

A decorative graphic on the left side of the slide, consisting of a network of white lines and small circles on a teal background, resembling a circuit board or a neural network.

WEEK 6

EER DIAGRAMS – MAPPING THE EER DIAGRAM TO RELATIONAL TABLES

CS3319

STUDENT OBJECTIVES

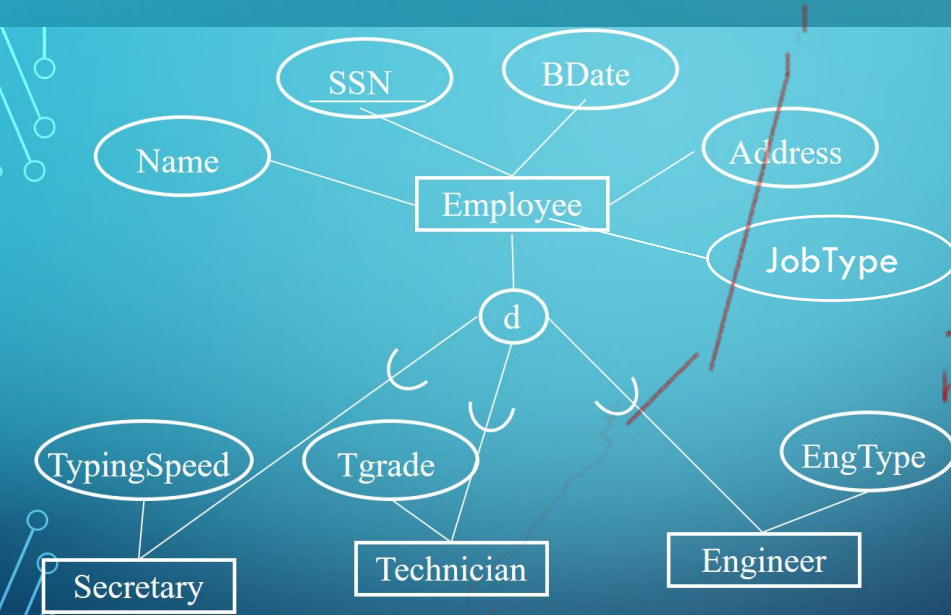
- Upon completion of this video, you should be able to:
 - Given an EER diagram, convert it to relational tables using one of the four rules.

MAPPING EER DIAGRAMS TO RELATIONS:

In Lecture 2, we introduced 7 steps to convert an ER diagram to a relational database, now we add Step 8:

Step 8: Convert each specialization with m subclasses $\{S_1, S_2, \dots, S_m\}$ and (generalized) superclass C , where the attributes of C are $\{k, a_1, \dots, a_n\}$ and k is the (primary) key, into relations schemes using one of the four following options:

- **Option 8A Multiple relations – superclass and subclasses:** Create a relation L for C (superclass) with attributes = $\{k, a_1, \dots, a_n\}$ and primary key = k. Create a relation L_i for each subclass S_i , $1 \leq i \leq m$, with the attributes of $L_i = \{k\} \cup \{\text{attributes of } S_i\}$, and primary key of $L_i = k$.



Employee

SSN	Name	Bdate	Address	JobType
22	Homer Smith	2/2/1970	Springfield	Tec
33	Lisa Jones	1/1/90	London	Eng
34	Bob Lee	4/4/91	London	Eng
56	Laura Cook	2/19/64	London	Sec

Secretary

SSN	TypingSpeed
56	60

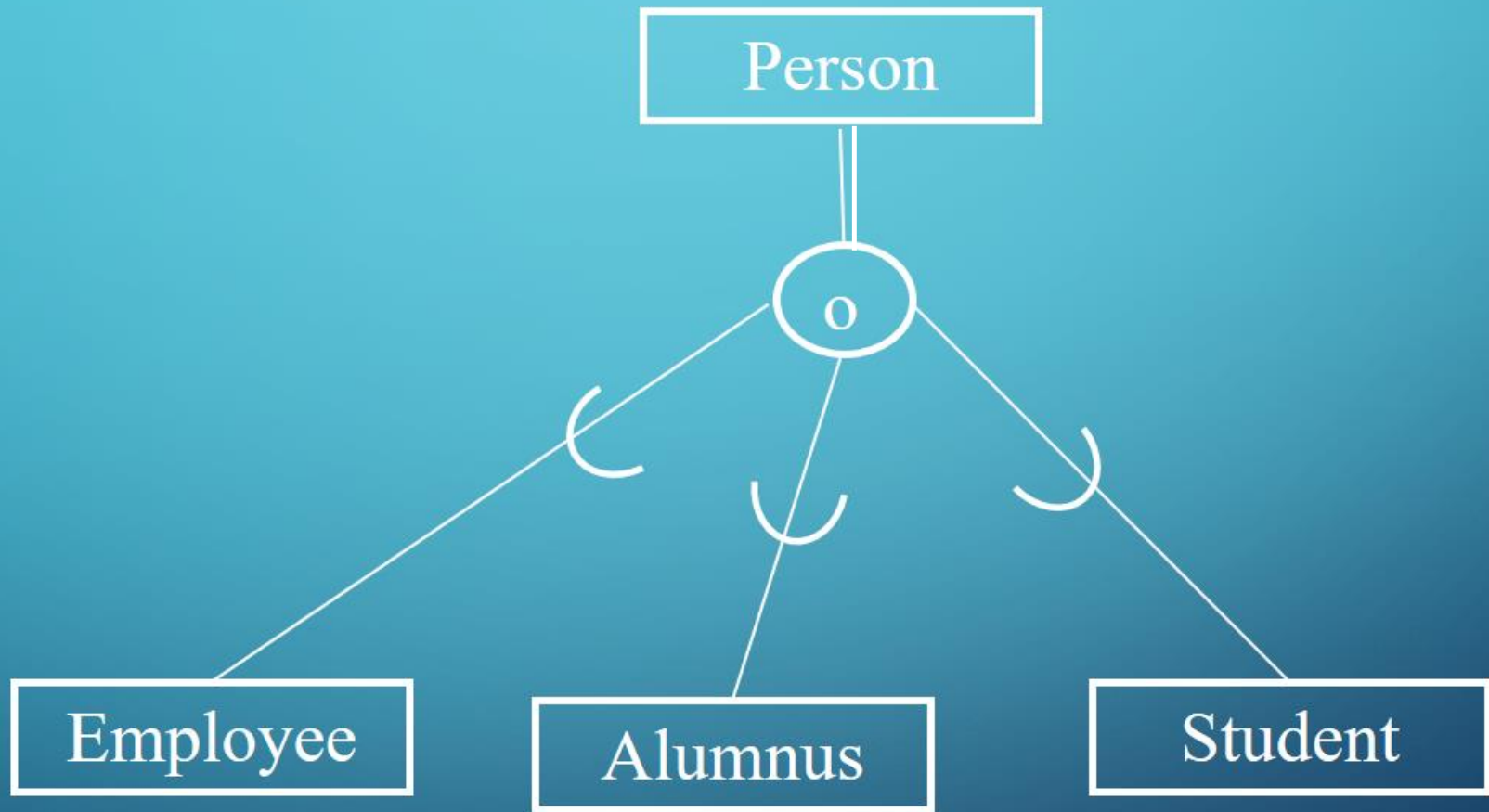
Technician

SSN	Tgrade
22	Tgrade7

Engineer

SSN	EngType
33	Civil
34	Chemical

10/15/2023



Employee

FirstName	LastName	<u>SSN</u>	Salary
Laura	Reid	111	4000.00
Sue	Smith	121	3000.00

Alumni

FirstName	LastName	<u>SSN</u>	Degree
Laura	Reid	111	MSc

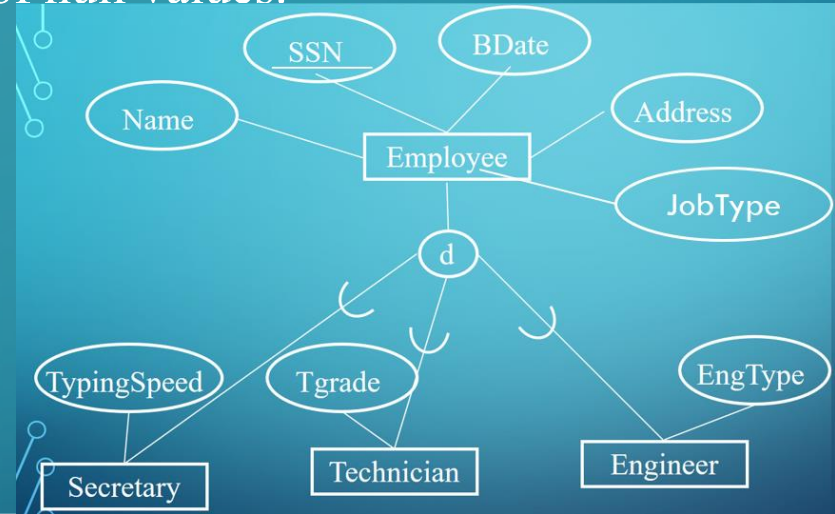
I <= i
do not

CY!

No

● **Option 8C Single relation with one type attribute:** Create a single relation L with attributes $\{k, a_1, \dots, a_n\} \cup \{\text{attributes of } S_1\} \cup \dots \cup \{\text{attributes of } S_m\}$ and primary key = k.

This option is for *disjoint* subclasses, with a discriminating attribute or category, and has the potential for generating a large number of null values.

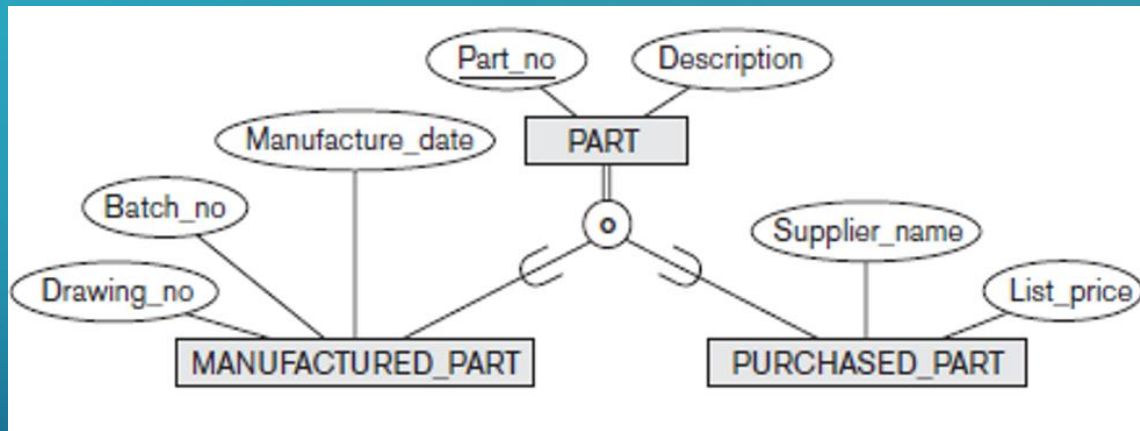


Employee

<u>SSN</u>	Name	Bdate	Address	JobType	TypingSpeed	Tgrade	EngType
22	Homer Smith	2/2/1970	Springfield	Tec	Null	Tgrade7	Null
33	Lisa Jones	1/1/90	London	Eng	Null	Null	Civil
34	Bob Lee	4/4/91	London	Eng	Null	Null	Chemical
56	Laura Cook	2/19/64	London	Sec	60	Null	Null

● **Option 8D Single relation with multiple type attributes:** Create a single relation L with attributes $\{k, a_1, \dots, a_n\} \cup \{\text{attributes of } S_1\} \cup \dots \cup \{\text{attributes of } S_m\} \cup \{t_1, t_2, \dots, t_m\}$ with primary key k.

This option is for *overlapping* subclasses, and each t_i , $1 \leq i \leq m$, is a Boolean attribute indication whether this tuple belongs to subclass S_i .



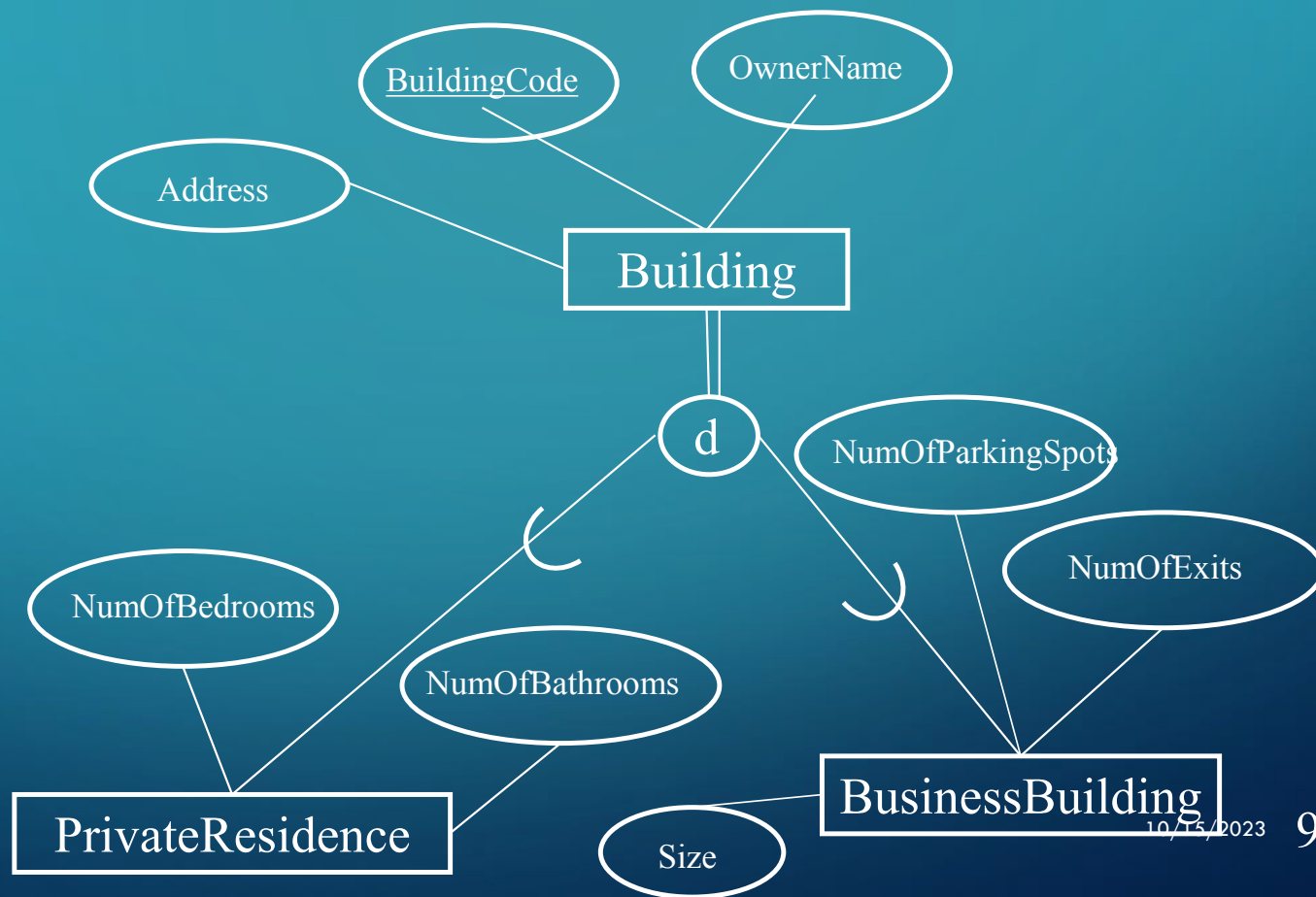
Part

<u>PartNo</u>	Descrip	Mflag	DrawingNo	BatchNo	ManufDate	Pflag	Supplier_Name	ListPrice
111	Screw	True	6758	A3	2/2/2018	False	Null	Null
222	Hammer	False	Null	Null	Null	Null	Rona	45.00
333	Drill	True	8765	A7	1/1/2018	True	Home Hardware	129.00

ANOTHER EXAMPLE:

- City Hall is trying to classify it's buildings for taxing purposes.
 - Every building has an address and a unique building code and the owners name.
 - A building must be either a private residence or business, but it cannot be both.
 - For a private residences, city hall wants to also keep track of the number of bedrooms and number of bathrooms.
 - For a business, they want to keep track of the number of exits, size of the property, and the number of parking spots.

QUESTION: Draw an EER diagram to reflect this example:



Map your EER diagram to relational table(s):

BusinessBuilding

<u>BuildingCode</u>	OwnerName	Address	Size	NumOfParkingSpots	NumOfExits
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PrivateResidence

<u>BuildingCode</u>	OwnerName	Address	NumOfBedrooms	NumOfBathrooms
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