

Tishk International University
Department of Information Technology
Database Systems 1
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ER diagram

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Objectives

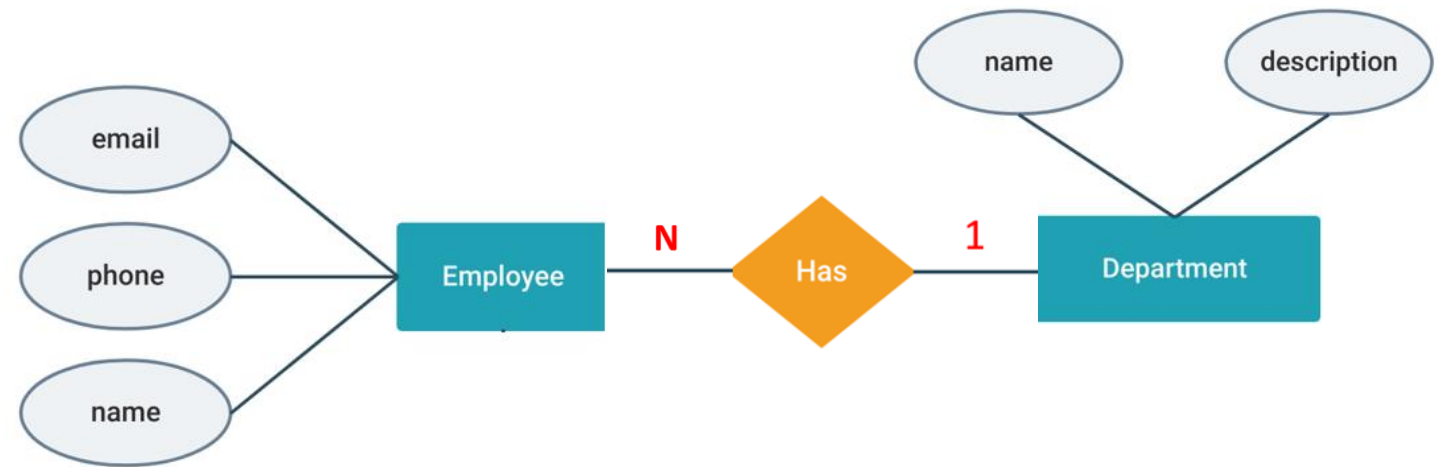


- ER Diagram

Entity-Relationship Diagram (ER Diagram)



- Is a visual representation of different **entities** within a system and how they **relate** to each other.
- Is used to model the logical view of the system from data perspective.

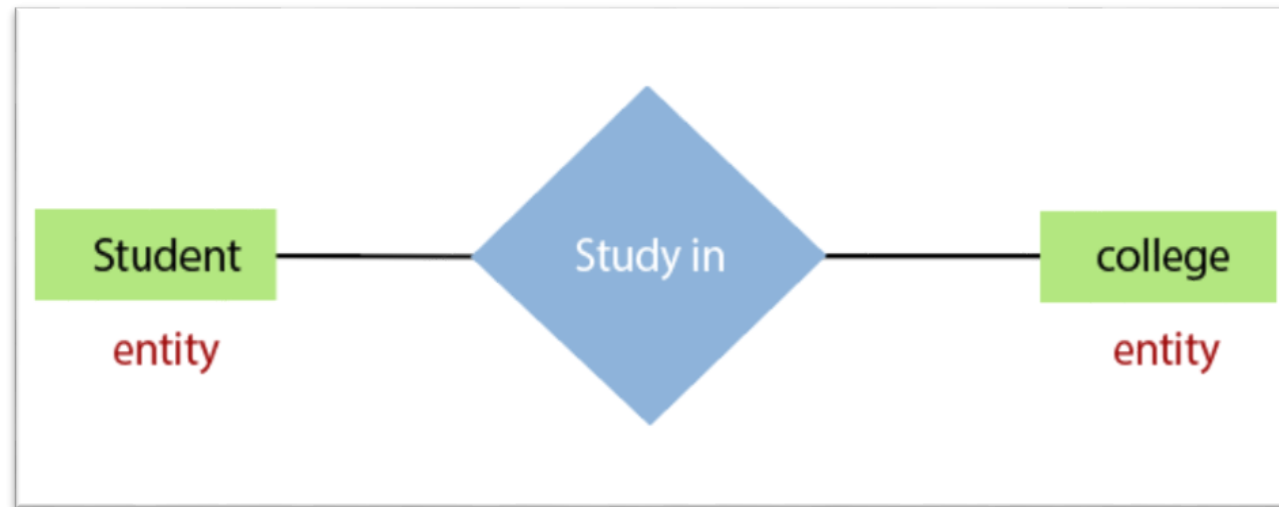


Components of ER Diagram



1. Entity: it can be an object, place, person.

- E.g.: Student, Course, Employee, Department



Components of ER Diagram (cont.)



2. Attributes: it describes the properties or characteristics of an entity

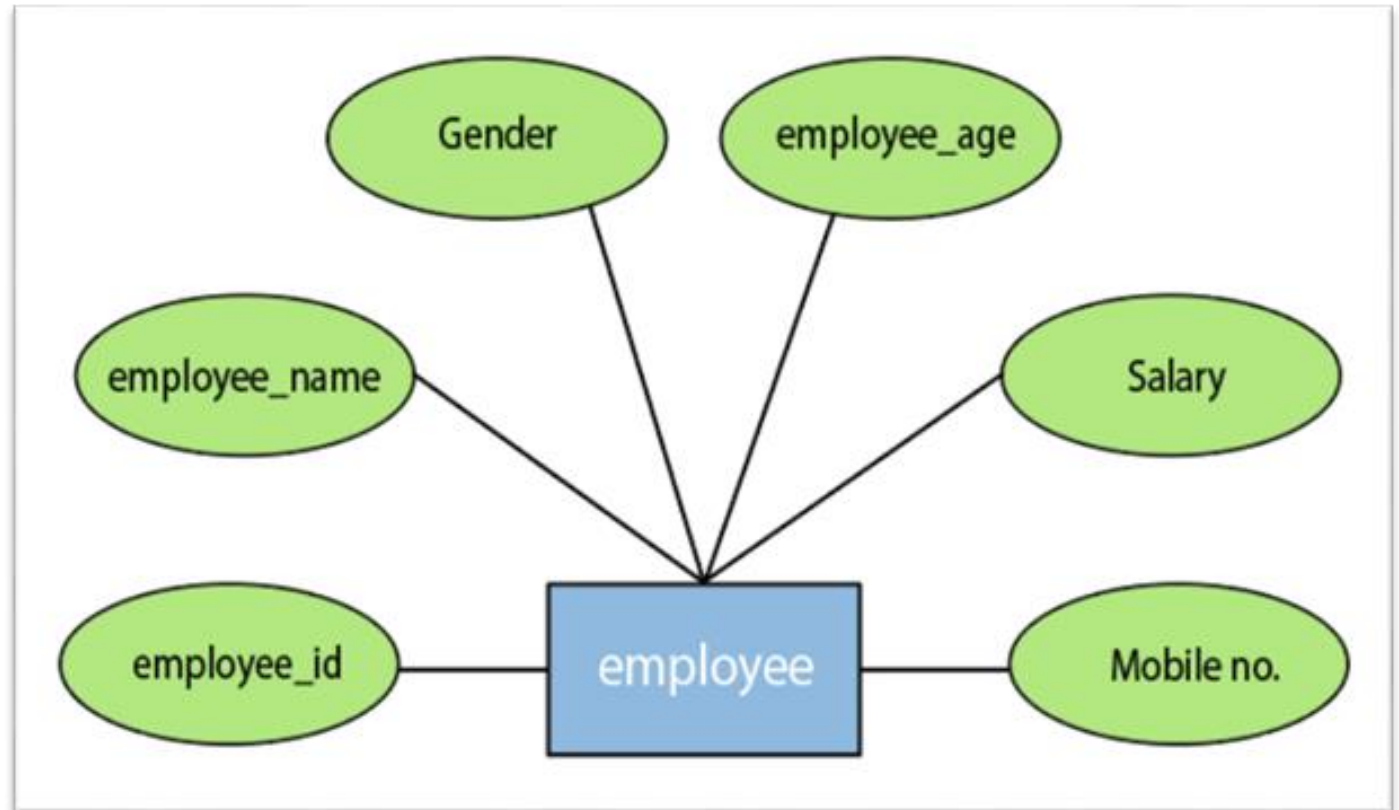
- E.g.: Student ID, first name, second name, age, mark
- There are 5 different attributes:
 - Simple attribute
 - Key attribute
 - Composite attribute
 - Derived attribute
 - Multi-valued attribute

Components of ER Diagram (cont.)



1. Simple attribute: contains a single value and cannot be divided further.

- E.g.: Gender, Salary

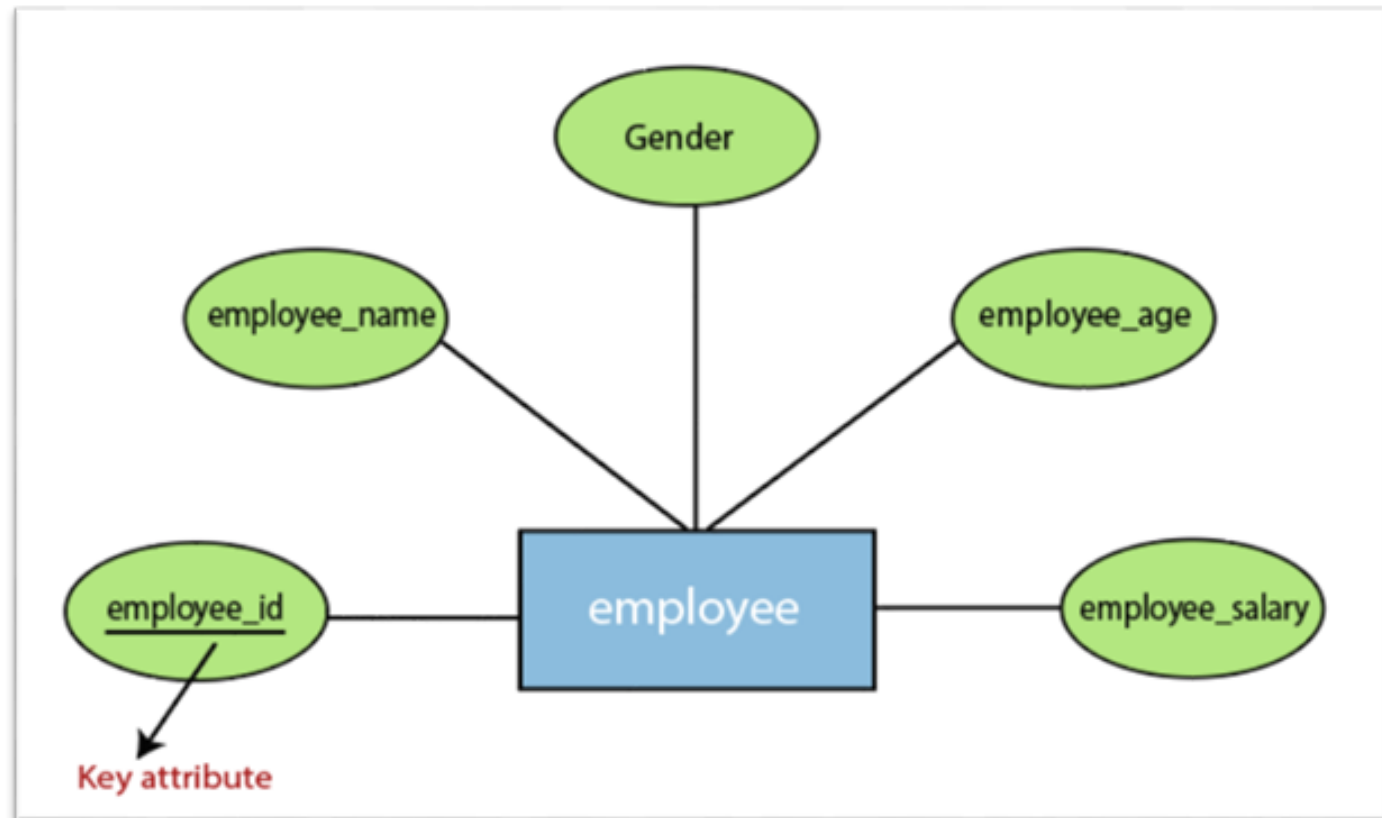


Components of ER Diagram (cont.)



2. Key attribute: uniquely identifies an entity in an entity set.

- E.g.: Student_ID, Employee_ID

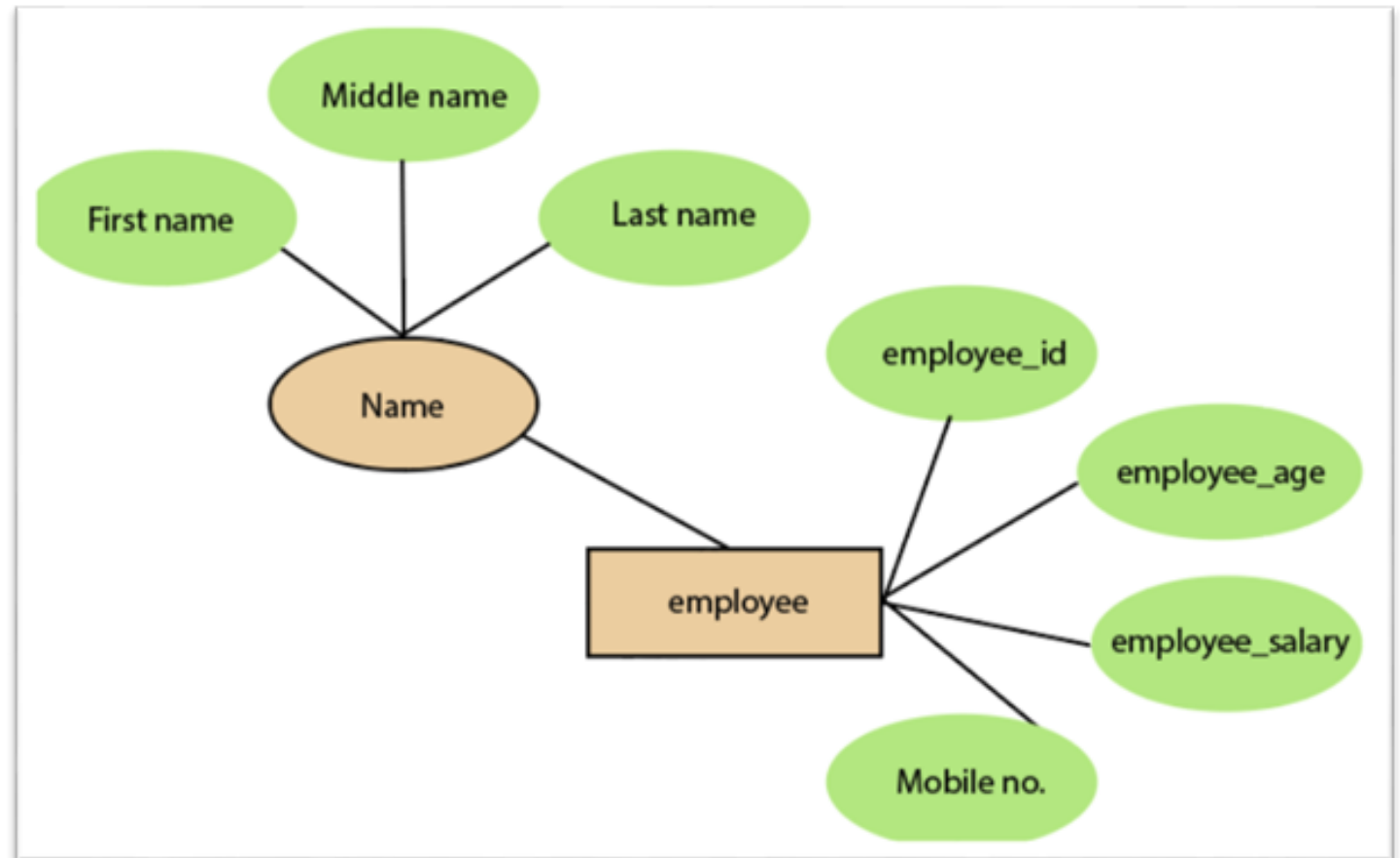


Components of ER Diagram (cont.)



3. Composite attribute: is a combination of two or more simple attributes.

- E.g.: Name

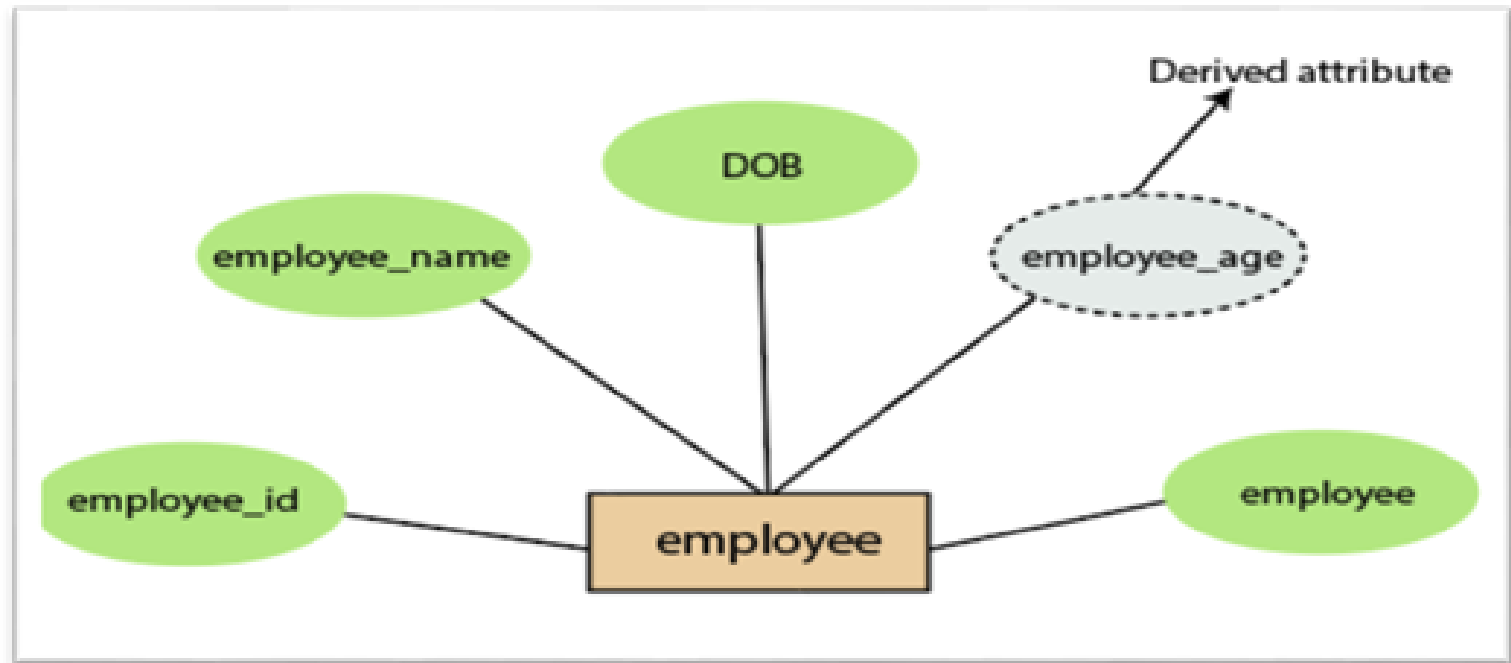


Components of ER Diagram (cont.)



4. Derived attribute: is derived from other attributes.

- E.g.: **employee_age** is a derived attribute as it changes over time and can be derived from another attribute **date_of_birth**

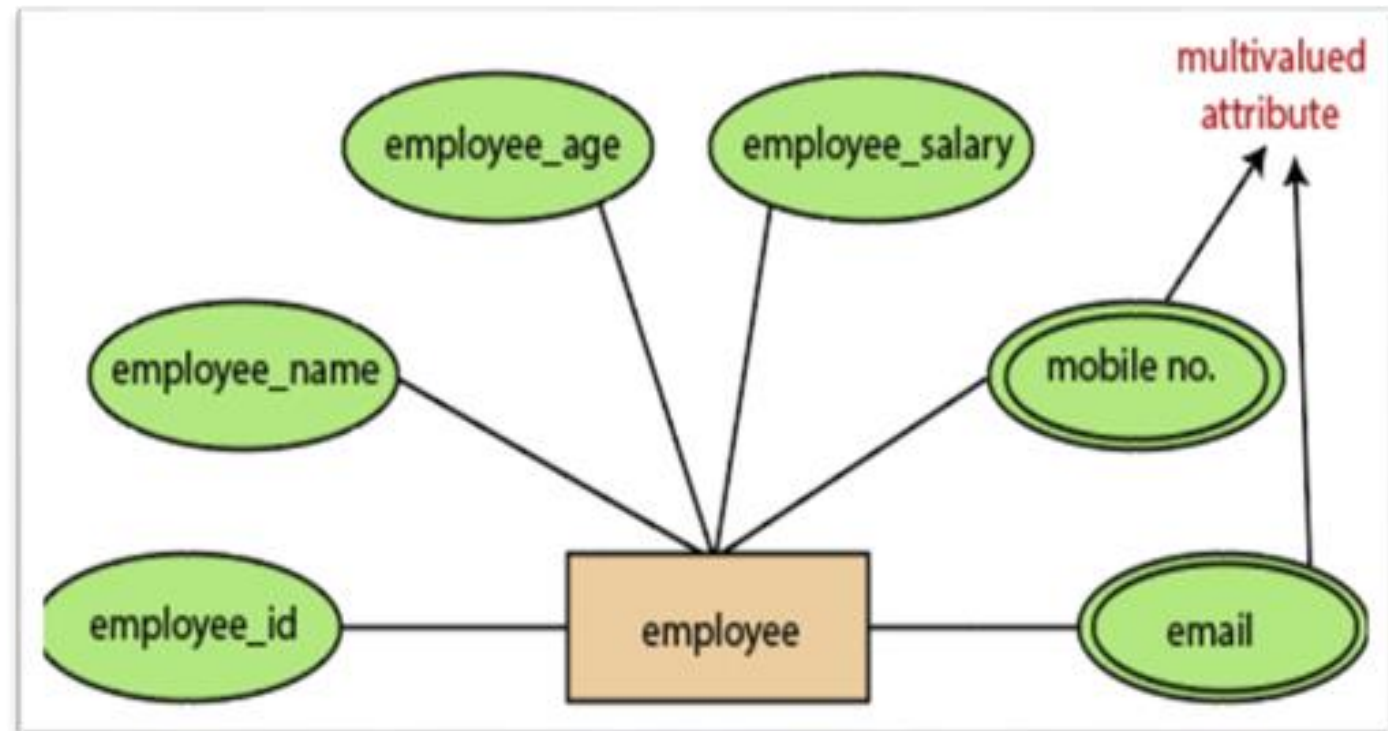


Components of ER Diagram (cont.)



5. Multi-valued attribute: it contains more than one value.

- E.g.: an employee can have more than one mobile number and email address



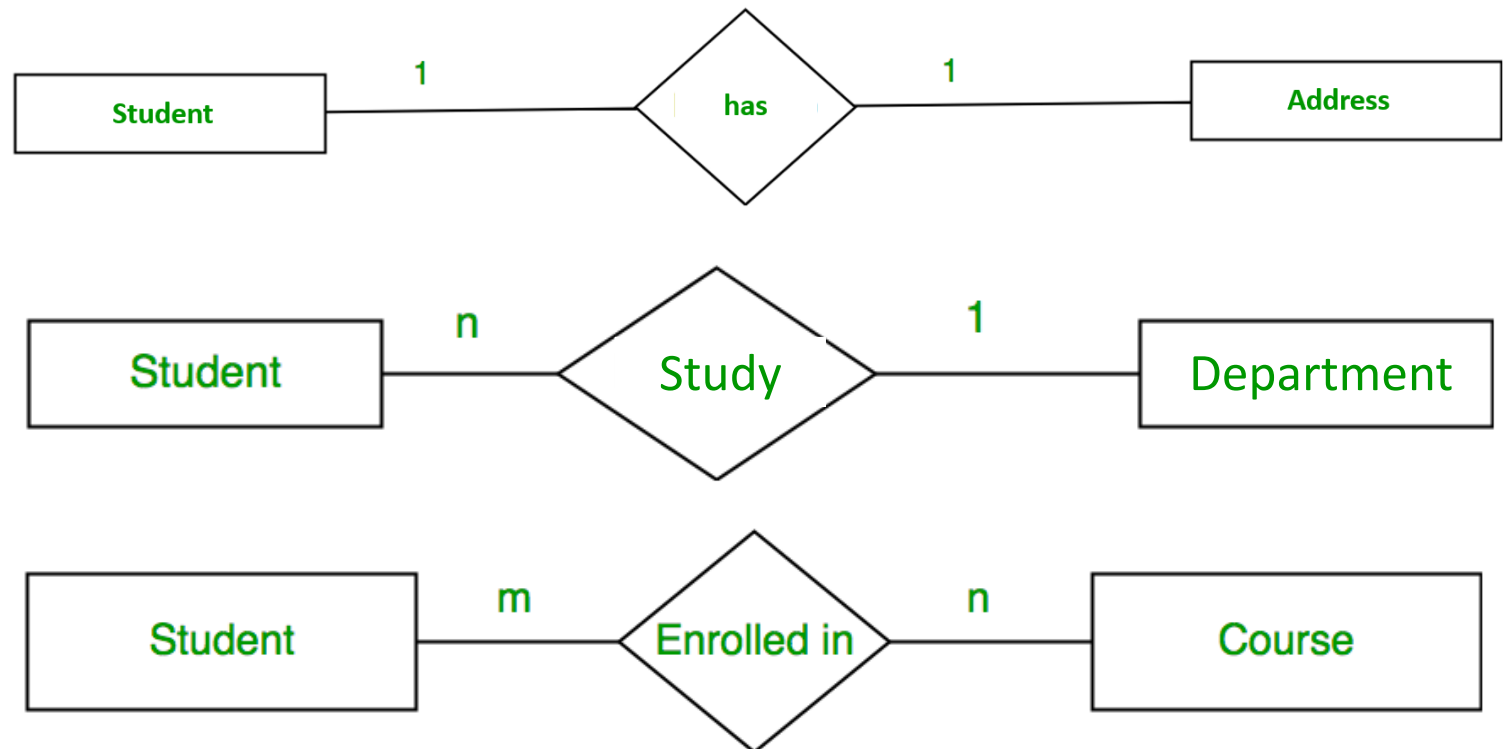
Cardinality in ER Diagram

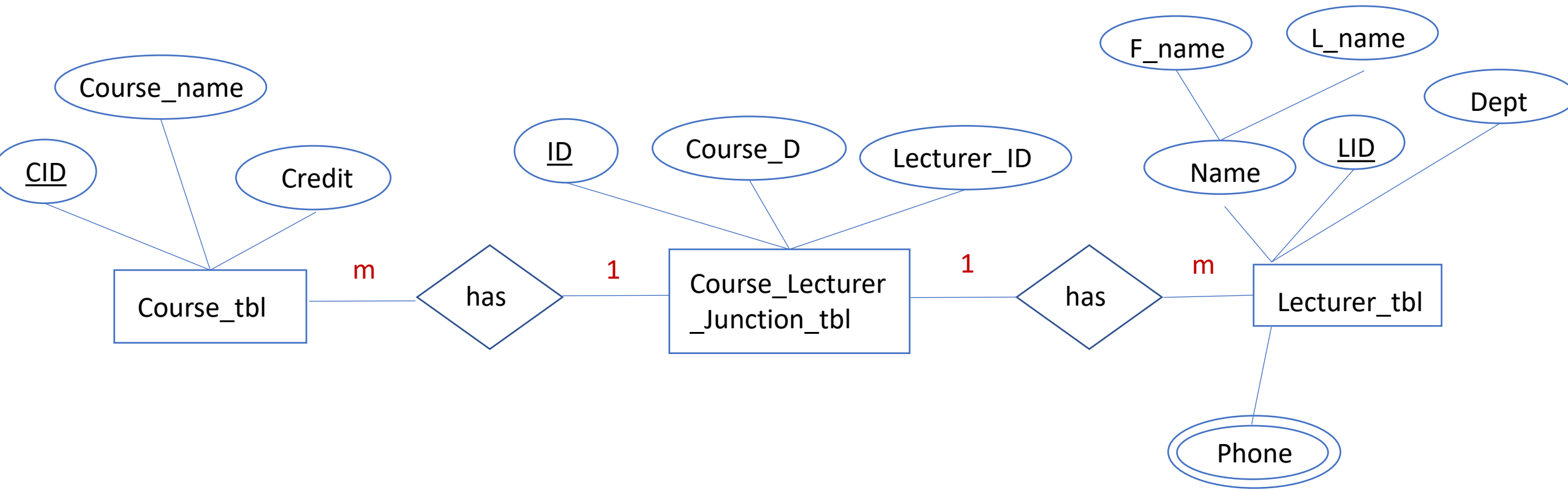


- The number of times an entity of an entity set participates in a relationship set is known as **cardinality**.

There are 3 different types of cardinality:

- One to One
- One to Many
- Many to Many







Thank You