

Entity: a specific object in the min-world for which we will design the database.


→ Tuple, Rows of tables

→ Project X.

Entity Type: a set of entities that share the same properties.

→ Tables

→ Project
Department
Employee
Dependent

→ We use  to show entity types in an ERD

- Attributes: the properties of entities

e.g.: project X (PID = 2, name = Project X,)

- Attribute Types (Domain of attributes): the domain of values each attribute can have.

- Entity Set: the current set of entities within the database

→ Current State of the Data base

Department

Employee

Project

Dependent

Step 1:

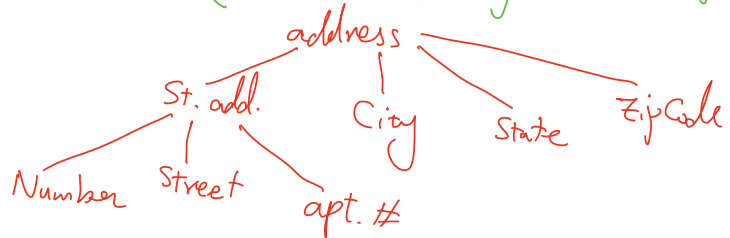
Entity Types

Step 2: Specify the attributes

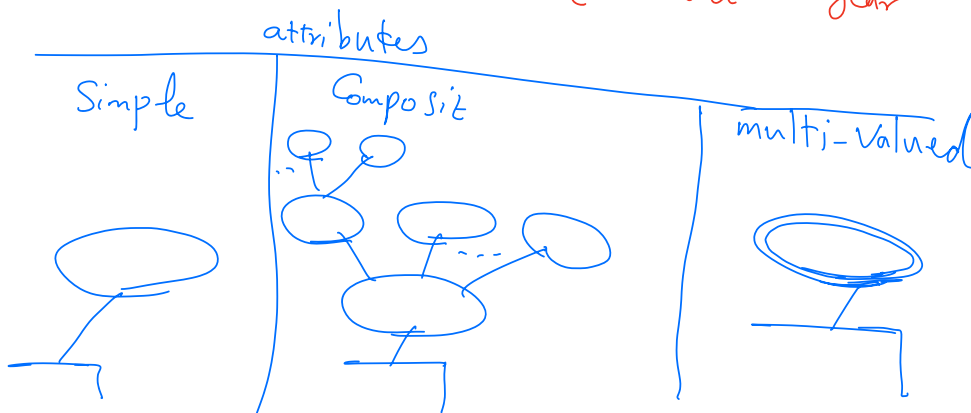
Attributes

Simple: Take a single atomic value
↳ e.g.: name;

Composite: has multiple components
↳ e.g.: address (Street address, City, State, Zip Code)



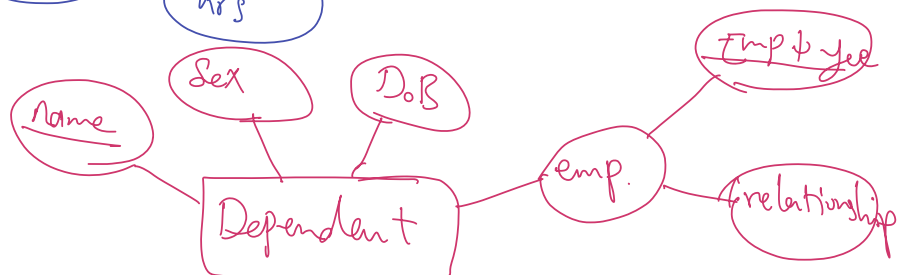
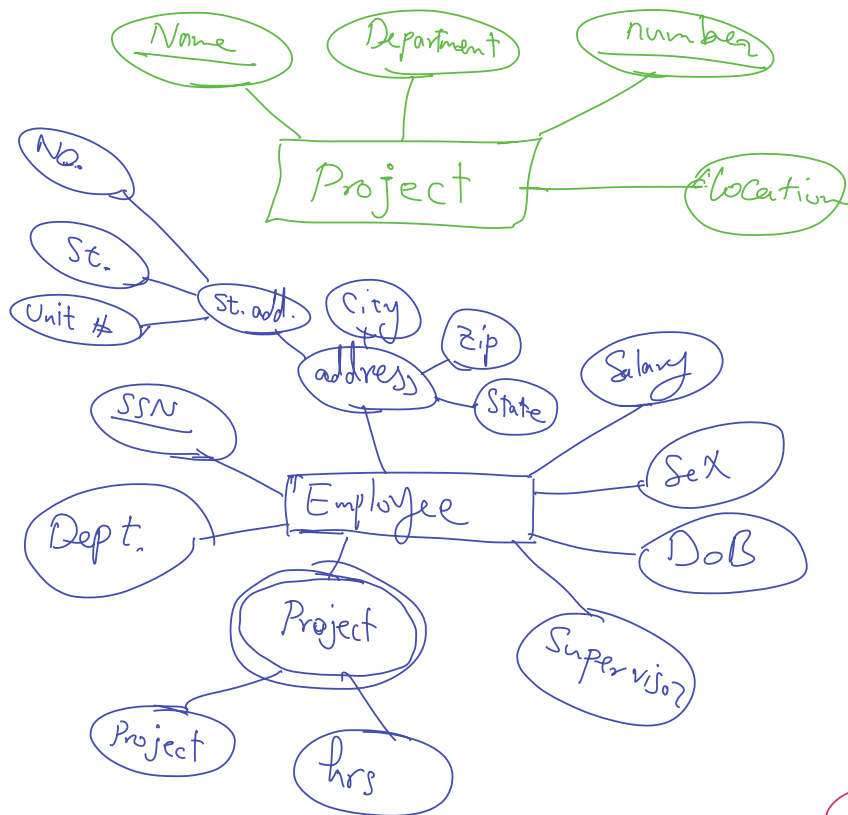
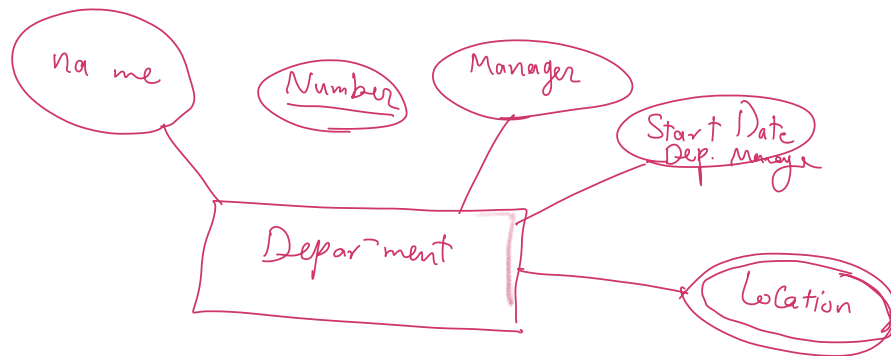
Multi-valued: Can take a set of values
↳ e.g.: {Previous degrees}



Every Entity must have at least one **Key attribute**



Unique attribute

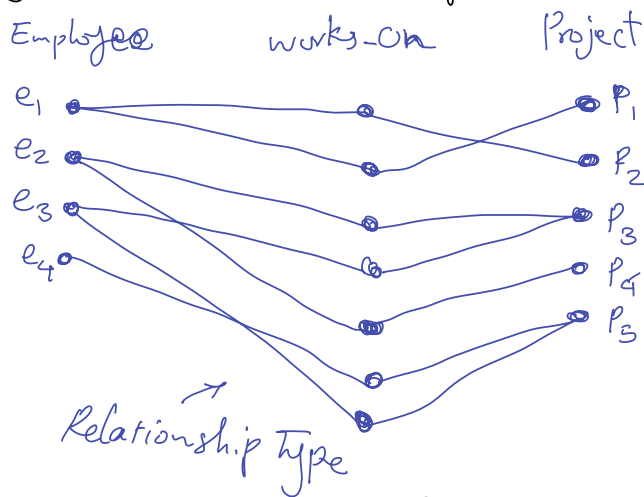


A relationship relates two or more entities with a specific meaning

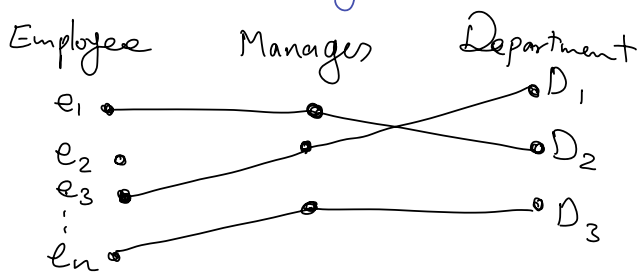
John Smith **works On** Project X
Employee Project

- A Set of relations with the same logic are called Relationship Type

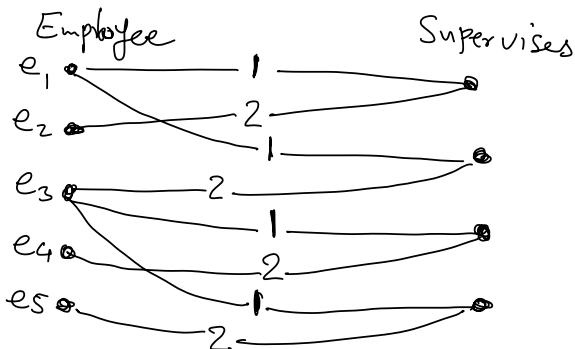
- Degrees of Relationships



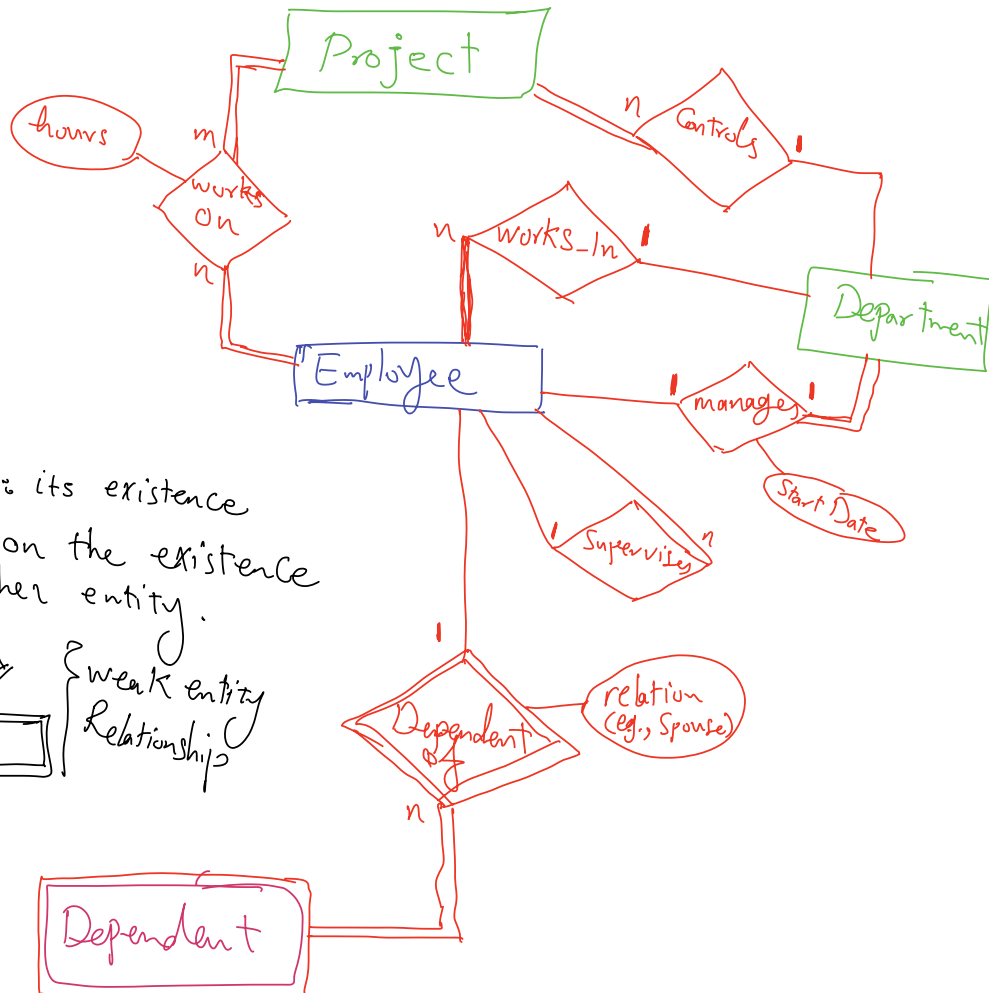
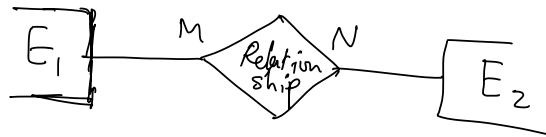
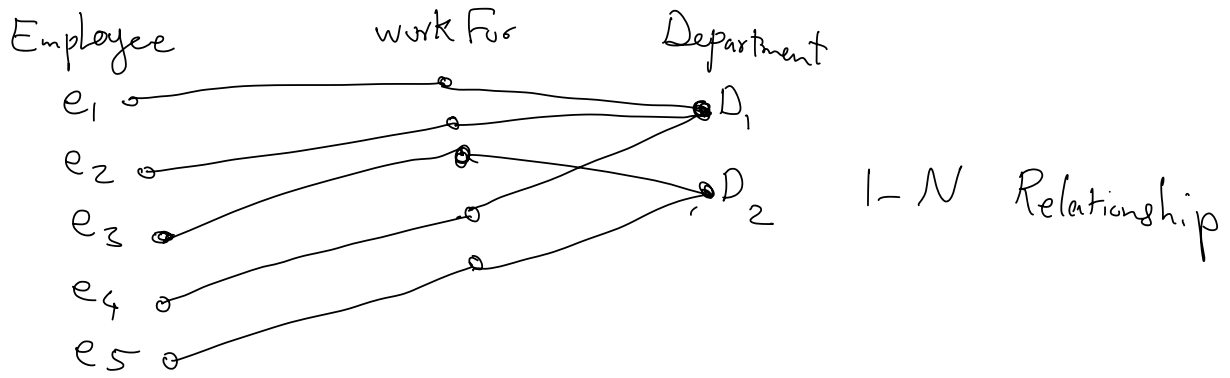
← Degree of the relationship is M-N



1-1 Relationship



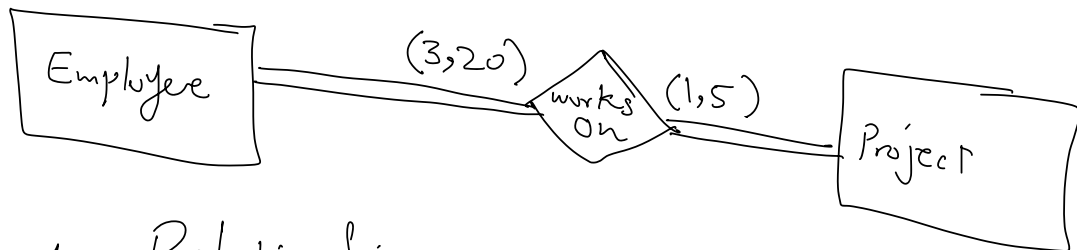
1-N Relationship



-weak Entity: its existence depends on the existence of another entity.



Relationship Degree Constraints



n-ary Relationships:

Relationships b/w multiple entities

