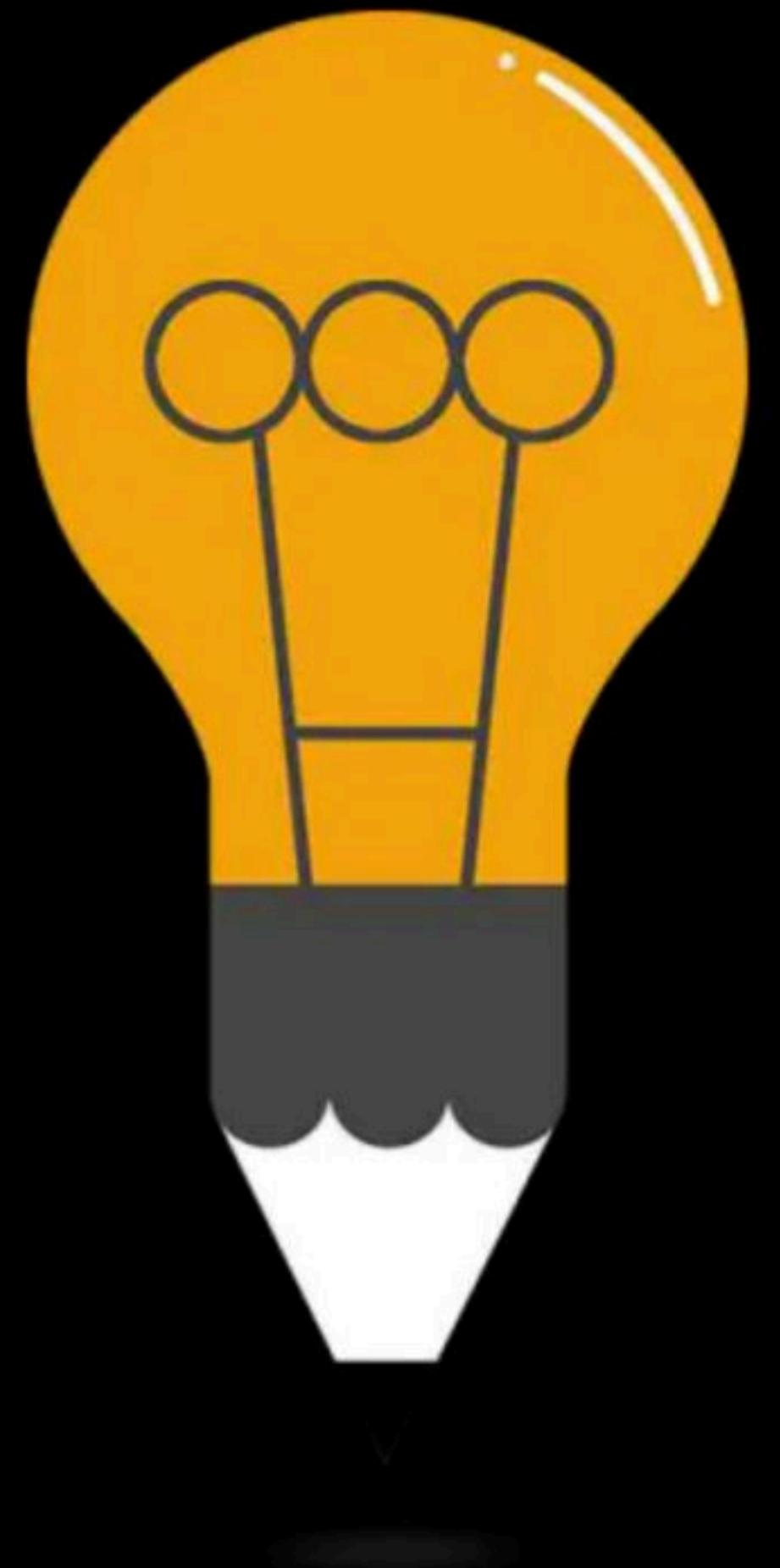




Doubt Clearing Session & Relational Modeling

Complete Course on Database Management System



DBMS Doubts & E-R Modeling

By: Vishvadeep Gothi

Entity-Relationship Model

The entity-relationship (E-R) data model consists of a collection of basic objects, called entities, and of relationships among these objects.

Entity

Object in the real world that is distinguishable from another object

Entity-Set

A collection of similar entities called an entity set

Attribute

An entity is described using a set of attributes

Domain

A unique set of values permitted for an attribute

Relationship

An association among two or more entities

Relationship Set

A set of similar relationships

Key

An attribute or set of attributes whose values can uniquely identify an entity in a set

E-R Diagram

1. Entity set
2. Relationship Set
3. Attributes

Educator Entity Set

Types of Relationships

1. Unary
2. Binary
3. Ternary

Unary Relationship

Binary Relationship

Descriptive Attribute

Attribute of relationship

Ternary Relationship

Mapping Cardinality

1. One to One
2. One to Many
3. Many to One
4. Many to Many

One-To-One

Example: Citizen has Aadhar card or driving license

One-To-Many

Example: Employee manages teams

Many-To-One

Example: Bank Account to Customer

Question GATE-2005

Consider the entities 'hotel room', and 'person' with a many to many relationship 'lodging' as shown below:



If we wish to store information about the rent payment to be made by person (s) occupying different hotel rooms, then this information should appear as an attribute of

- A. Person
- B. Hotel Room
- C. Lodging
- D. None of these

Question GATE-2018

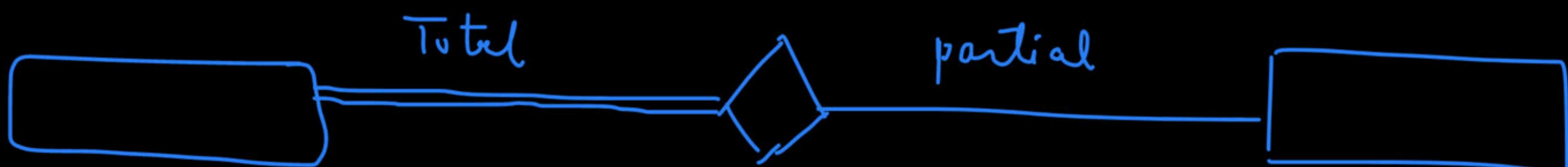
In an Entity-Relationship (ER) model, suppose R is a many-to-one relationship from entity set E1 to entity set E2. Assume that E1 and E2 participate totally in R and that the cardinality of E1 is greater than the cardinality of E2.

Which one of the following is true about R ?

- A. Every entity in E1 is associated with exactly one entity in E2
- B. Some entity in E1 is associated with more than one entity in E2
- C. Every entity in E2 is associated with exactly one entity in E1
- D. Every entity in E2 is associated with at most one entity in E1

Participation Constraints

Specifies the presence of an entity when it is related to another entity in a relationship type



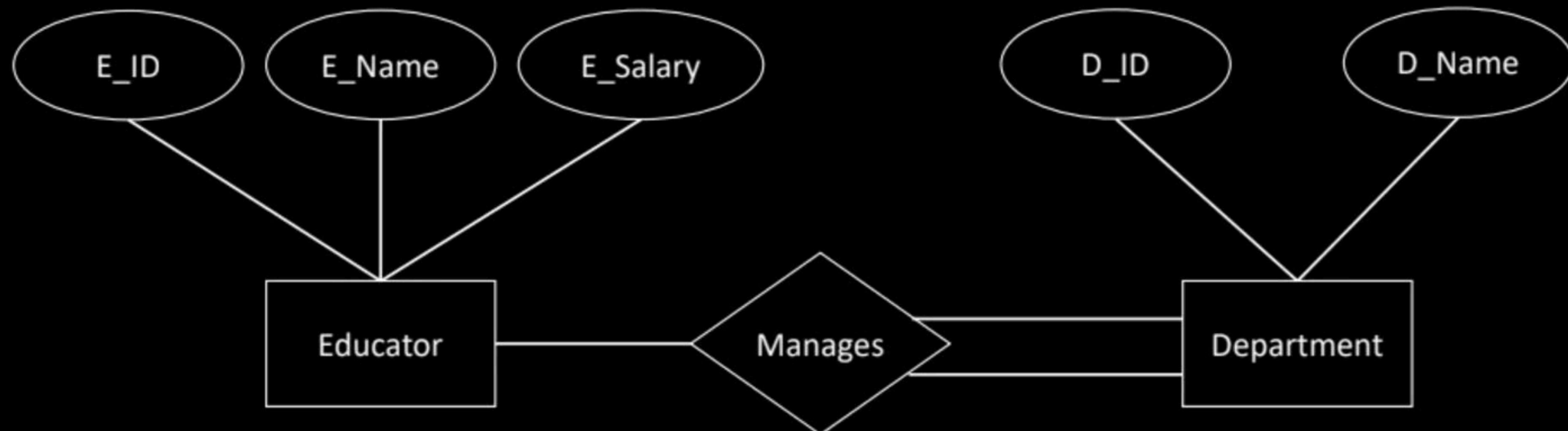
Participation Constraints

Specifies the presence of an entity when it is related to another entity in a relationship type.

2 Types:

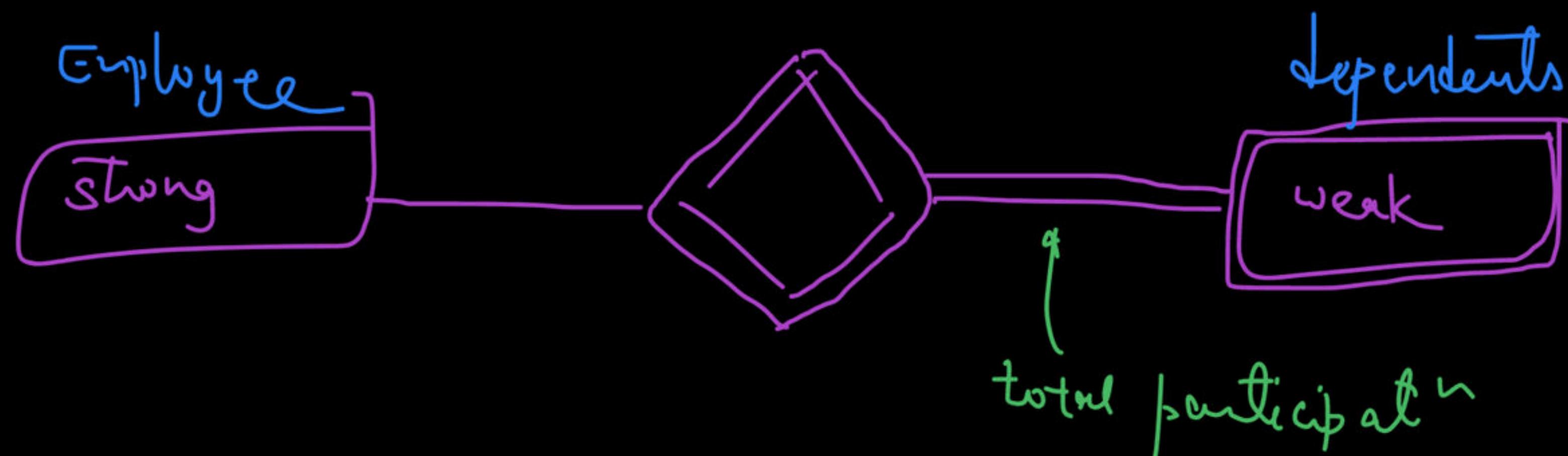
1. Total Participation
2. Partial Participation

Participation Constraints



Weak or Strong Entity

A weak entity is an entity that cannot be uniquely identified by its attributes alone



Weak or Strong Entity

Dominant entity → entity of strong entity set

Subordinate entity → -|| weak entity set

Extended E-R Features

- Specialization
- Generalization
- Higher- and lower-level entity sets
- Attribute inheritance
- Aggregation

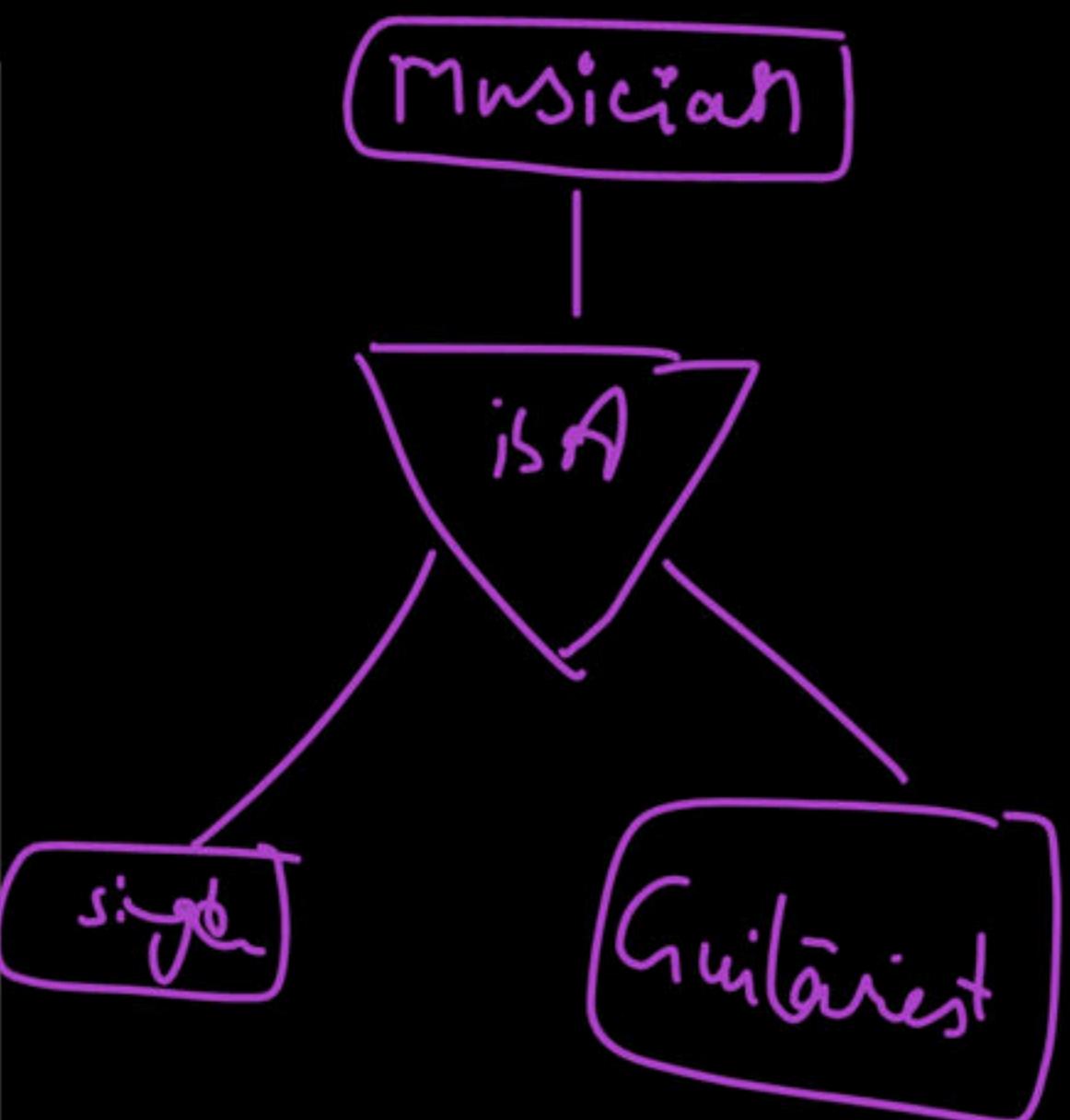
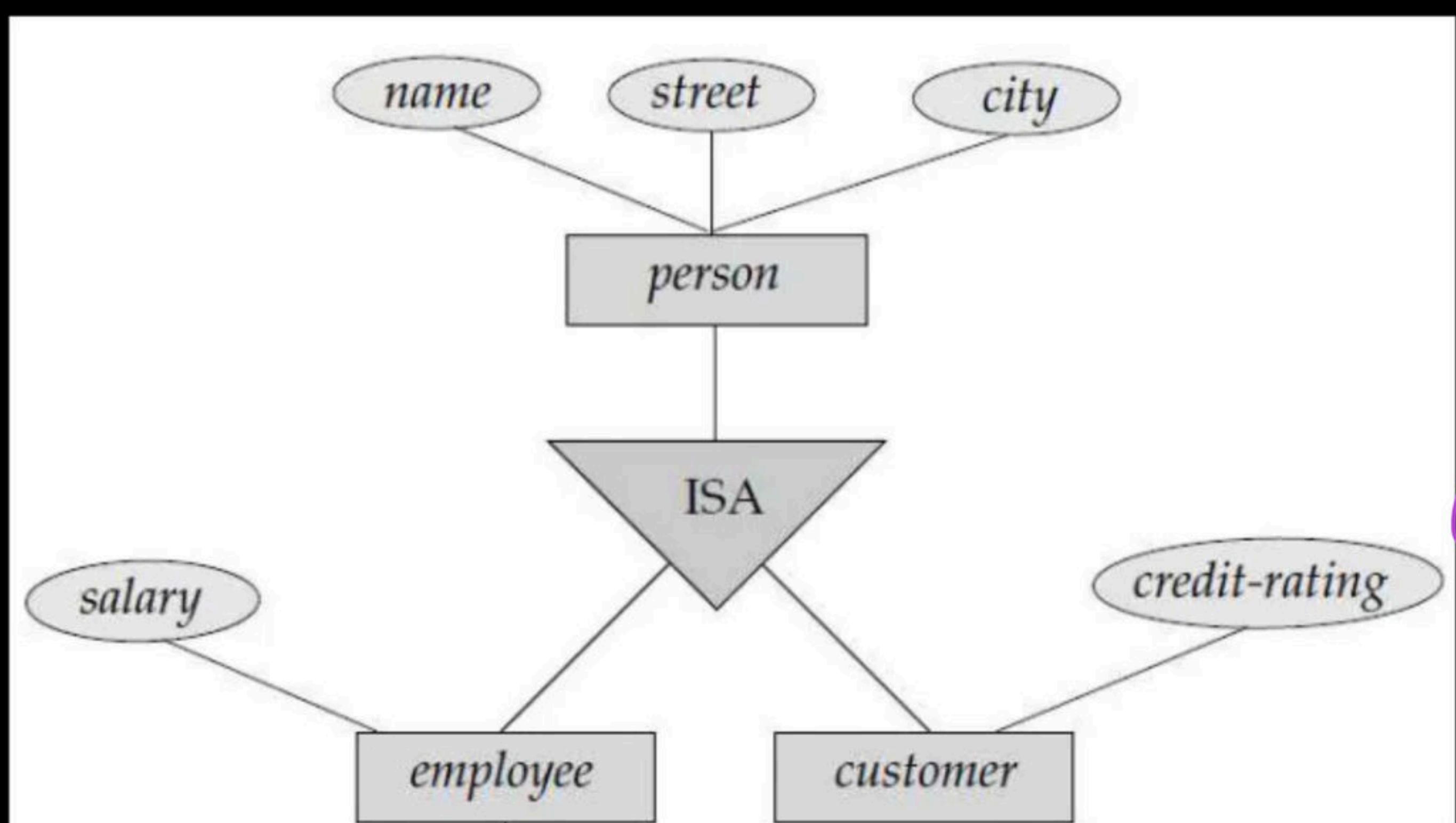
Specialization

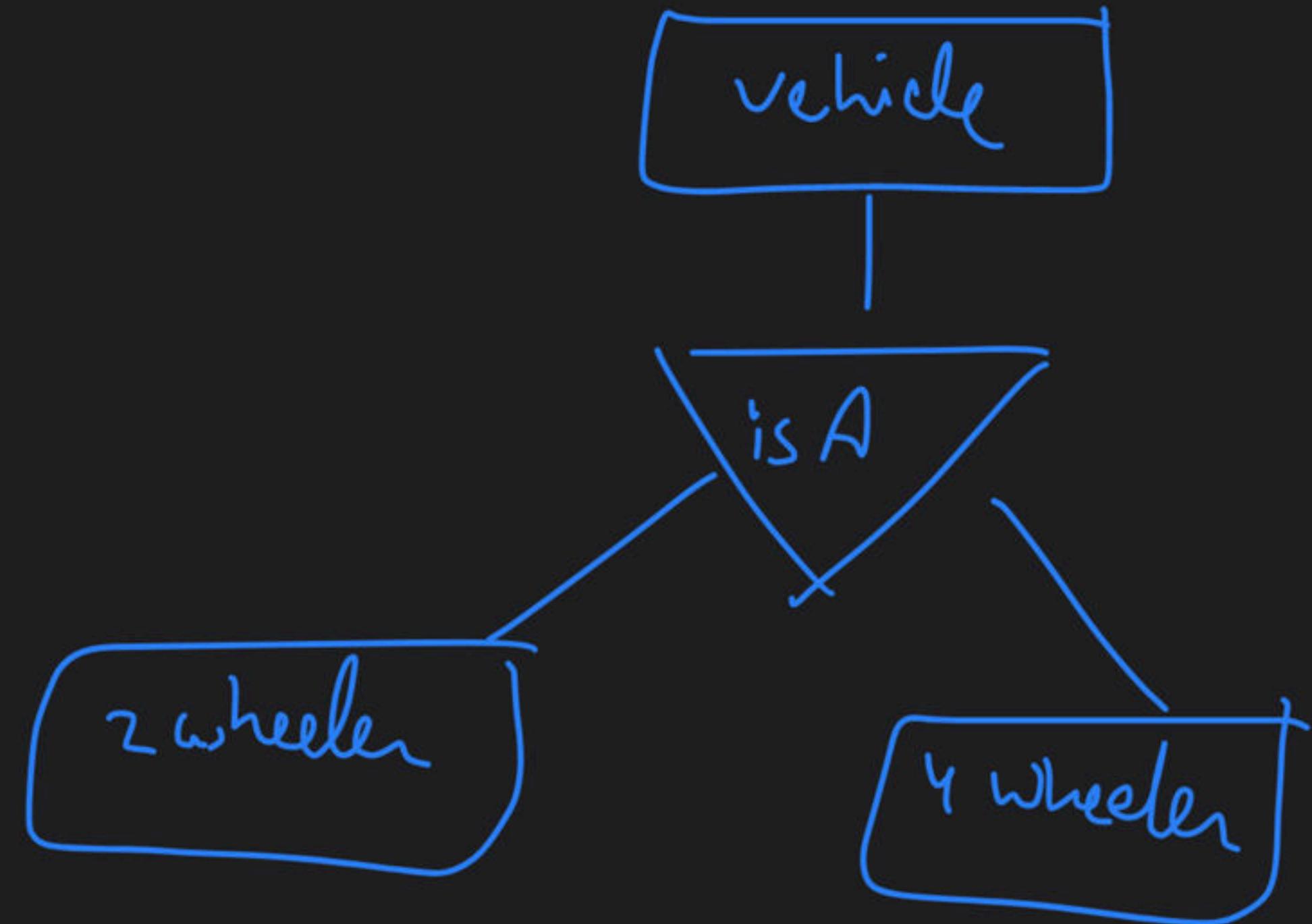
The process of designating subgroupings within an entity set is called specialization.

Generalization

This commonality can be expressed by generalization, which is a containment relationship that exists between a higher-level entity-set and one or more lower-level entity sets

Generalization





Generalization

This commonality can be expressed by generalization, which is a containment relationship that exists between a higher-level entity-set and one or more lower-level entity sets

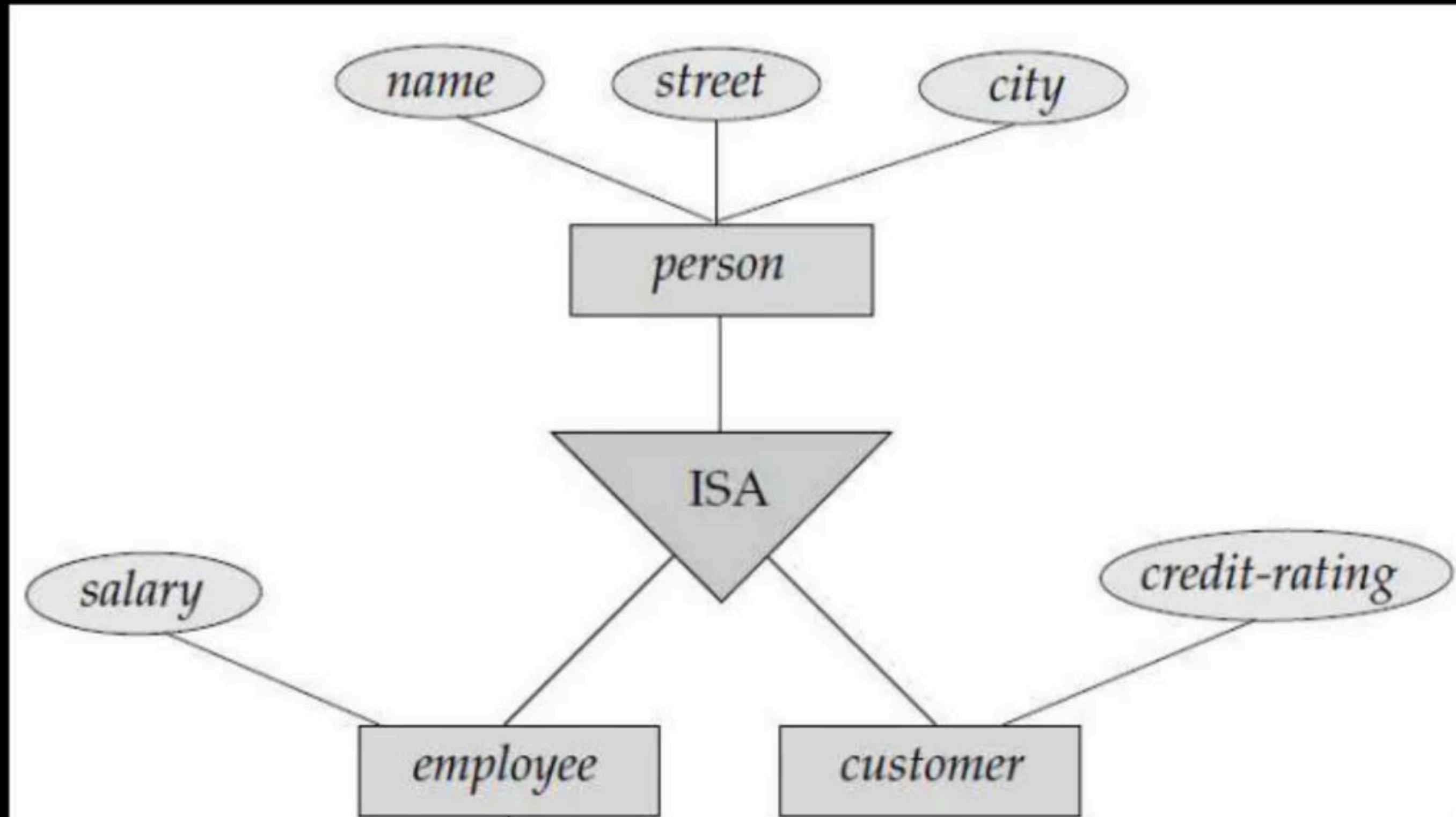
1. Disjoint → one entity of higher-level entity set is present in only one lower-level entity set
2. Overlapping
↳ one entity of higher-level entity set can be present in more than one lower-level entity sets.

Generalization

Total generalization or specialization: Each higher-level entity must belong to a lower-level entity set

Partial generalization or specialization: Some higher-level entities may not belong to any lower-level entity set.

Attribute Inheritance

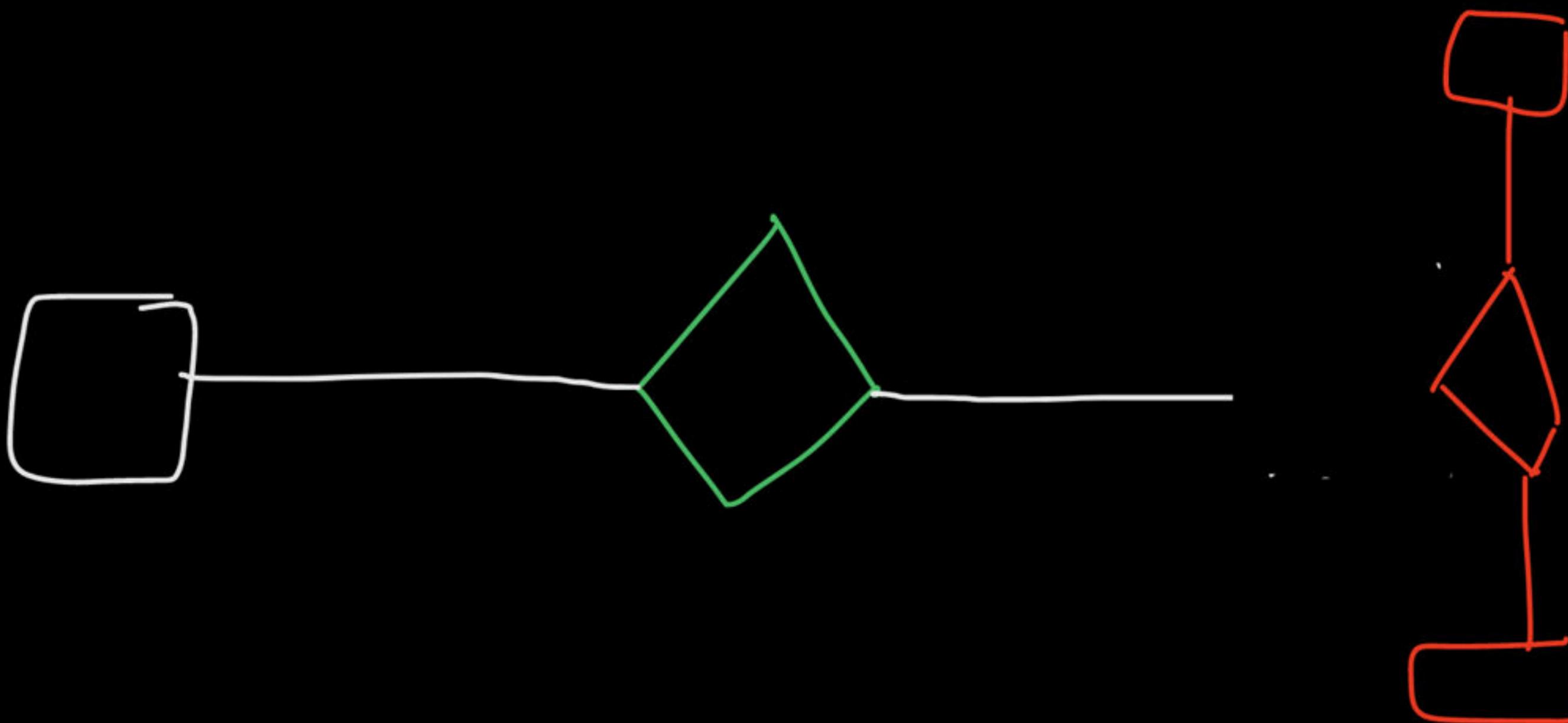


employee entity set \Rightarrow 4 attributes
name, street, city, salary

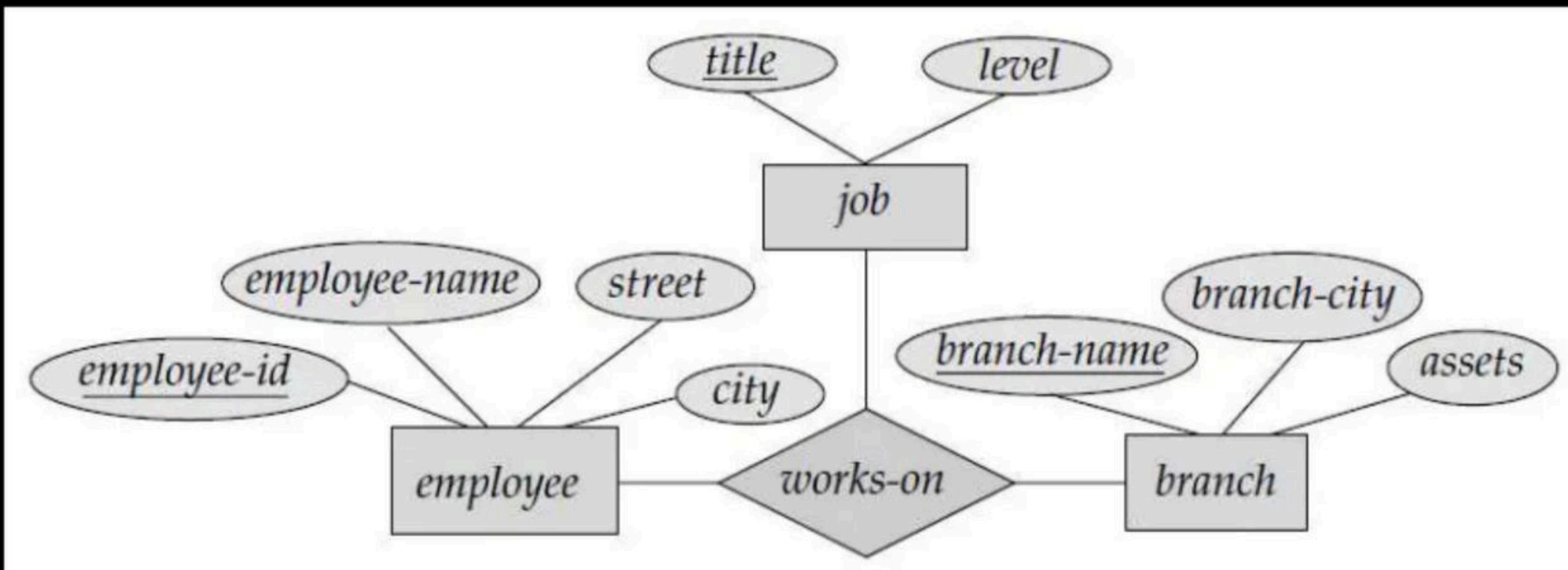
customer entity set
 \Rightarrow 4 attributes
name, street, city,
credit_rating

Aggregation

Relationship-set participating in relationship then aggregation is used

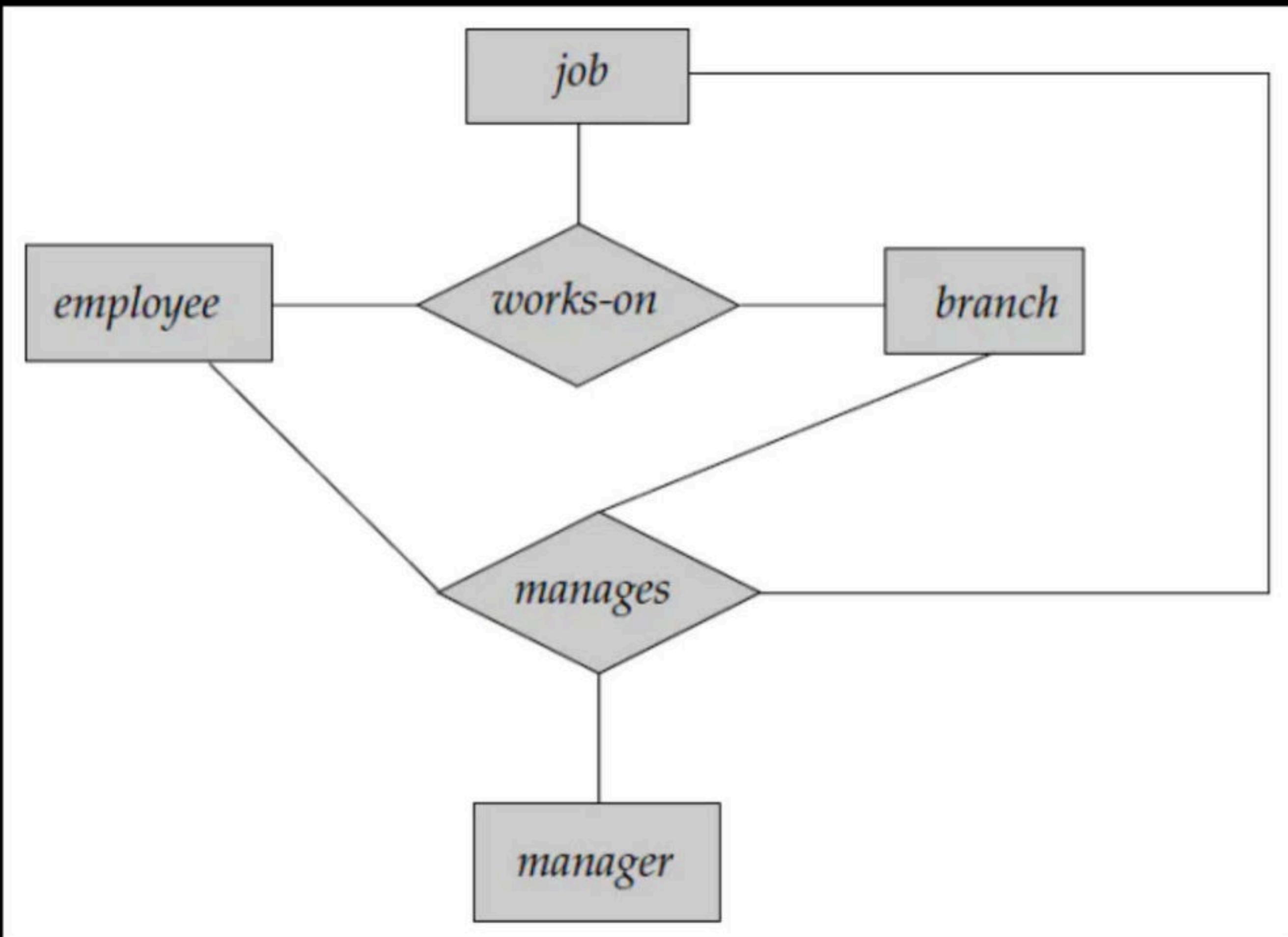


Aggregation



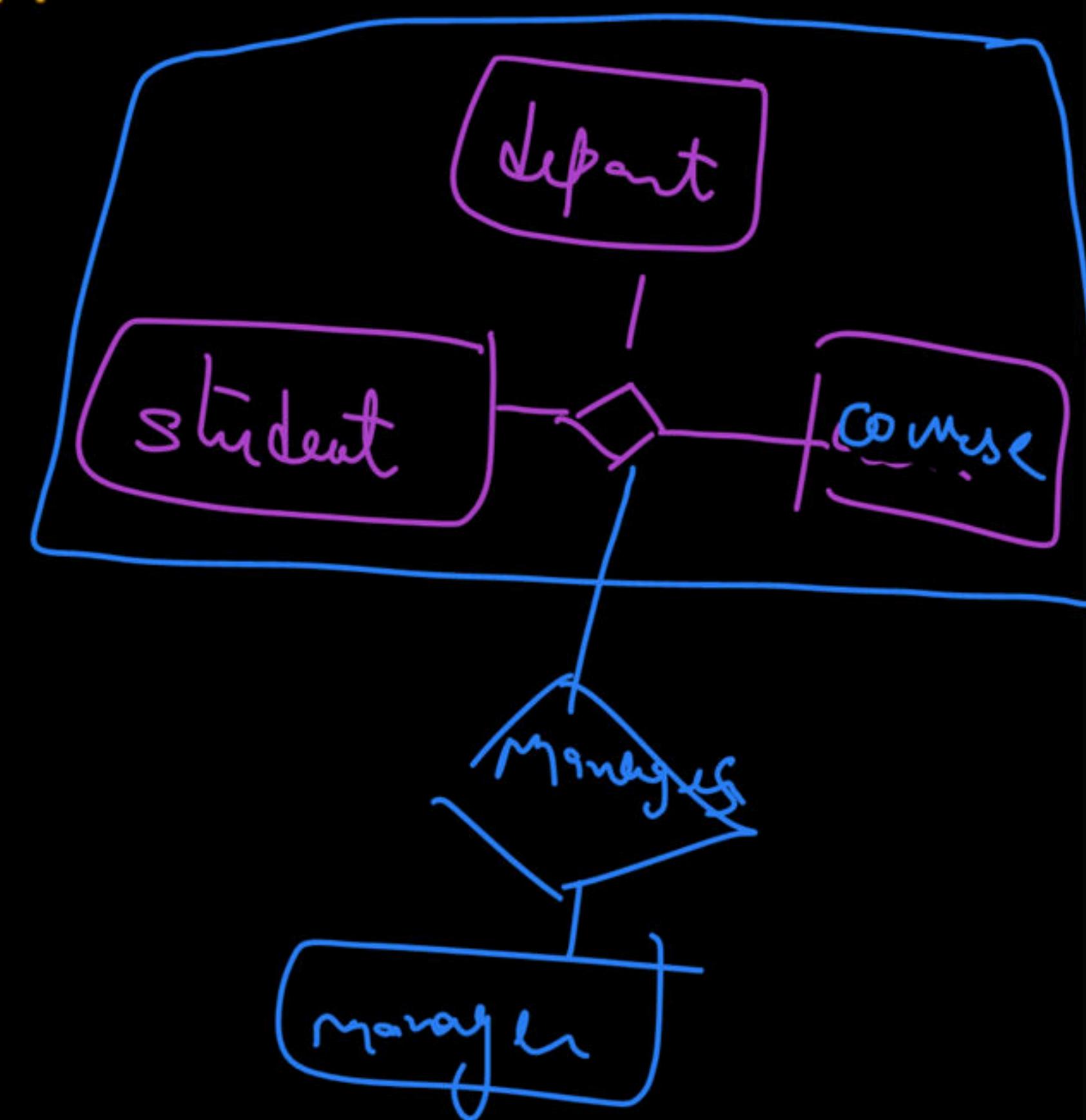
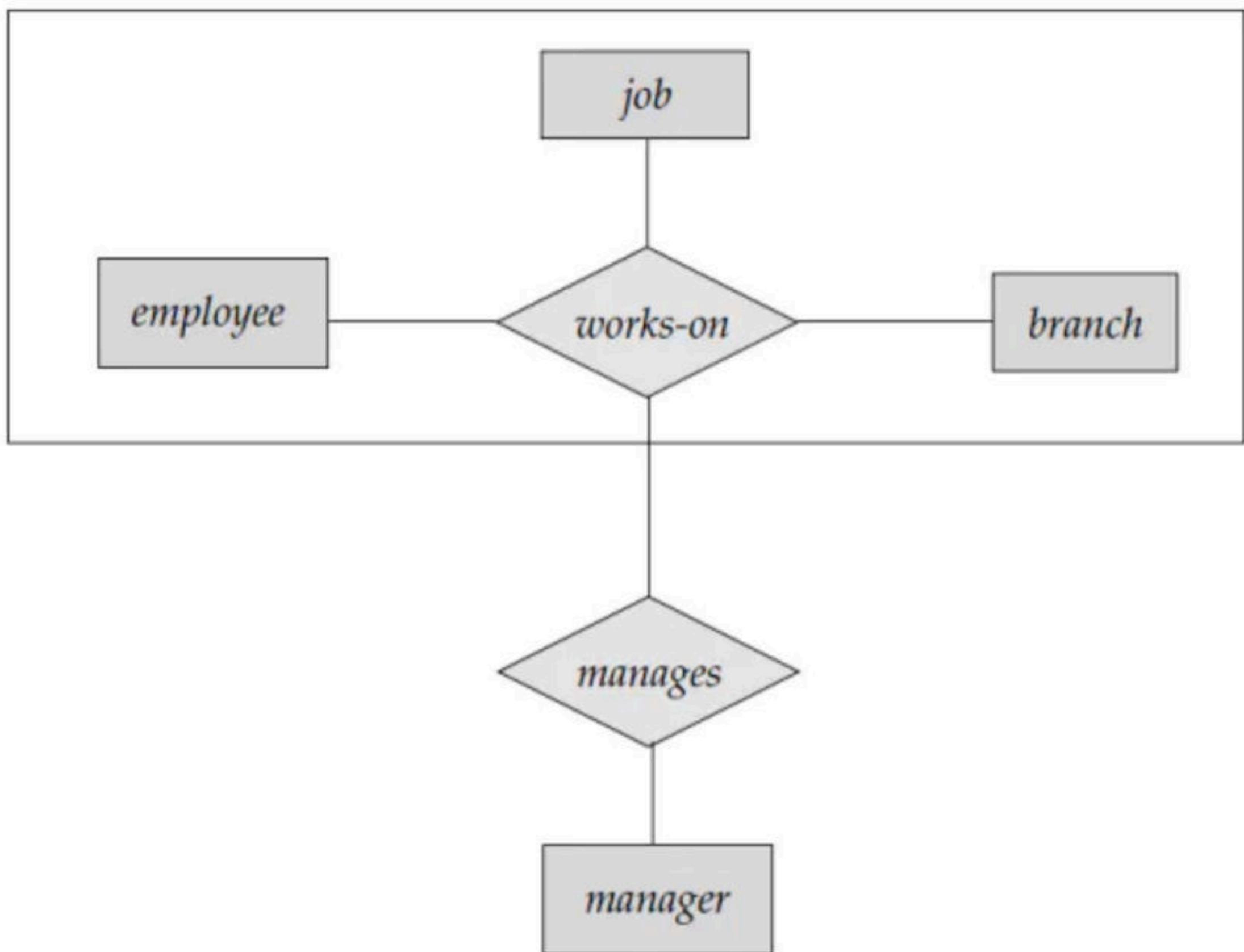
Rahul ✓ \Rightarrow manages Raj working in
✓ delhi ktm
✓ on assistant job

Aggregation



✗

Aggregation



Types of Attributes

1. Single valued vs Multivalued attributes
2. Simple vs Composite attributes
3. Given vs Derived attributes
4. Prime vs Non-prime attributes

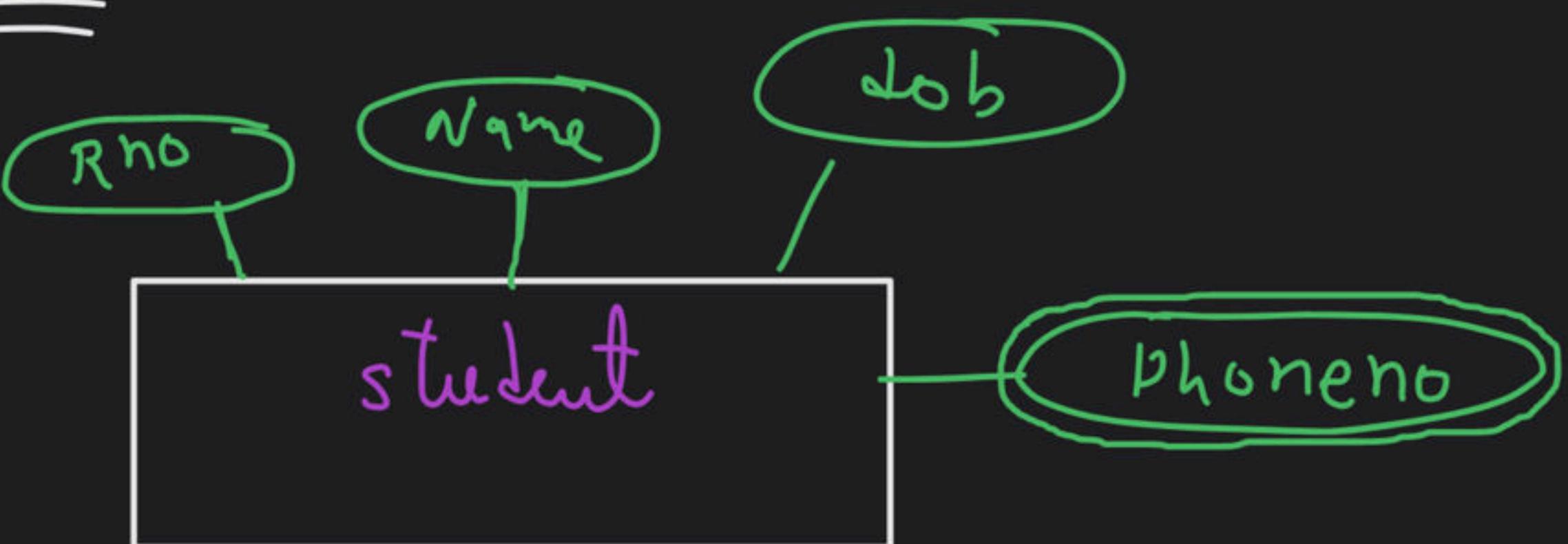
single valued vs multivalued attribute

single value possible for each entity

multiple values possible for one entity

ex:- phoneno of student

ex:-

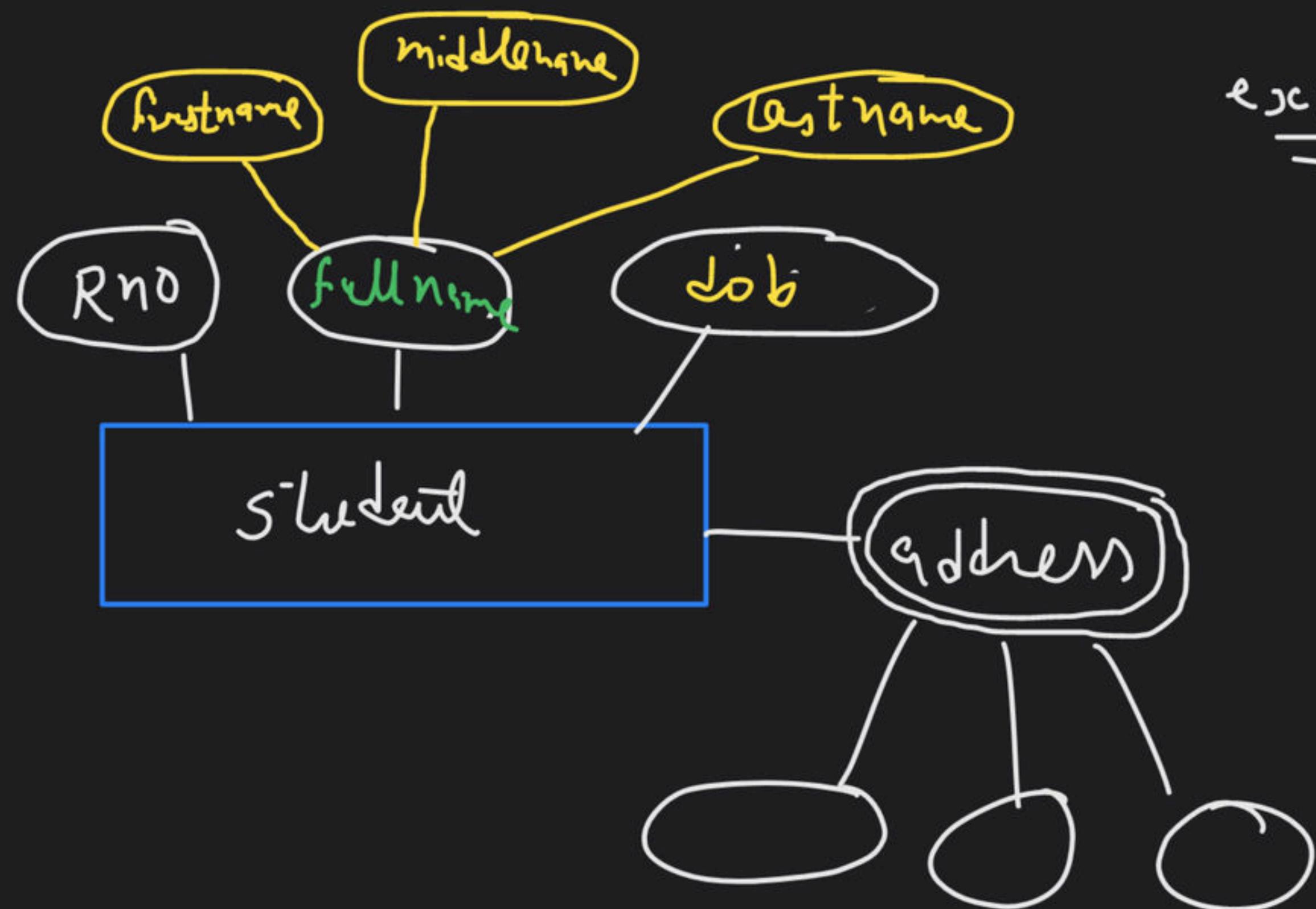


Simple vs composite attribute (Compound)

can not be decomposed

can be decomposed into other attributes

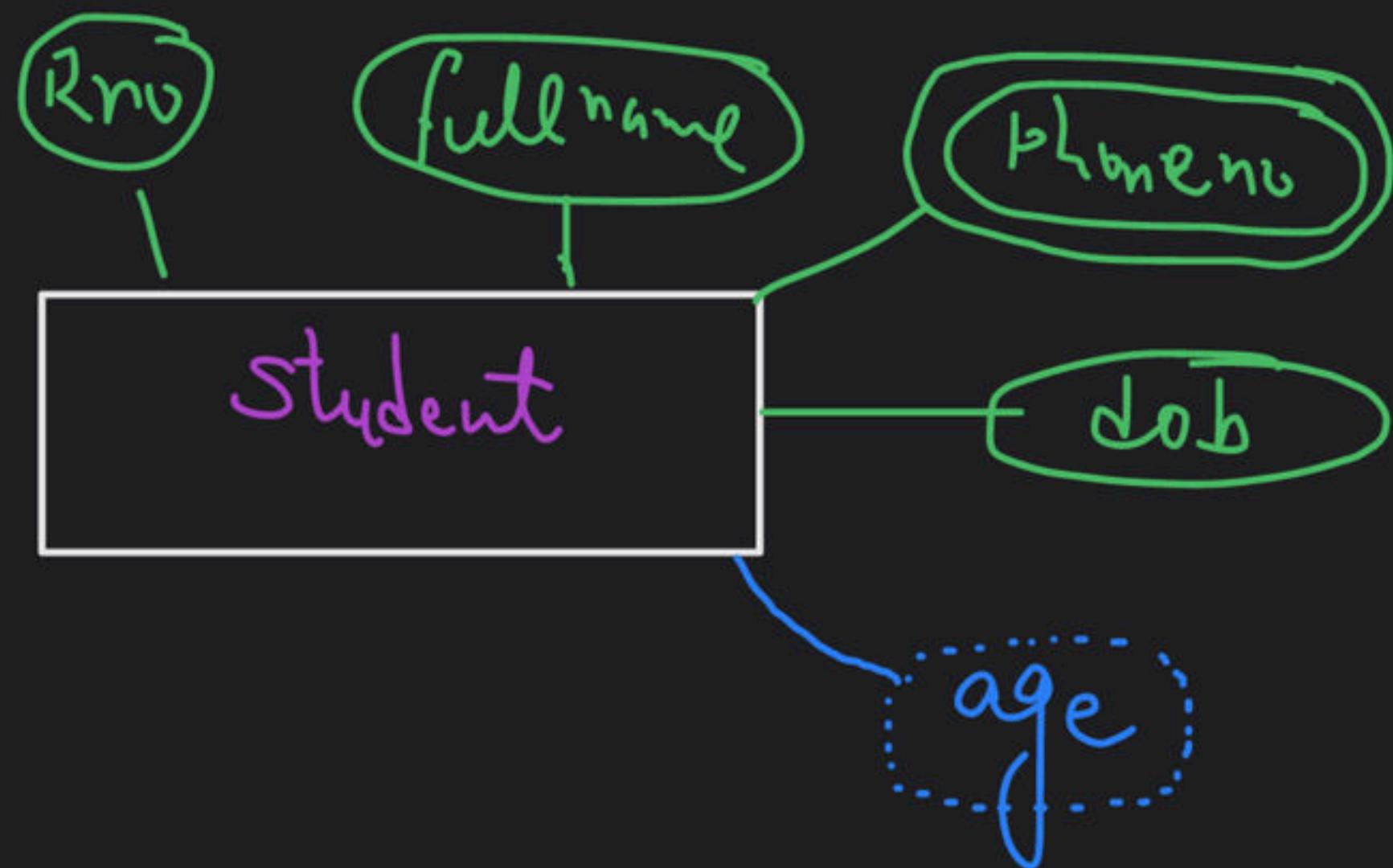
e.g.: - fullname



Given in
entity set

Given vs Derived attribute

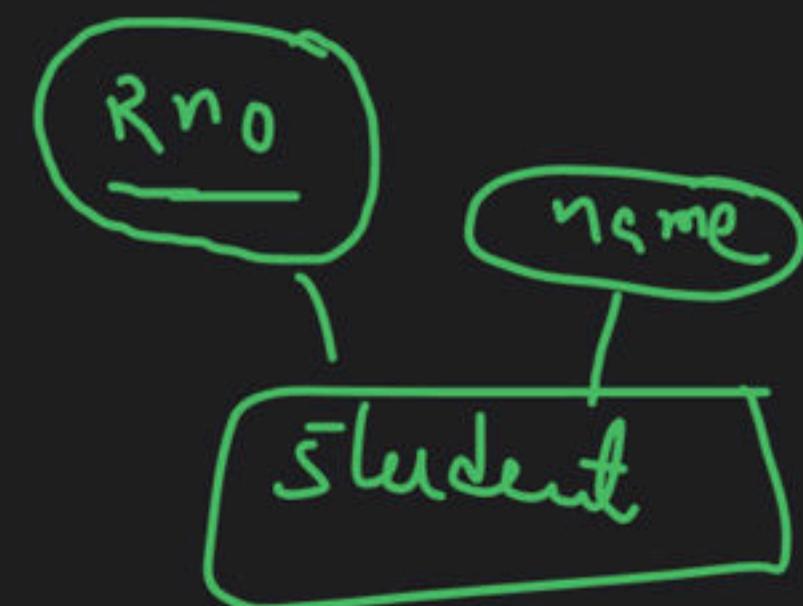
derived from other
attributes



Prime vs non-prime

part of key

not part of key



Ex:- entity set :- E

attributes :- q₁

q₂

q₃

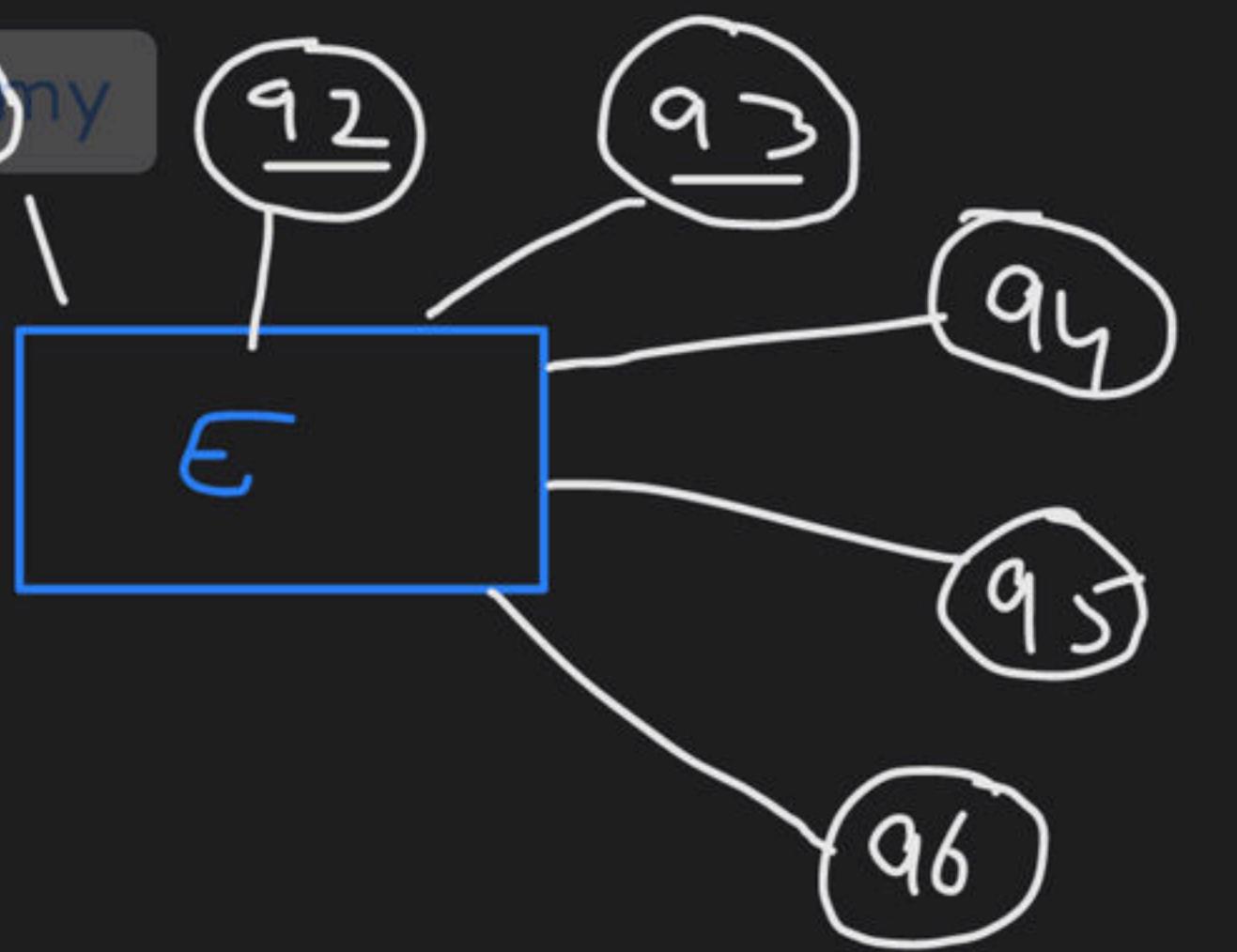
q₄

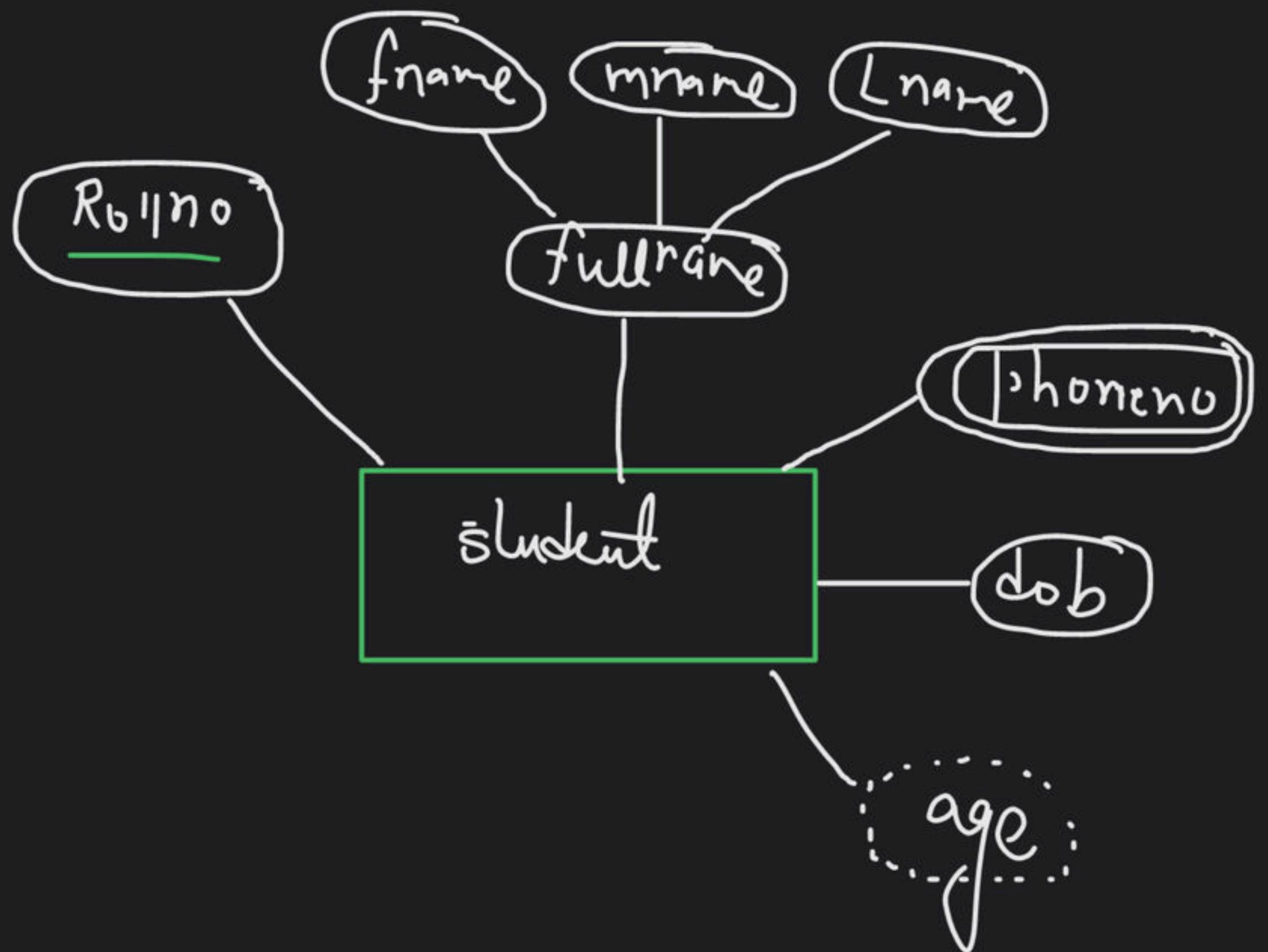
q₅

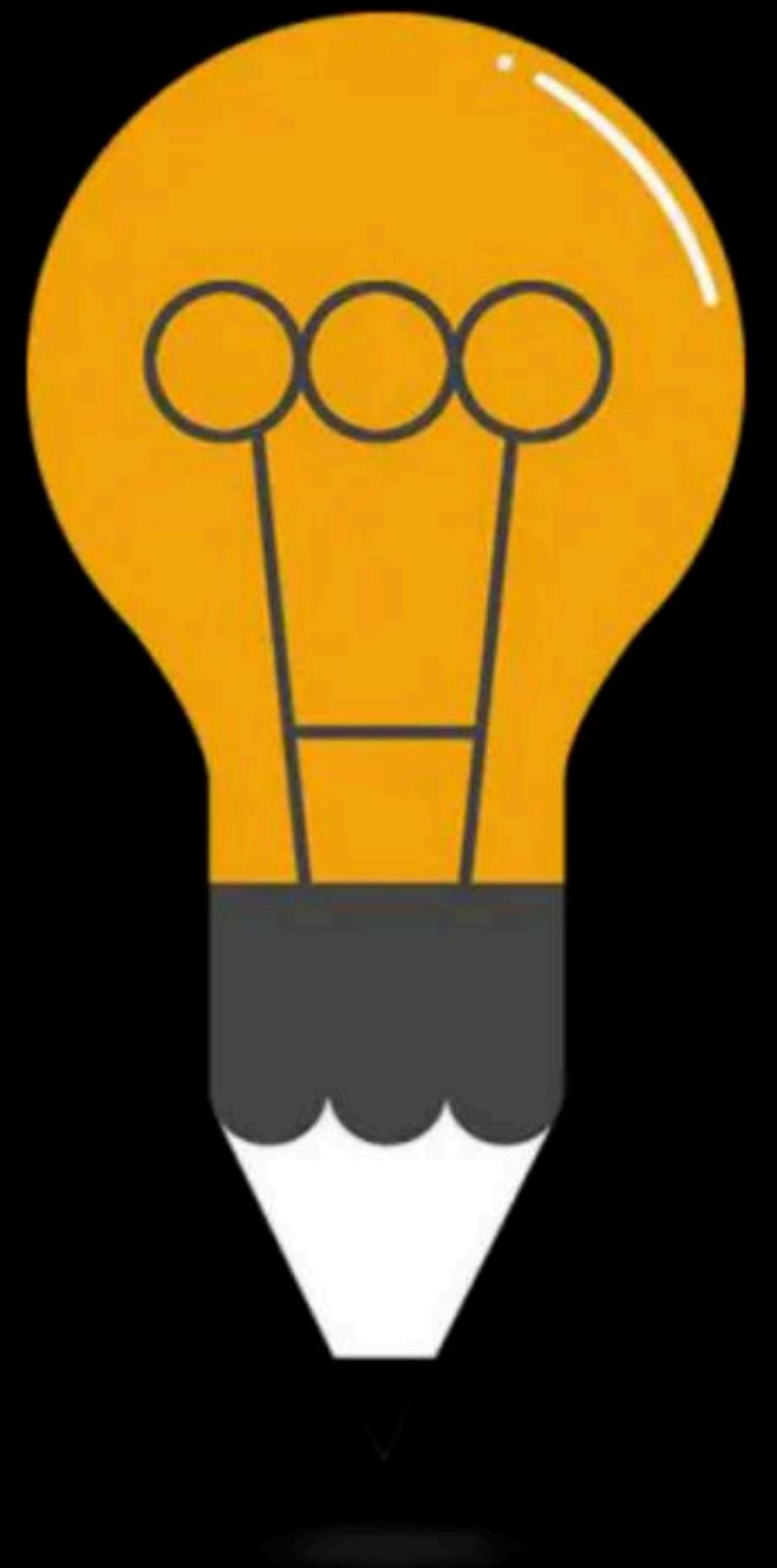
q₆

~~keys :-~~ ① q₁ ?
② q₂ q₃ }

Prime \Rightarrow q₁, q₂, q₃
non-prime \Rightarrow q₄, q₅, q₆



Example:-



DPP

By: Vishvadeep Gothi

Question

DBMS is the collection of _____ that enables user to create and maintain a database?

- a) Keys
- b) Transactions
- c) Objects
- d) Programs

Question

Which of the following is the process of selecting the data storage and data access characteristics of the database?

- (A)Logical DB design
- (B)Physical DB design
- (C)Testing & Performance tuning
- (D)Schema Refinement

Question

In which model the database is stored in tables?

- (A) Network Model
- (B) Relational Model
- (C) Hierarchical Model
- (D) E-R Model

Question

Which is the data model?

- (A) Relational
- (B) Object-Oriented
- (C) Network
- (D) All

Question

Which is not the feature of DBMS?

- (A) Data Redundancy
- (B) Independence
- (C) Flexibility
- (D) Data Integrity

Question

The ability to query information from the database, insert, delete and modify the tuples is

- A. Data definition language (DDL)
- B. Data manipulation language (DML)
- C. Storage definition language (SDL)
- D. Relational schema

Question

Which one of the following makes permanently recorded transaction in the database?

- A. View
- B. Commit
- C. Roll back
- D. Flash back

Happy Learning.!



→ phd.

▲ 1 • Asked by Rugved

Sir before joining IIT for mtech what should I prepare

