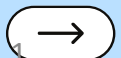# ER-*Translation* (*Entity Relationship Translation*)

Hernawati Susanti Samosir, SST., M.Kom.
Dosen Prodi DIII-Teknologi Informasi
Institut Teknologi Del

Target

D3TK

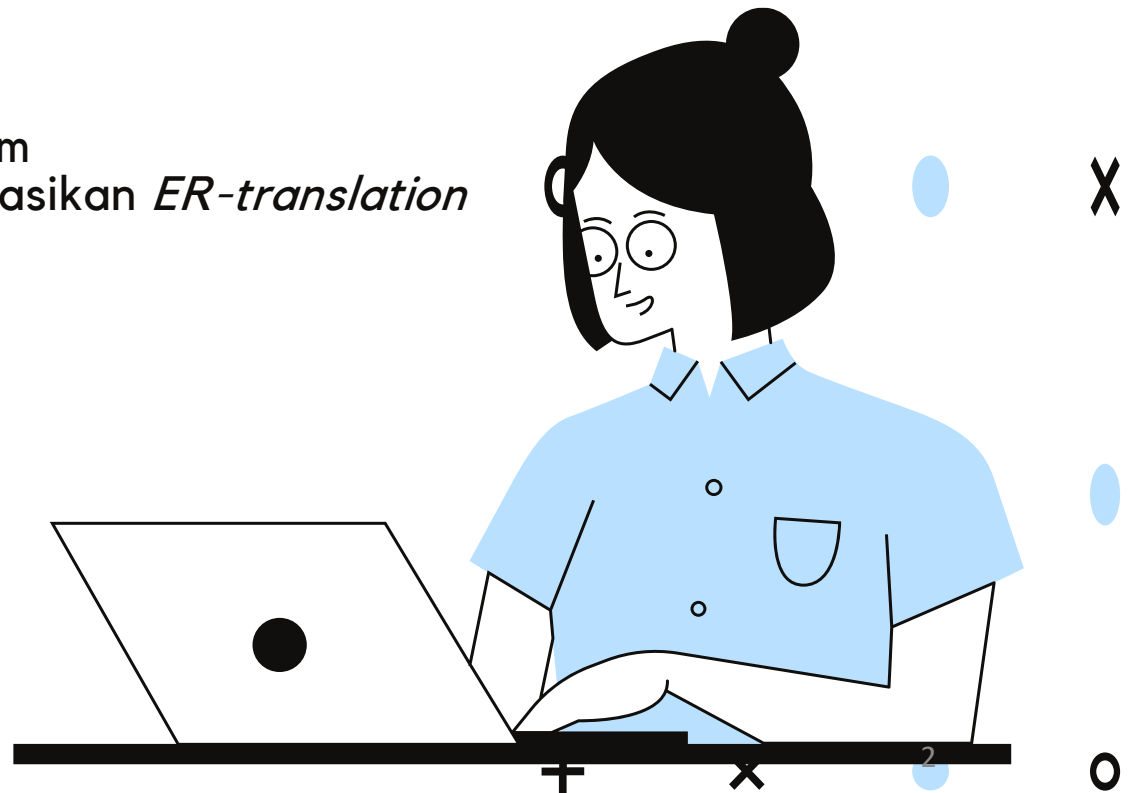Sub-CPMK3 :Mahasiswa mampu merancang ER Model yang tepat -> ERD, ER-*Translation* [C6]

D3TI

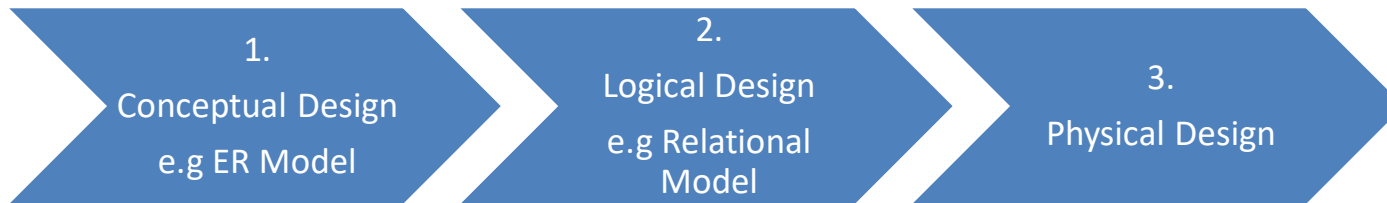Sub-CPMK4: Mahasiswa mampu mengimplementasikan ER-*Translation* yang tepat [C3]

X   O   +   O

Indikator:
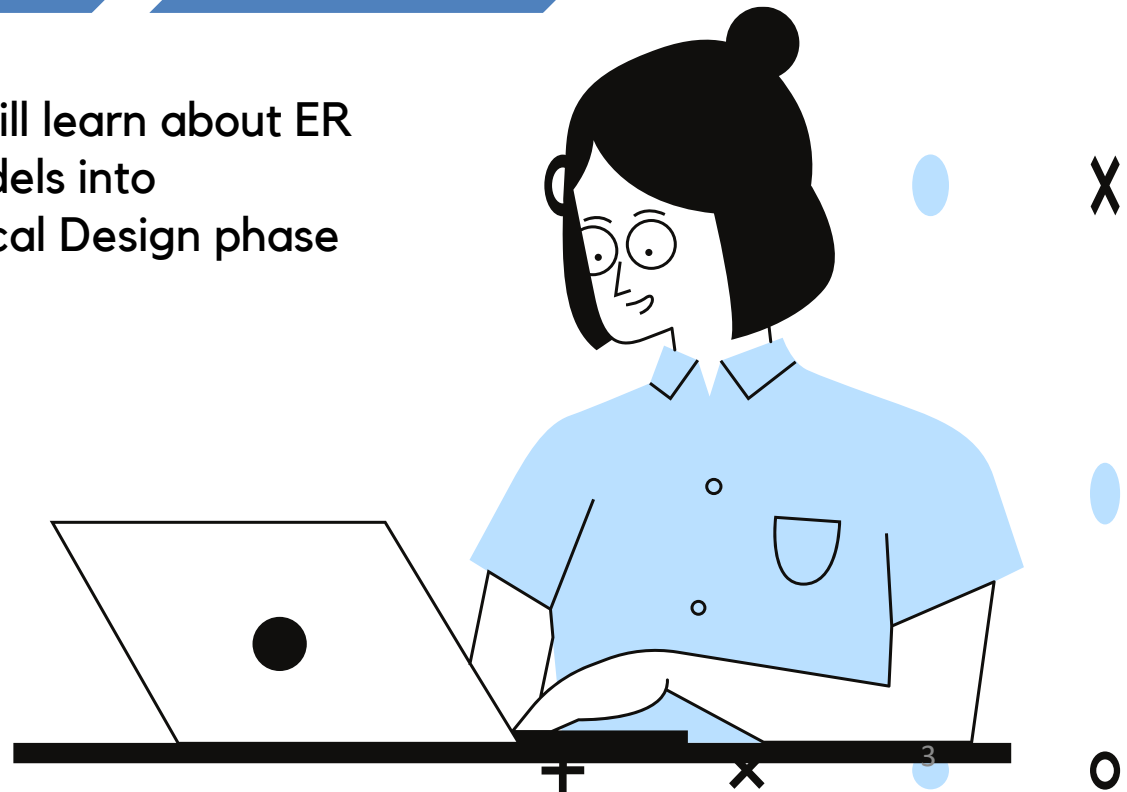
Ketepatan dalam Mengimplementasikan *ER-translation*

Lihat RPS

Phases of Database Design

Review of the previous slide:

1. Conceptual Design e.g ER Model	2. Logical Design e.g Relational Model	3. Physical Design

In the next slide (this session), we will learn about ER Translation (transform E-R data models into relational designs) as a part of Logical Design phase
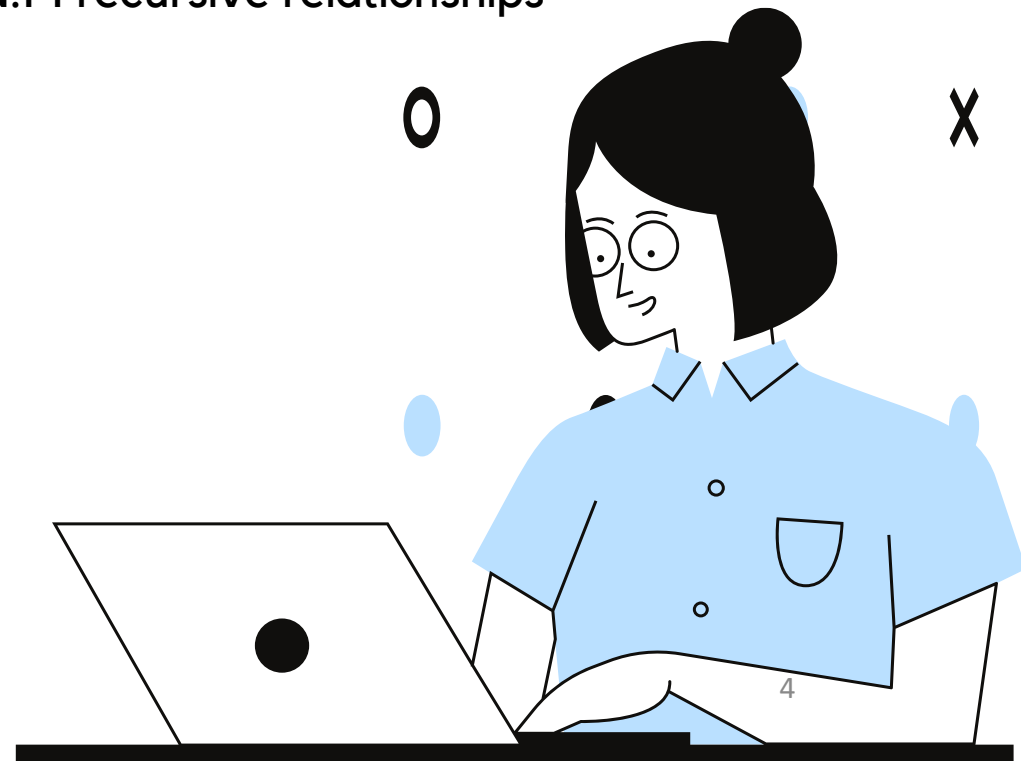
ER Translation

Lecture Objective:
- Learn how to transform E-R data models into relational designs
- Learn how to represent weak entities with the relational model
- Know how to represent 1:1, 1:N, and N:M binary relationships
- Know how to represent 1:1, 1:N, and N:M recursive relationships

Representing Relationships

The maximum cardinality determines how a relationship is represented
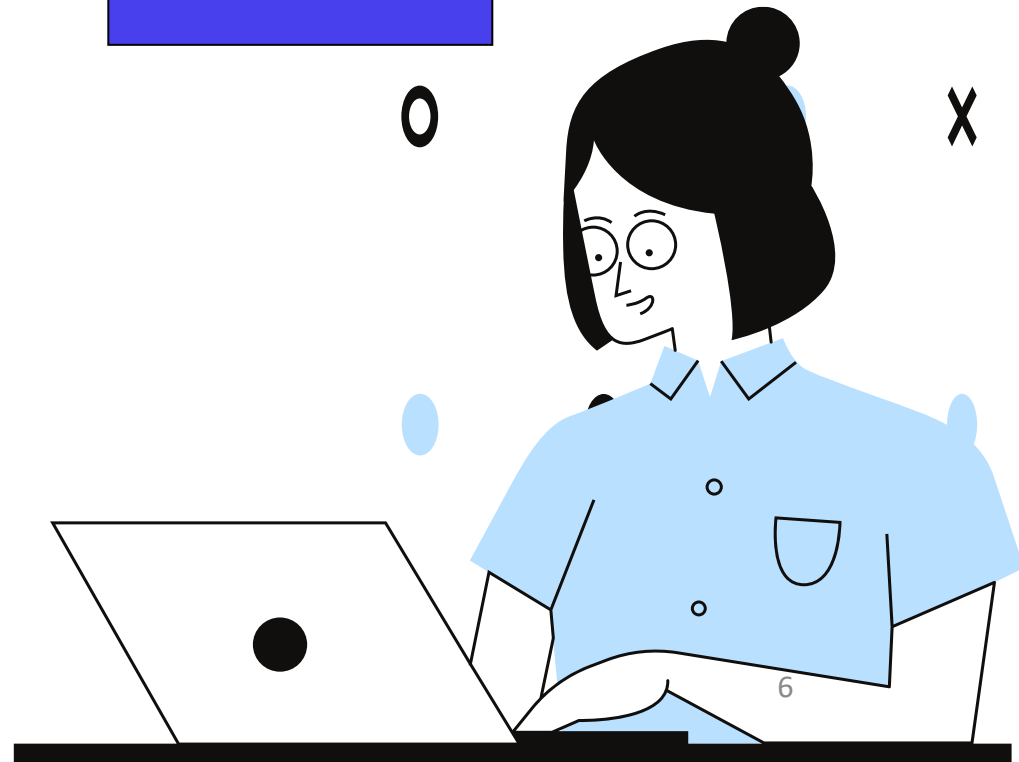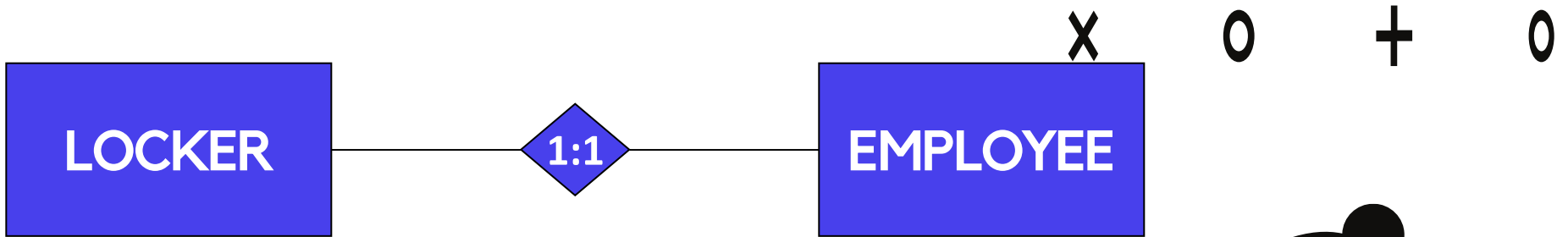
1:1 relationship

- The key from one relation is placed in the other as a *foreign key*
- It does not matter which table receives the foreign key

A One-to-One Relationship Example

LOCKER —— 1:1 —— EMPLOYEE

One Representation of a One-to-One Relationship

Locker
LockerID
LockerDesc
Location

Employee
EmpID
LockerID
EmpName

Primary Key

Foreign Key

One-to-Many Relationships

X   O   +   O
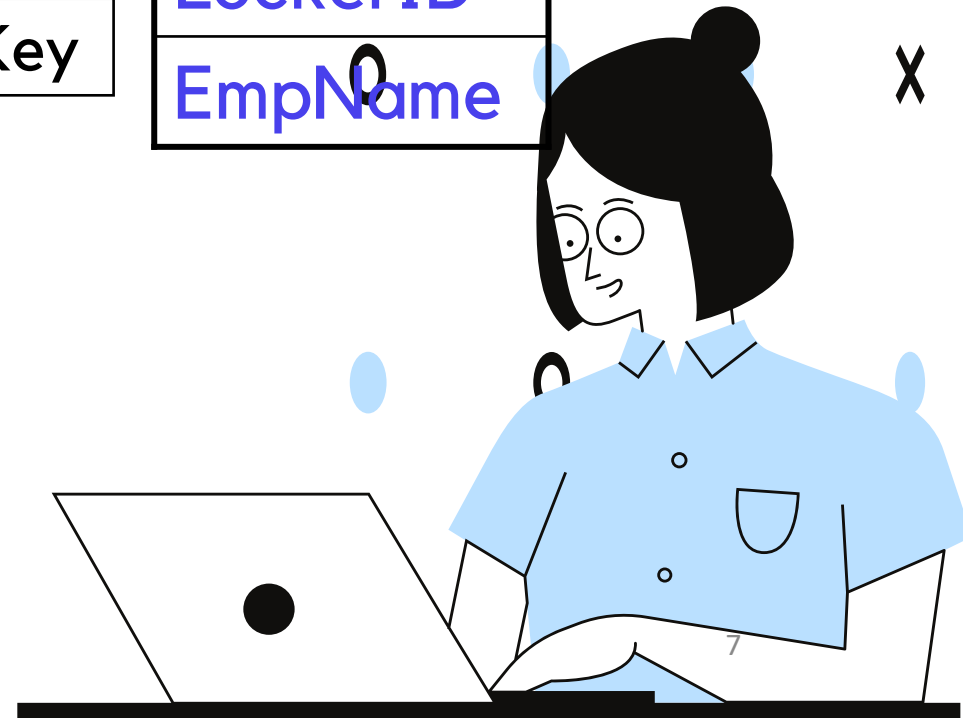
Like a 1:1 relationship, a 1:N relationship is saved by placing the key from one table into another as a foreign key
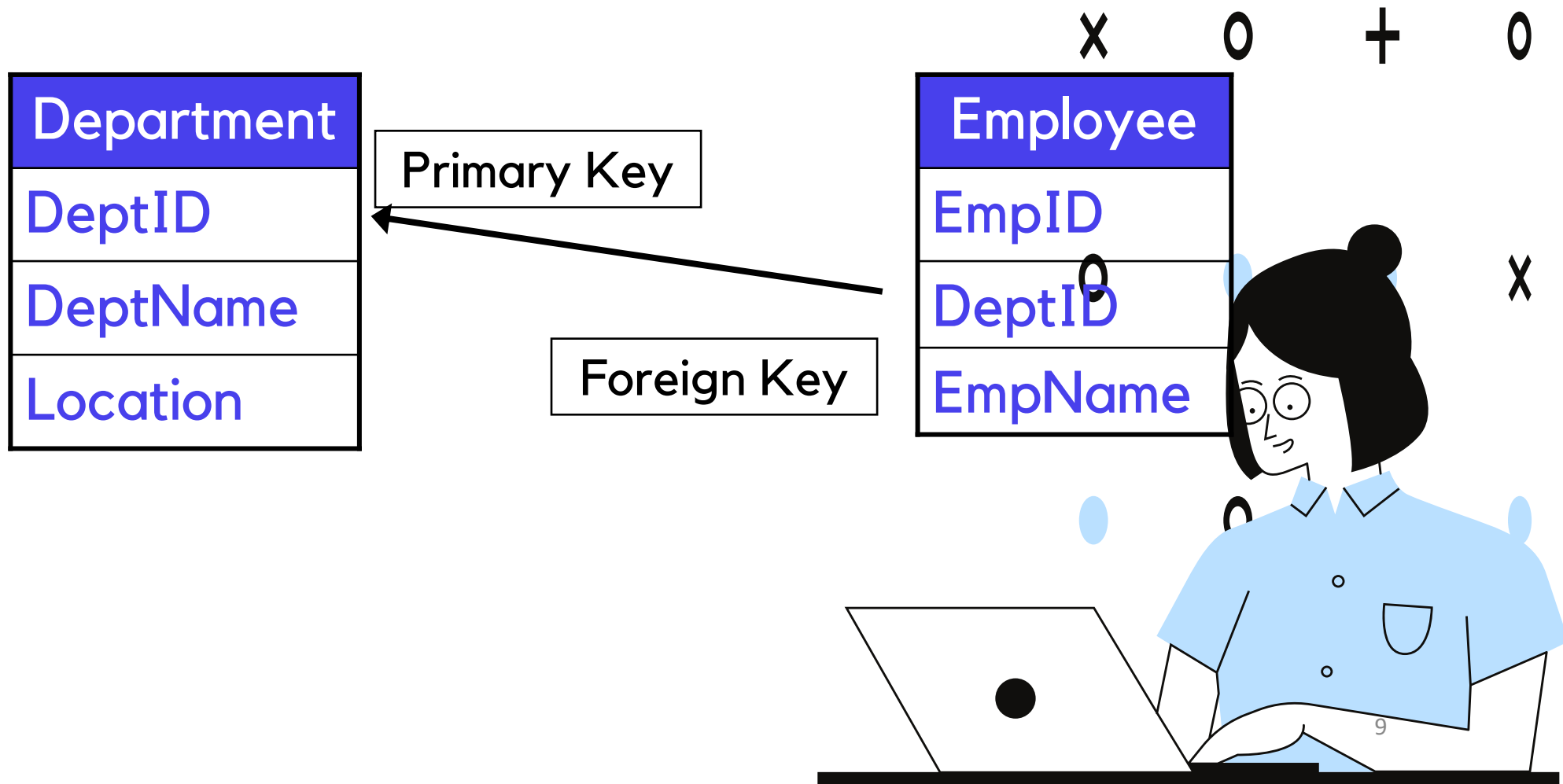However, in a 1:N the foreign key always goes into the many-side of the relationship

O   X

Representing a One-to-Many Relationship

Department

Department
DeptID
DeptName
Location

Employee

Employee
EmpID
DeptID
EmpName

Primary Key

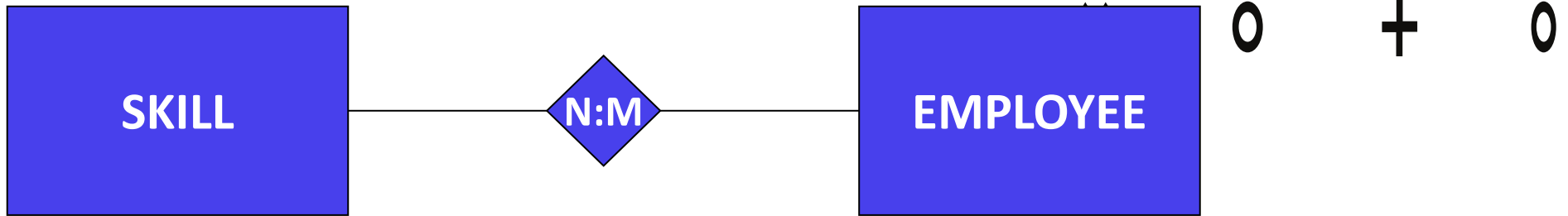Foreign Key

Representing Many-to-Many Relationships

- To save a M:N relationship, a new relation is created. This relation is called an *intersection relation*

- An intersection relation has a composite key consisting of the keys from each of the tables that formed it
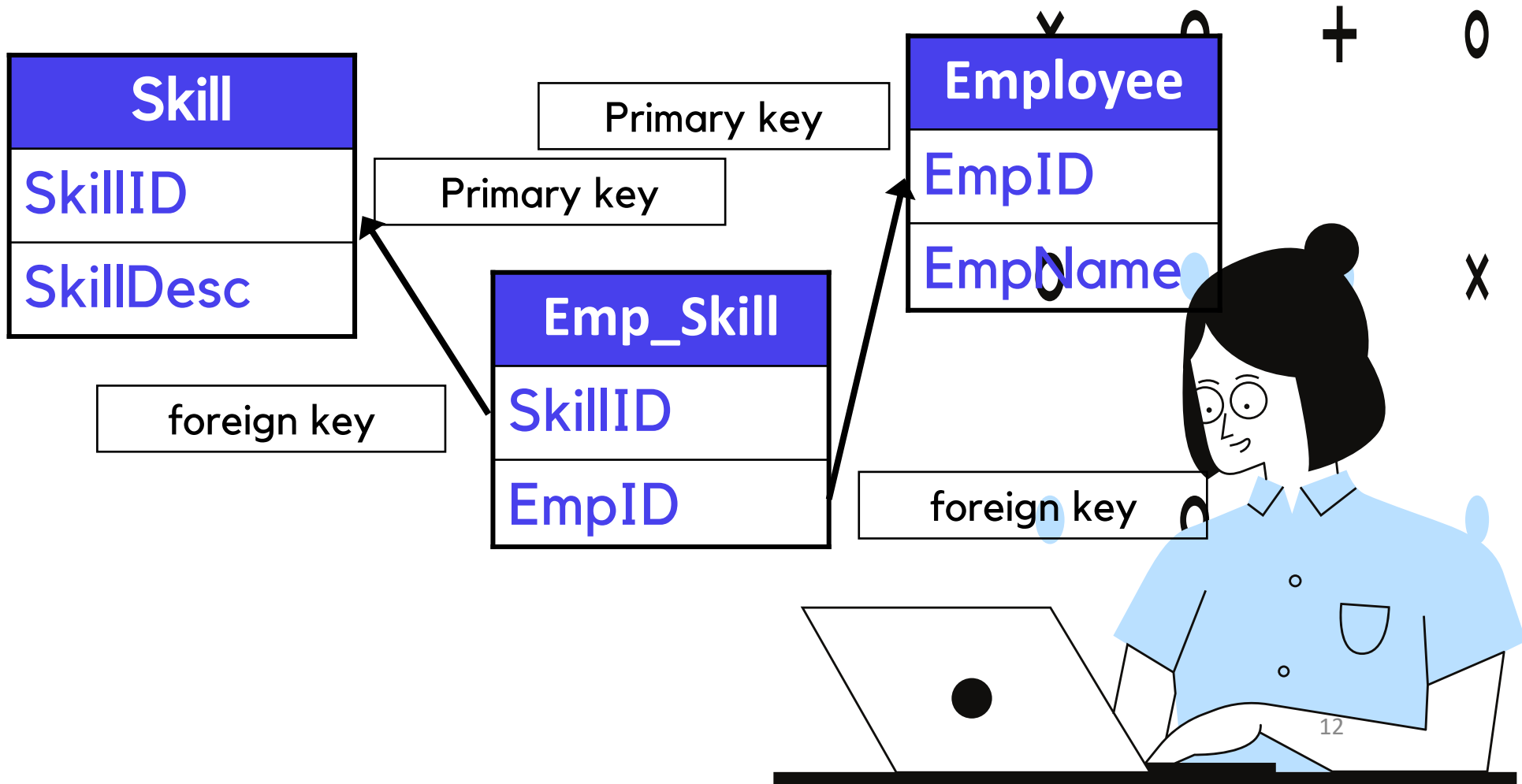
A Many-to-Many Relationship Example

SKILL — N:M — EMPLOYEE

Representing a Many-to-Many Relationship

Skill

SkillID

SkillDesc

Primary key

Primary key

Emp_Skill

SkillID

EmpID

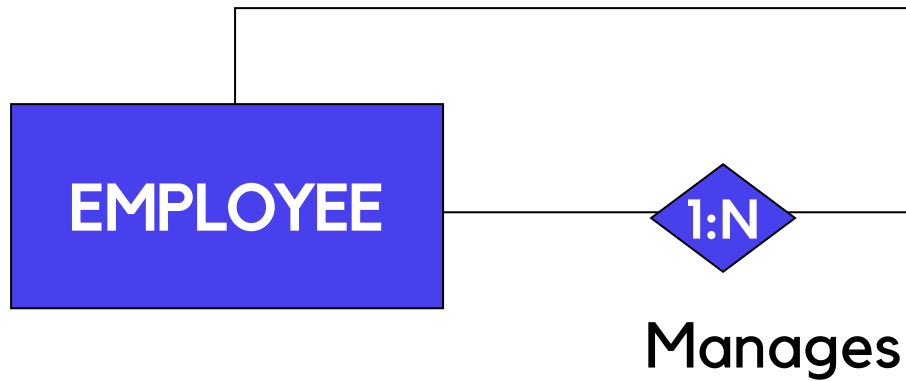**Employee**

EmpID

EmpName

foreign key

foreign key

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Representing Recursive Relationships

- A *recursive relationship* is a relationship that a relation has with itself.
- Recursive relationships adhere to the same rules as the binary relationships.
    - 1:1 and 1:M relationships are saved using foreign keys
    - M:N relationships are saved by creating an intersecting relation
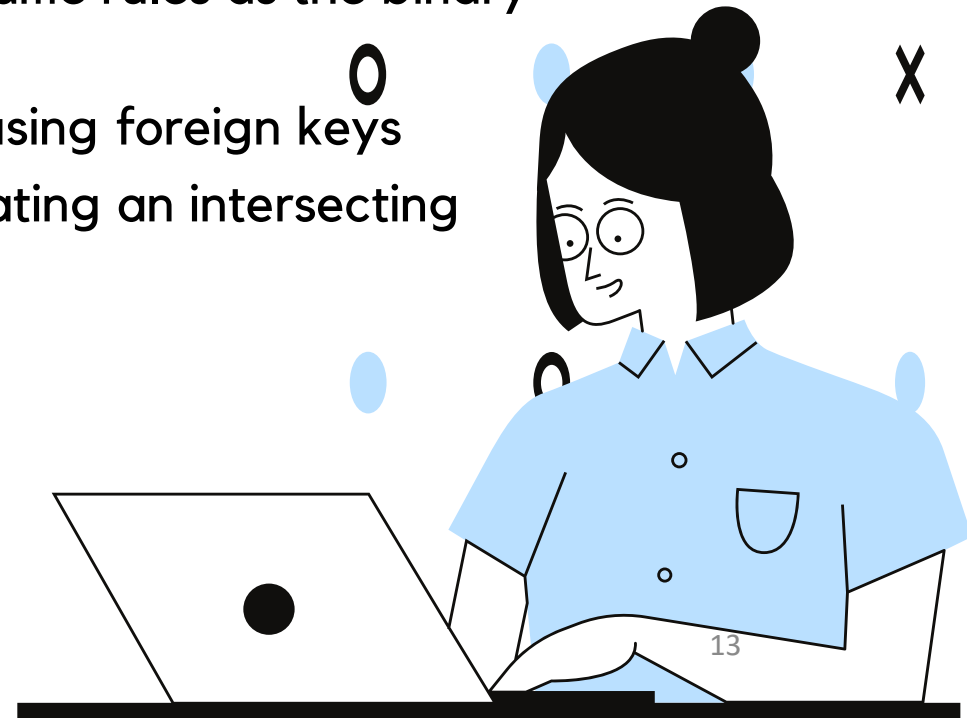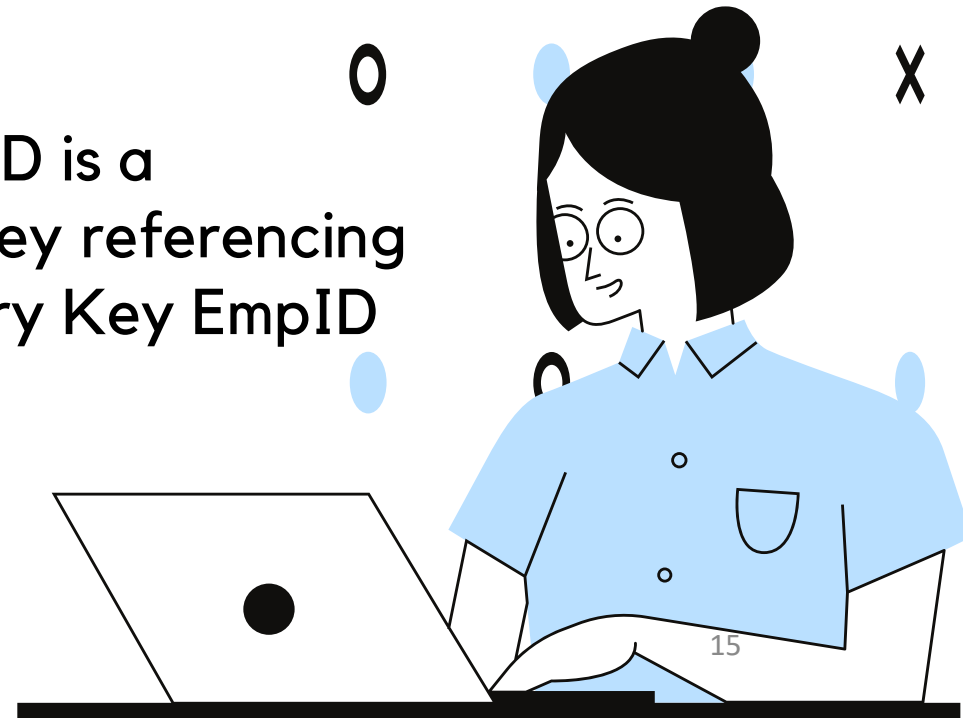
A Recursive Relationship Example

EMPLOYEE

1:N

Manages

Representing a Recursive Relationship

Employee
EmpID
ManagerID
EmpName

ManagerID is a
Foreign Key referencing
the Primary Key EmpID
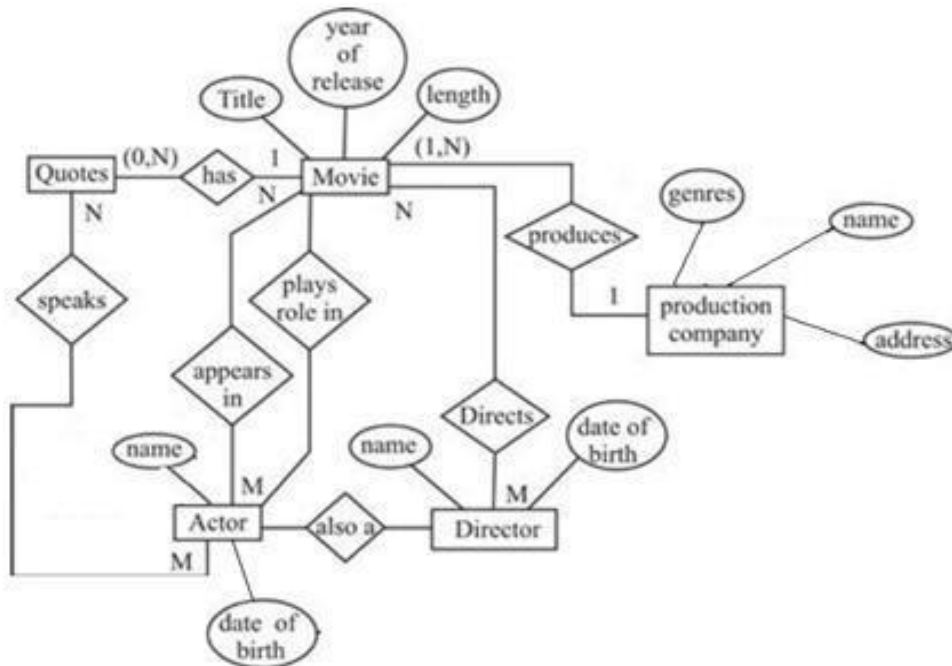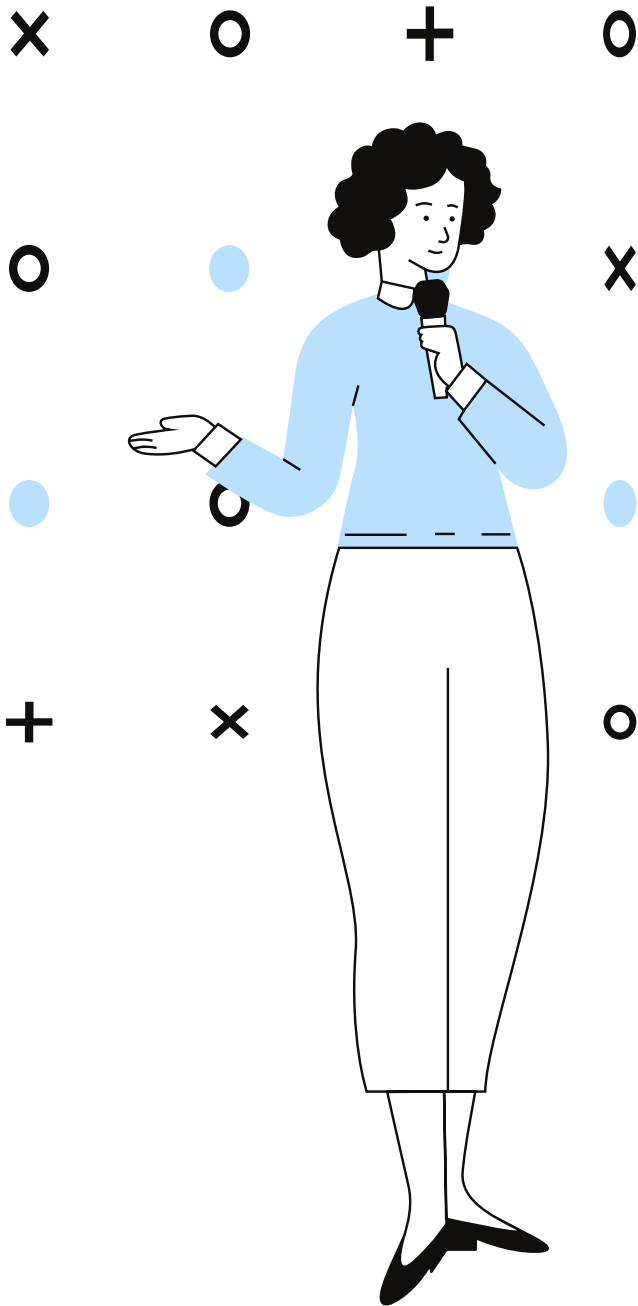
Latihan

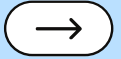Buatlah ER-*Translation*
dari ERD berikut ini

Next:

Mengerjakan soal latihan dan meringkas materi *ER-Translation*

Referensi

1. VES, Materi PBD CIS, https://cis.del.ac.id/prkl/perkuliahan/materi-view?q=O1K1TQ8ZEZFOD-SDFZcBip7dICe5lrWHH7JiXudkx_Zd4Q5vvH08RG_qkdib42qAFfJCgXY00pcxj2hLSIrtNQ , diakses 12-02-2022
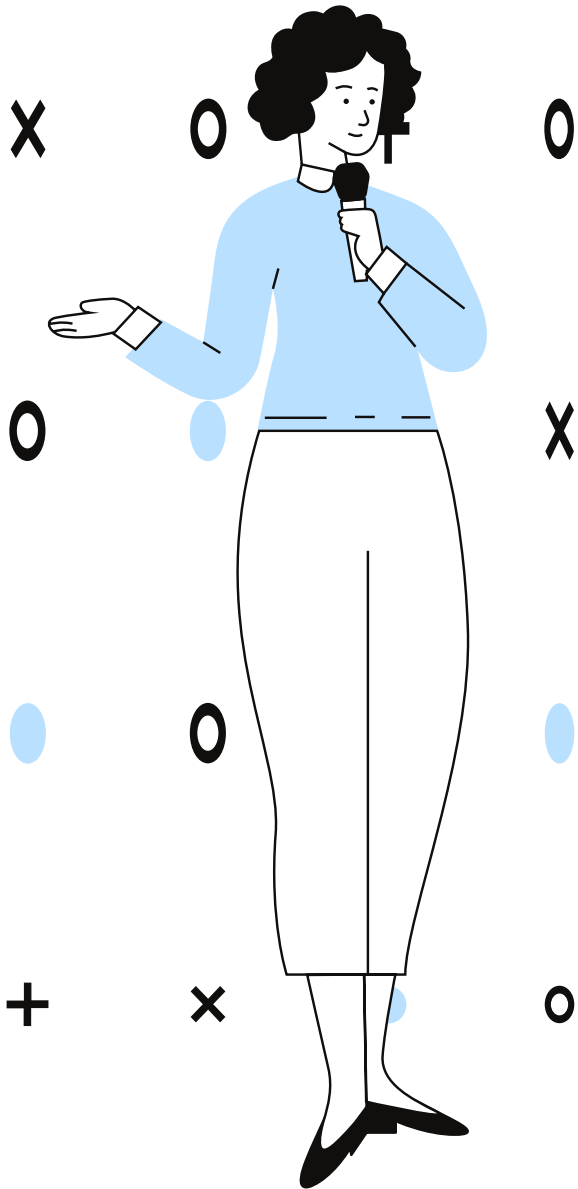
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