case-03: For Binary Relationship With Cardinality Ratio m:1
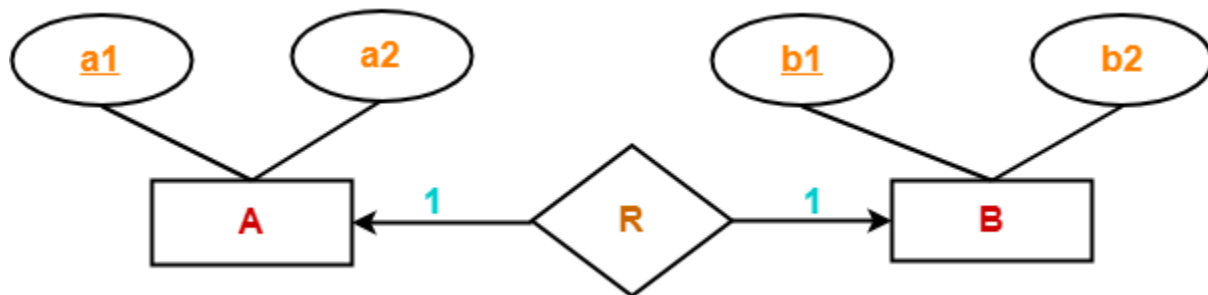

Here, two tables will be required-

1. AR (<u>a1</u> , a2 , b1)
2. B (<u>b1</u> , b2)

NOTE- Here, combined table will be drawn for the entity set A and relationship set R.

Case-04: For Binary Relationship With Cardinality Ratio 1:1

Here, two tables will be required. Either combine 'R' with 'A' or 'B'

Way-01:

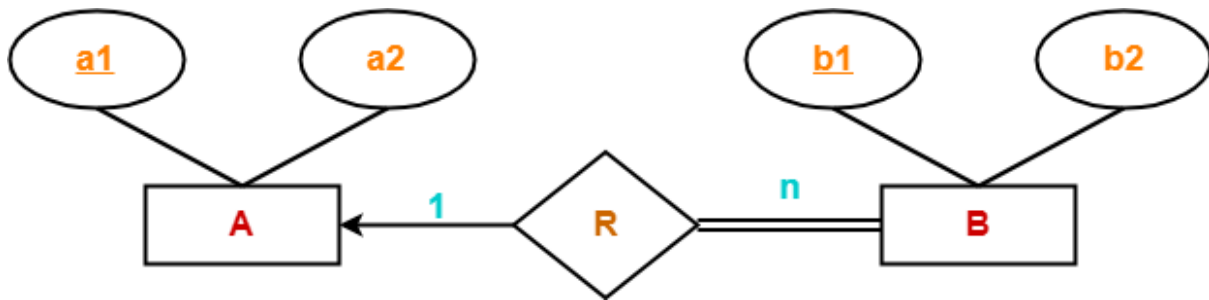1. AR (<u>a1</u> , a2 , b1)
2. B (<u>b1</u> , b2)

Way-02:

1. A (<u>a1</u> , a2)
2. BR (a1 , <u>b1</u> , b2)

Rule-06: For Binary Relationship With Both Cardinality Constraints and Participation Constraints-

- Cardinality constraints will be implemented as discussed in Rule-05.
- Because of the total participation constraint, foreign key acquires **NOT NULL** constraint i.e. now foreign key can not be null.

Case-01: For Binary Relationship With Cardinality Constraint and Total Participation Constraint From One Side-

Because cardinality ratio = 1 : n , so we will combine the entity set B and relationship set R.
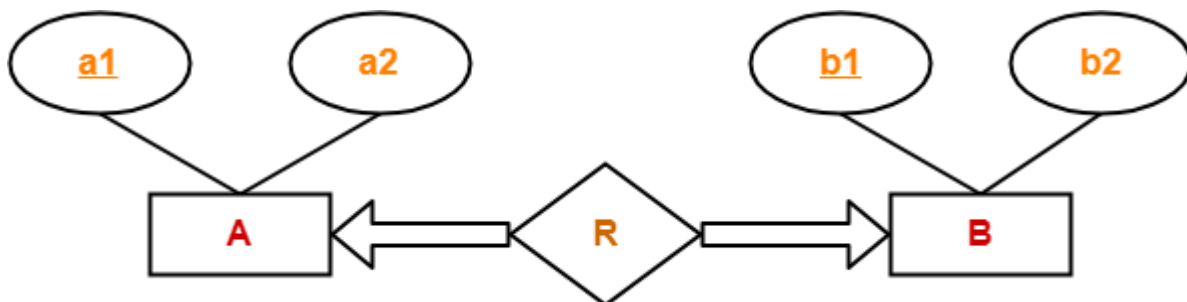
Then, two tables will be required-

1. A (a1 , a2)
2. BR (a1 , b1 , b2)

Because of total participation, foreign key a1 has acquired NOT NULL constraint, so it can't be null now.

Case-02: For Binary Relationship With Cardinality Constraint and Total Participation Constraint From Both Sides-

If there is a key constraint from both the sides of an entity set with total participation, then that binary relationship is represented using only single table.
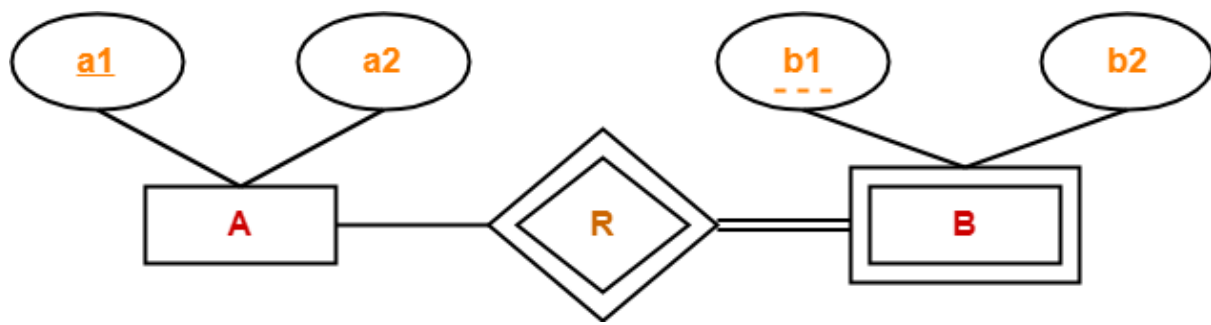

Here, Only one table is required.

- ARB (a1 , a2 , b1 , b2)

Rule-07: For Binary Relationship With Weak Entity Set-

Weak entity set always appears in association with identifying relationship with total participation constraint.

Here, two tables will be required-

1. A (<u>a1</u> , a2)
2. BR (<u>a1</u> , <u>b1</u> , b2)