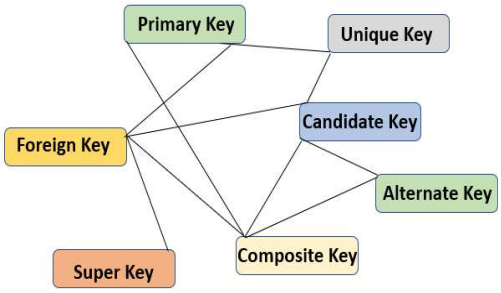
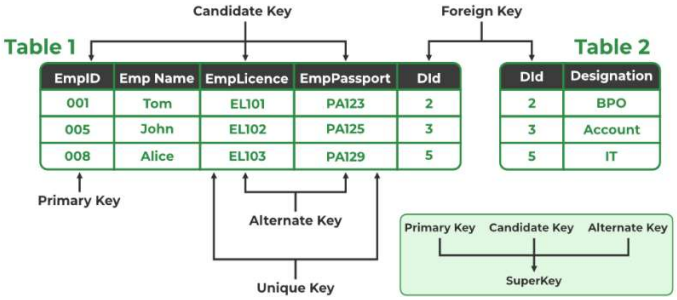
Relational Database

Types of Keys





True / False

1. In a relational table, each table must have an attribute or a combination of attributes that uniquely identifies each row.	True
In a relational table, each table must have an **attribute or a combination of attributes that uniquely identifies each row**. This is known as the **primary key**.	
2. In a relational table, each column need ~~not~~ have a distinctive name.	False
In a relational table, each column must have a **distinctive name to identify the data it contains**. Column names are used to **access and manipulate the data**.	
3. In a relational table, each value in a column must conform to the same data format.	True
In a relational table, each value in a column must **conform to the same data format**. This **ensures data integrity and consistency within the column**.	
4. Each column in a relational table has a specific range of values known as the attribute ~~object~~ **domain**.	False
While each column in a relational table can have a **specific range of values (known as a domain),** it is not typically referred to as the "attribute object." The term "attribute domain" or just "domain" is more accurate.	
5. The order of the rows and columns in a relational table is ~~important~~ and the primary ~~must appear as the first column~~.	False
The order of the rows and columns in a relational table is not important. The primary key **does not need to appear as the first column. Rows are unordered sets, and columns can be accessed by name regardless of their order**.	

MCQ

1. A primary key ____.
   a. is a minimal superkey
   b. is always the first field in each table
   c. must be numeric
   d. must be unique

2. A table can be logically connected to another table by defining a ____.
   a. hyperlink
   b. common attribute (Foreign Key)
   c. primary key
   d. logic key

Table: Publisher

PublisherID (PK)	Name	Address
P01	Pearson	Bukit Jalil
P02	Deitel	Puchong
P03	Rainbow	Subang

Table: Book

BookID (PK)	Name	Author	Price	PublisherID (FK)
B01	Maths	J.Wenton	50.60	P01
B02	Science	S.Hanson	100.00	P01
NULL	English	K.Vince	89.30	P02
B04	Biology	K.Vince	150.80	P03

3. Which rule is violated in the tables shown below?
   a) Entity integrity rule
   b) Referential integrity rule

Table: Publisher

PublisherID (PK)	Name	Address
P01	Pearson	Bukit Jalil
P02	Deitel	Puchong
P03	Rainbow	Subang

Table: Book

BookID (PK)	Name	Author	Price	PublisherID (FK)
B01	Maths	J.Wenton	50.60	P01
B02	Science	S.Hanson	100.00	**P05**
B03	English	K.Vince	89.30	P02
B04	Biology	K.Vince	150.80	P03

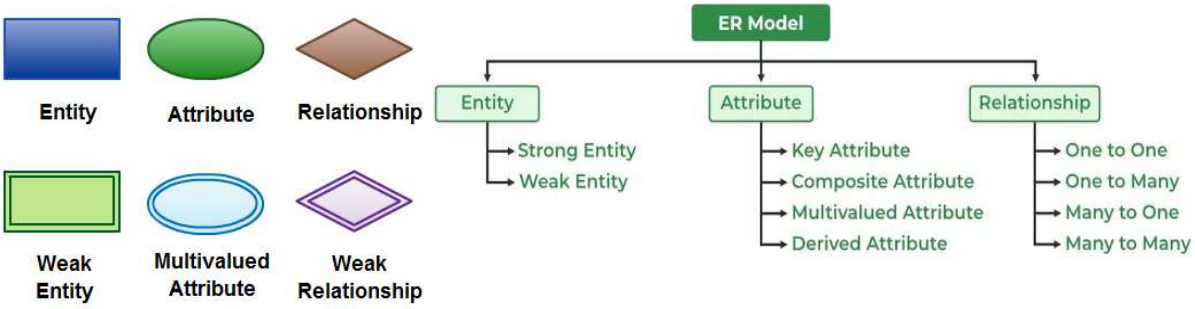
4. Which rule is violated in the tables shown below?
   a) Entity integrity rule
   b) Referential integrity rule

5. How to select a primary key from a list of candidate keys

i. select a key that does not contain NULL
ii. Select a key that is unique and does not repeat
iii. Select a key which values are easy to remember
iv. Make sure that Primary Key does not keep changing

a) i, ii, iii
b) ii, iii, iv
c) i, ii, iv
d) i, iii, iv

Types of Attributes



1.A single-valued attribute can have **only one value**. *Eg. empName, empID*
2.A multivalued attribute can **have many values**. *Eg. PhoneNumber, emailAddress*
3.A simple attribute is one that **cannot be subdivided**. *Eg. empSalary*
4.A composite attribute is one that **can be subdivided**. - be divided into subparts *Eg. empAddress*
5. A derived attribute may be **calculated from other attributes**. *Eg. totalNumOfTrains*

1.A ___ attribute is one that **cannot be subdivided**.
composite
simple
single-valued
multivalued

2.A ___ attribute can have **only one value**.
composite
simple
single-valued
multivalued

3.A composite attribute is one that **can be subdivided**. - be divided into subparts

4.A multivalued attribute can **have many values**.

5.Provide one example of **composite attribute**
Address: This can be divided into subparts such as Street, City, State, and ZIP Code.

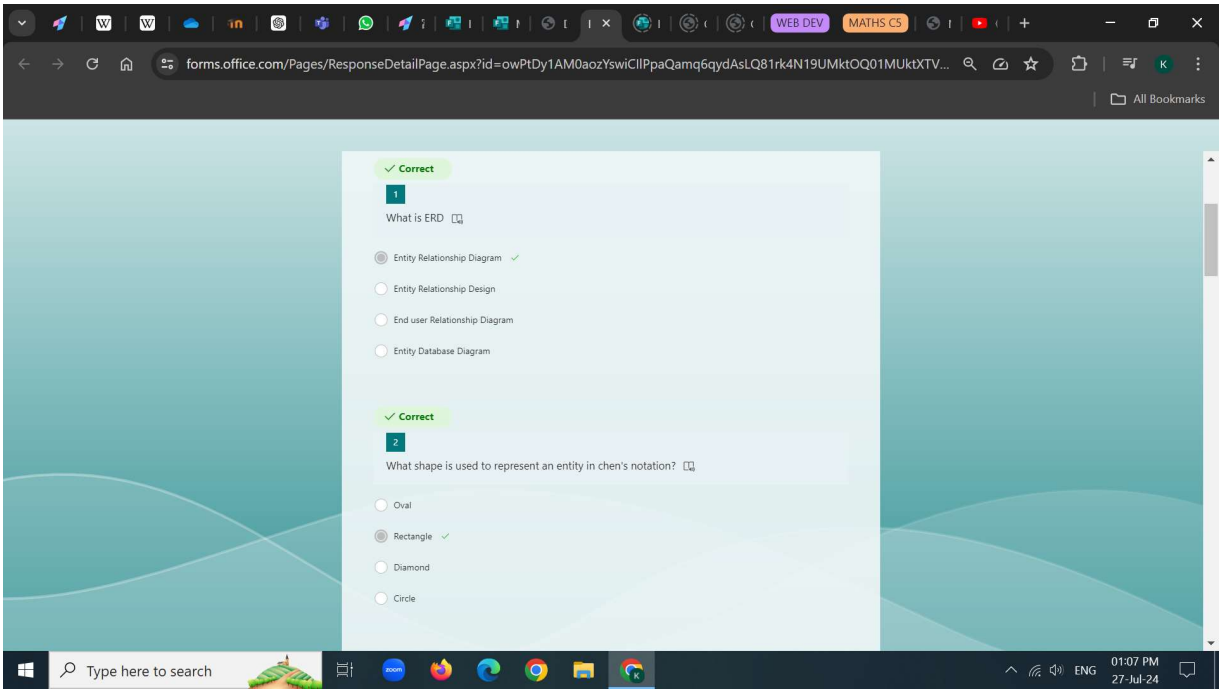
6.Provide one example of **multi-valued attribute**
Phone Numbers: A person may have multiple phone numbers such as Home Phone, Work Phone, and Mobile Phone.

7.Choose the correct statement(s)

a. **Attribute whose value may be calculated from other attributes is known as derived attribute**
b. A derived attribute must be ~~physically~~ **dynamically** stored within the database
c. An example of derived attribute is ~~DateOFBirth~~ **totalNumberOfTrains, totalMarks**
d. **The advantage of storing derived attribute is that the data value is always readily available**
e. The ~~disadvantage~~ **advantage** of storing derived attribute is saving storage space
f. The disadvantage of storing derived attribute is **data Inconsistency**

Types of Relationships

One-to-One Relationship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MATHS C5
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All Bookmarks
Correct
1
What is ERD
Entity Relationship Diagram
Entity Relationship Design
End user Relationship Diagram
Entity Database Diagram
Correct
2
What shape is used to represent an entity in chen's notation?
Oval
Rectangle
Diamond
Circle
Type here to search
ENG
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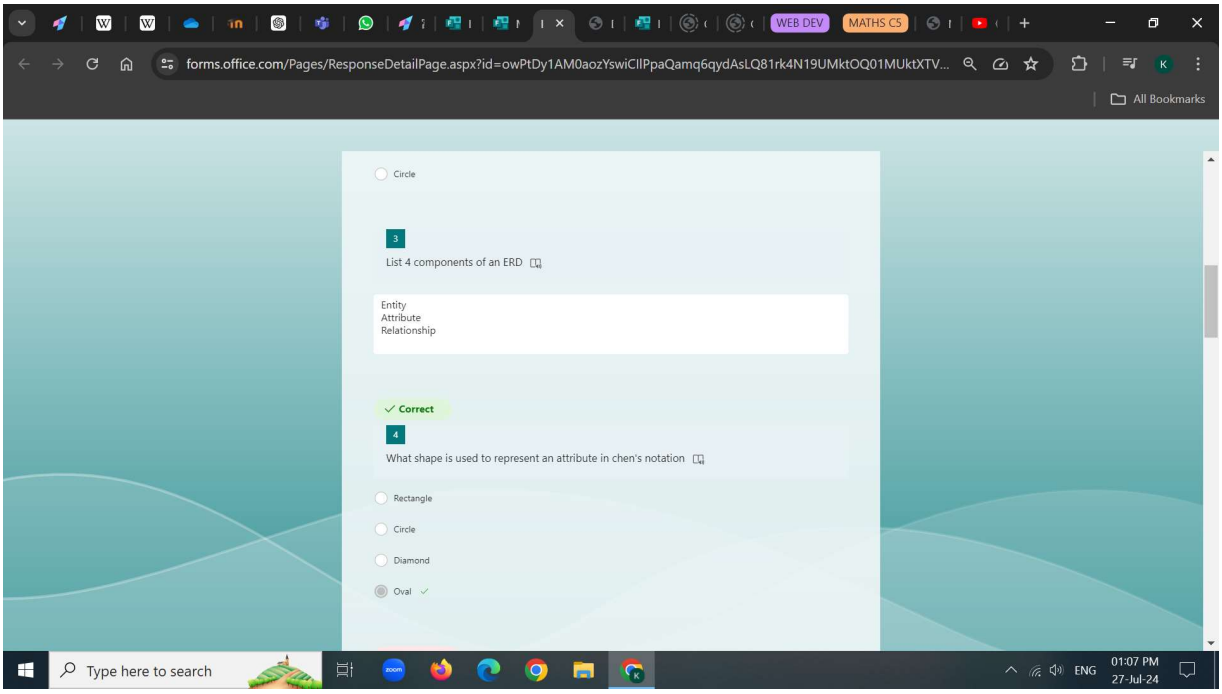
27-Jul-24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All Bookmarks
Circle
3
List 4 components of an ERD
Entity
Attribute
Relationship
Correct
4
What shape is used to represent an attribute in chen's notation
Rectangle
Circle
Diamond
Oval
Type here to search
ENG
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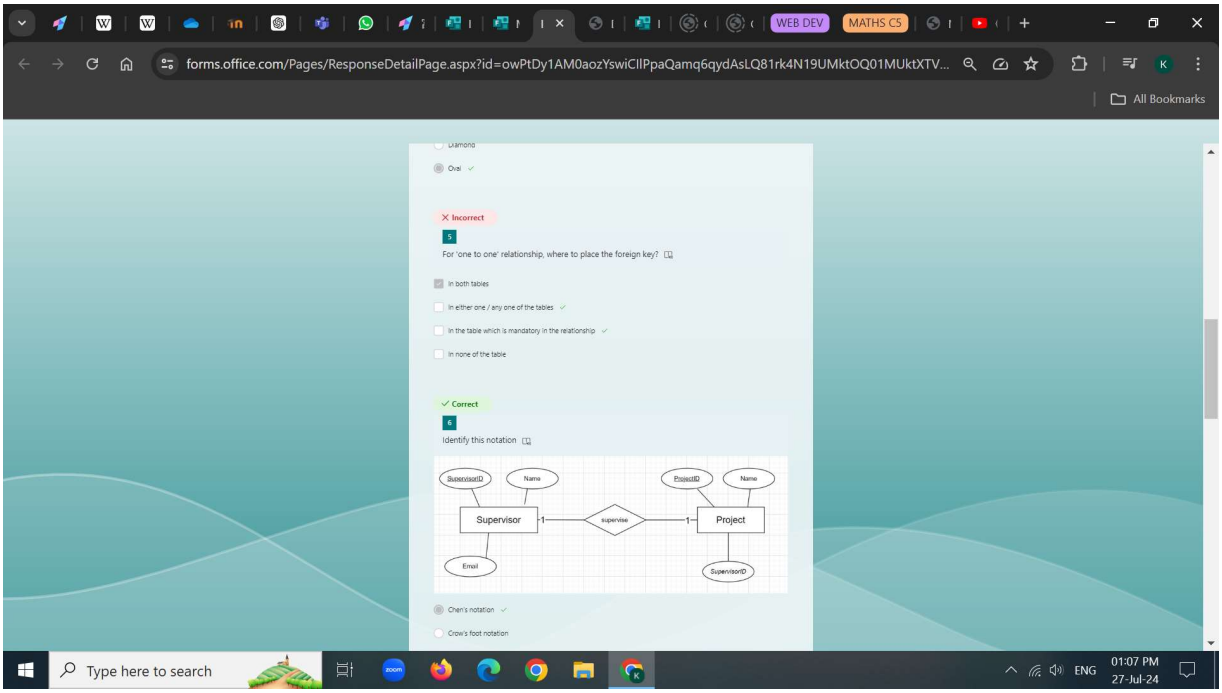
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All Bookmarks
Incorrect
5
For 'one to one' relationship, where to place the foreign key?
In both tables
In either one / any one of the tables
In the table which is mandatory in the relationship
In none of the table
Correct
6
Identify this notation
SupervisorID
Name
ProjectID
Name
Supervisor
1
supervise
1
Project
Email
SupervisorID
Chen's notation
Crow's foot notation
Type here to search
ENG
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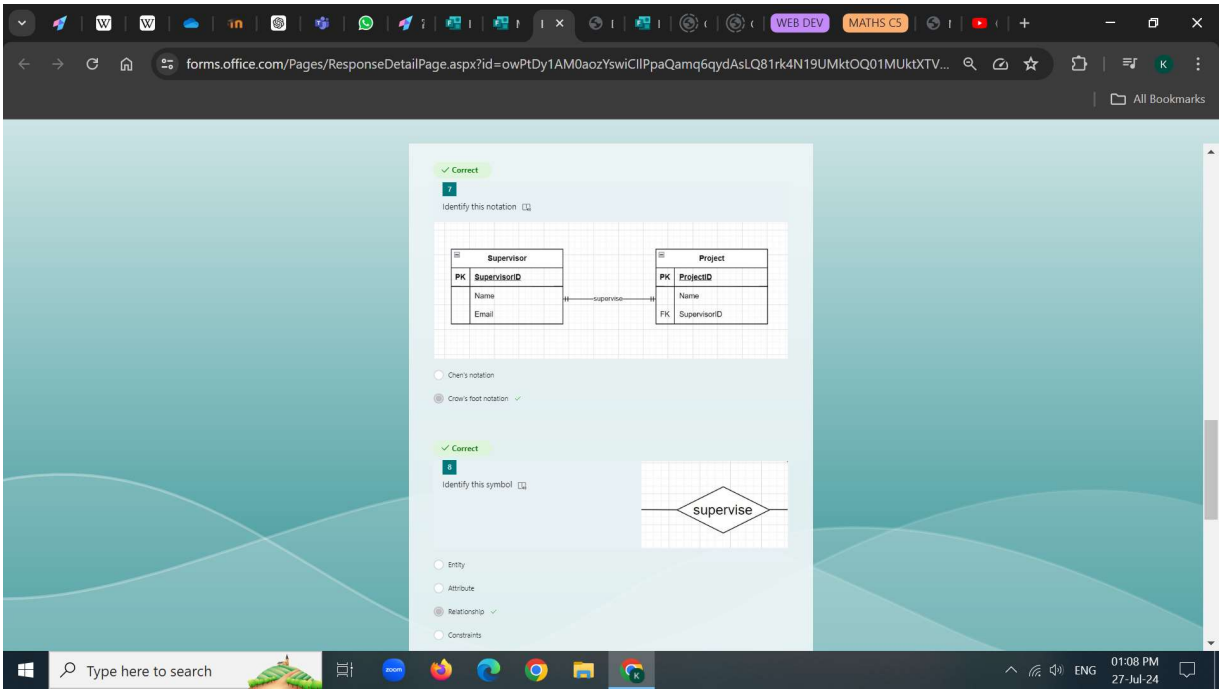
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All Bookmarks
Correct
7
Identify this notation
Supervisor
PK
SupervisorID
Name
Email
supervise
Project
PK
ProjectID
Name
FK
SupervisorID
Chen's notation
Crow's foot notation
Correct
8
Identify this symbol
supervise
Entity
Attribute
Relationship
Constraints
Type here to search
ENG
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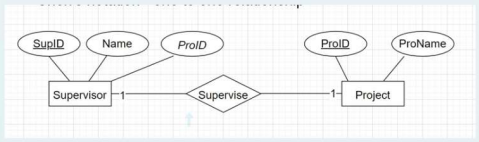
67% Reset

All Bookmarks

✓ Correct

9

Identify the primary key in entity 'Supervisor'



- [x] SupID
- [ ] Name
- [ ] ProID
- [ ] ProName

✓ Correct

10

Identify the foreign key in entity 'Supervisor'

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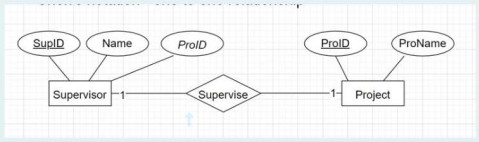
All Bookmarks

- [ ] ProID
- [ ] ProName

✓ Correct

10

Identify the foreign key in entity 'Supervisor'



- [ ] ProName
- [x] ProID
- [ ] Name
- [ ] SupID

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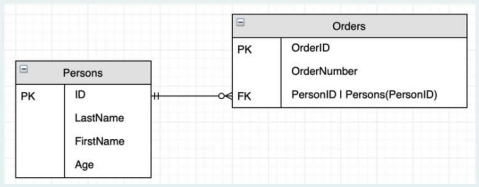
All Bookmarks

Incorrect

1

What type of relationship is depicted in the diagram below?



- one to one
- one to many ✓
- many to many
- many to one

Correct

2

For 'one to many' relationship, where to place the foreign key?

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All Bookmarks

Correct

2

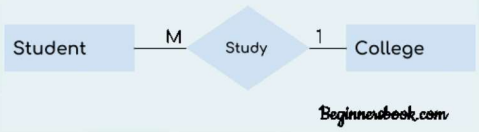
For 'one to many' relationship, where to place the foreign key?

- in the 'one' table
- in any of the table
- in the 'many' table ✓
- in the table which is mandatory in the relationship

Incorrect

3

Choose the correct statement



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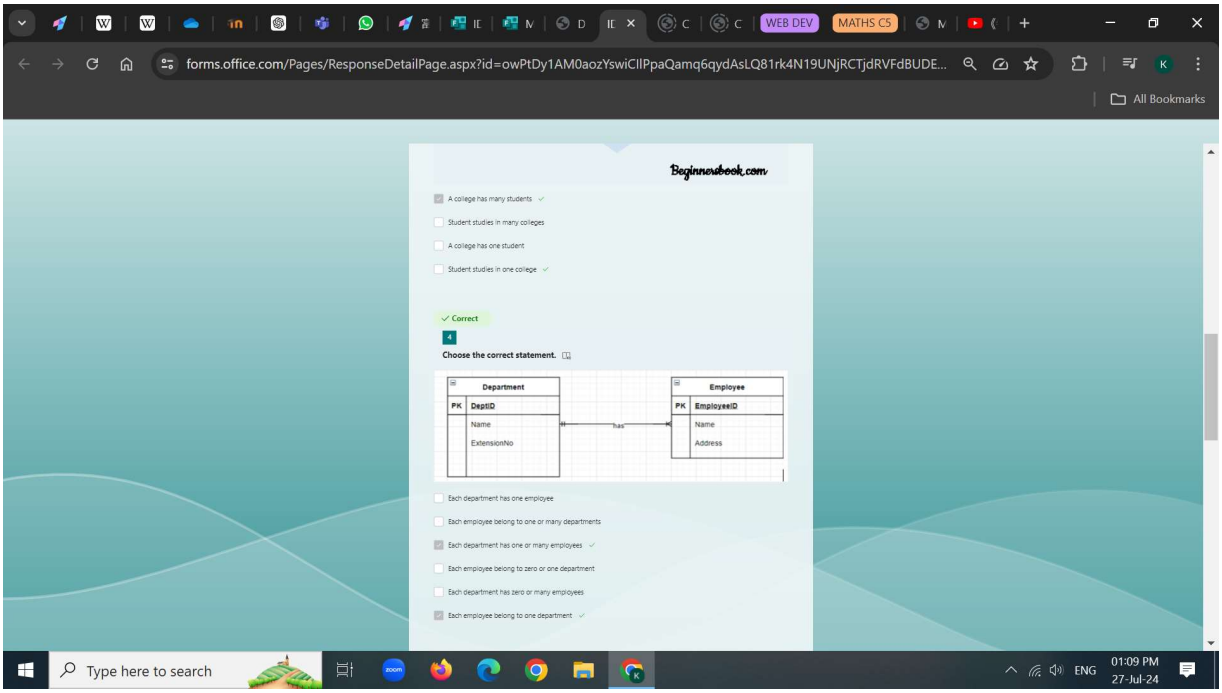
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All Bookmarks
Beginnersbook.com
A college has many students
Student studies in many colleges
A college has one student
Student studies in one college
Correct
4
Choose the correct statement.
Department
PK DeptID
Name
ExtensionNo
has
Employee
PK EmployeeID
Name
Address
Each department has one employee
Each employee belong to one or many departments
Each department has one or many employees
Each employee belong to zero or one department
Each department has zero or many employees
Each employee belong to one department
Type here to search
ENG
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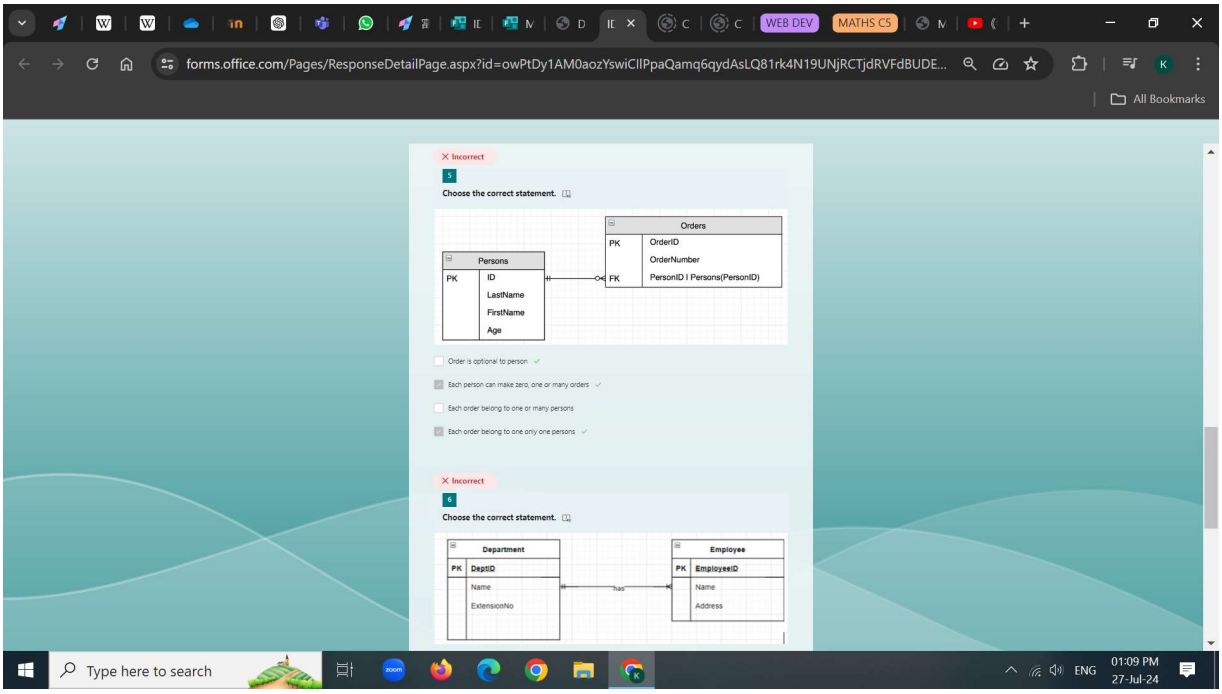
27-Jul-24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All Bookmarks
Incorrect
5
Choose the correct statement.
Orders
PK OrderID
OrderNumber
FK PersonID I Persons(PersonID)
Persons
PK ID
LastName
FirstName
Age
Order is optional to person
Each person can make zero, one or many orders
Each order belong to one or many persons
Each order belong to one only one persons
Incorrect
6
Choose the correct statement.
Department
PK DeptID
Name
ExtensionNo
has
Employee
PK EmployeeID
Name
Address
Type here to search
ENG
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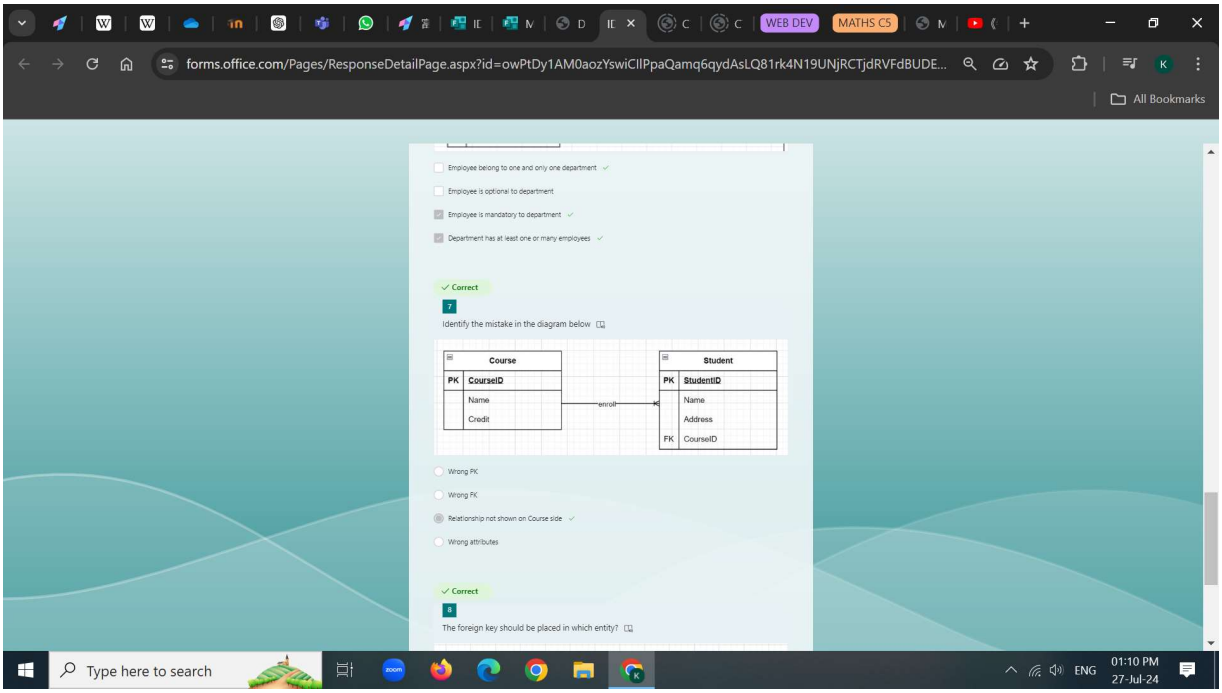
27-Jul-24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All Bookmarks
Employee belong to one and only one department
Employee is optional to department
Employee is mandatory to department
Department has at least one or many employees
Correct
7
Identify the mistake in the diagram below
Course
PK CourseID
Name
Credit
enroll
Student
PK StudentID
Name
Address
FK CourseID
Wrong PK
Wrong FK
Relationship not shown on Course side
Wrong attributes
Correct
8
The foreign key should be placed in which entity?
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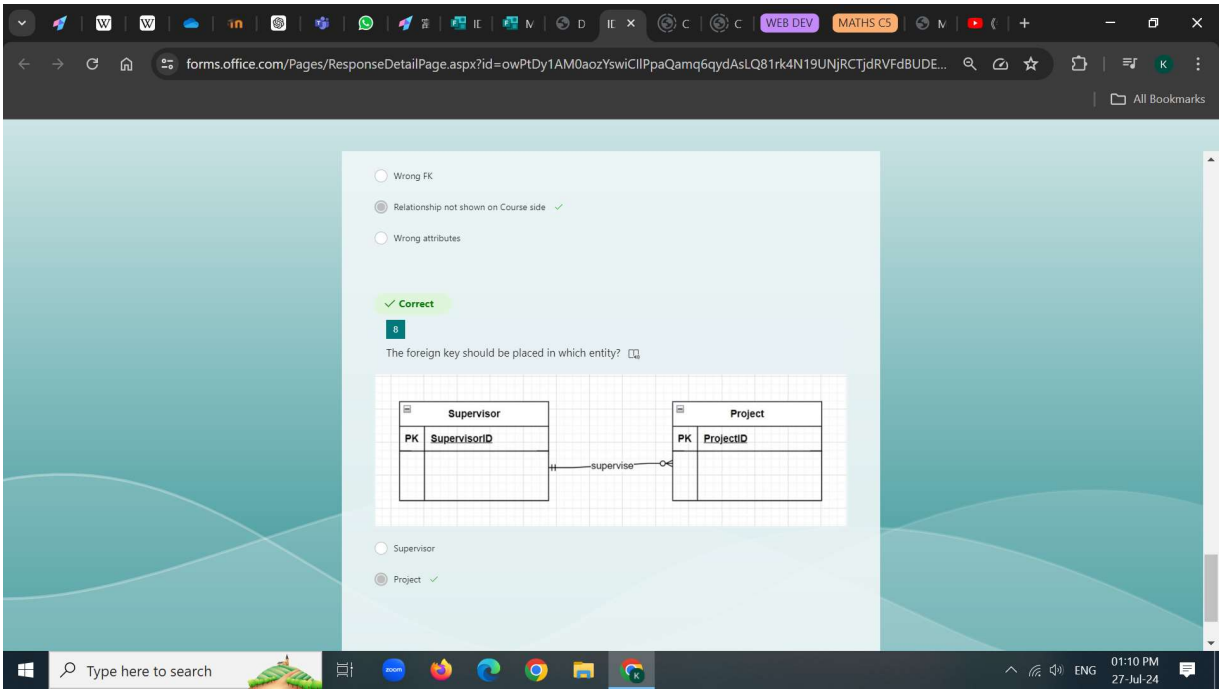
27-Jul-24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All Bookmarks
Wrong FK
Relationship not shown on Course side
Wrong attributes
Correct
8
The foreign key should be placed in which entity?
Supervisor
PK SupervisorID
supervise
Project
PK ProjectID
Supervisor
Project
Type here to search
ENG
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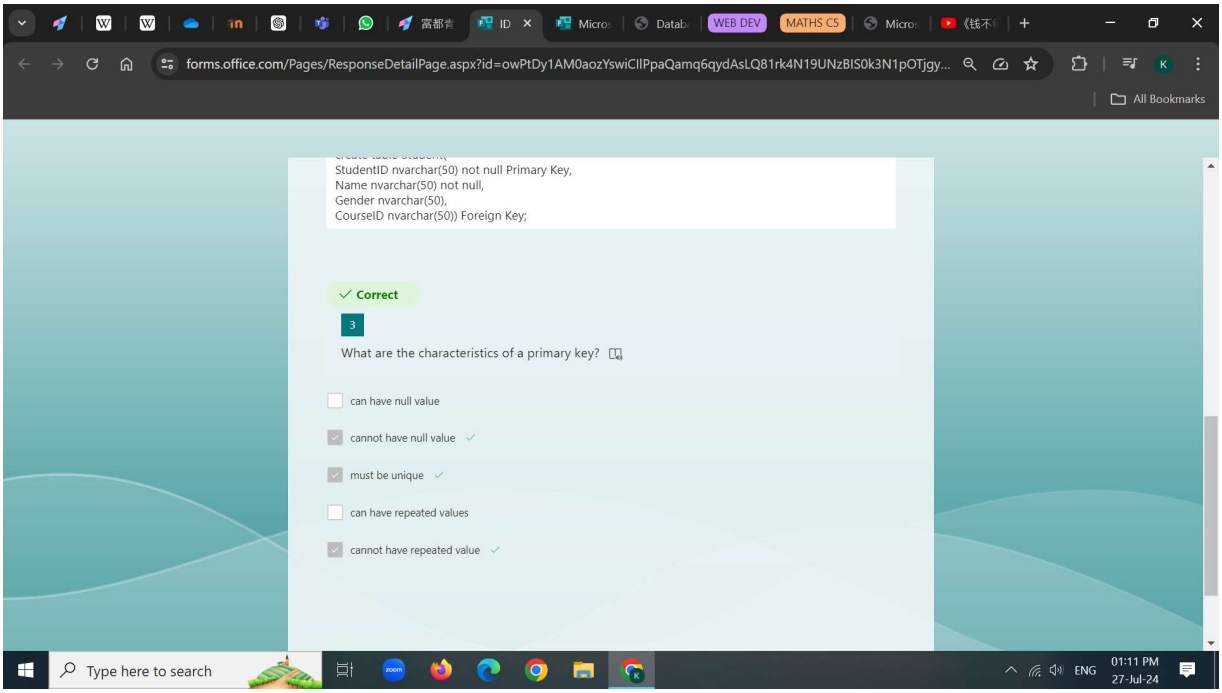
27-Jul-24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All Bookmarks
StudentID nvarchar(50) not null Primary Key,
Name nvarchar(50) not null,
Gender nvarchar(50),
CourseID nvarchar(50)) Foreign Key;
Correct
3
What are the characteristics of a primary key?
can have null value
cannot have null value
must be unique
can have repeated values
cannot have repeated value
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ENG
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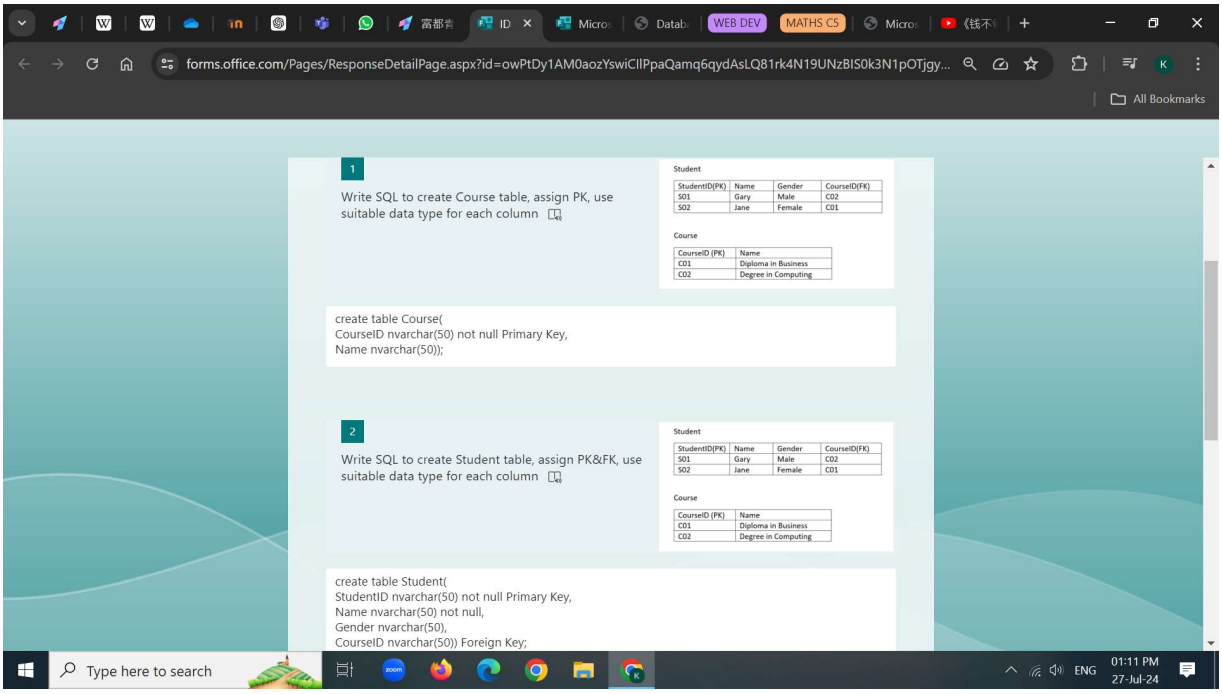
27-Jul-24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All Bookmarks
1
Write SQL to create Course table, assign PK, use suitable data type for each column
Student
StudentID(PK) Name Gender CourseID(FK)
S01 Gary Male C02
S02 Jane Female C01
Course
CourseID (PK) Name
C01 Diploma in Business
C02 Degree in Computing
create table Course(
CourseID nvarchar(50) not null Primary Key,
Name nvarchar(50));
2
Write SQL to create Student table, assign PK&FK, use suitable data type for each column
Student
StudentID(PK) Name Gender CourseID(FK)
S01 Gary Male C02
S02 Jane Female C01
Course
CourseID (PK) Name
C01 Diploma in Business
C02 Degree in Computing
create table Student(
StudentID nvarchar(50) not null Primary Key,
Name nvarchar(50) not null,
Gender nvarchar(50),
CourseID nvarchar(50)) Foreign Key;
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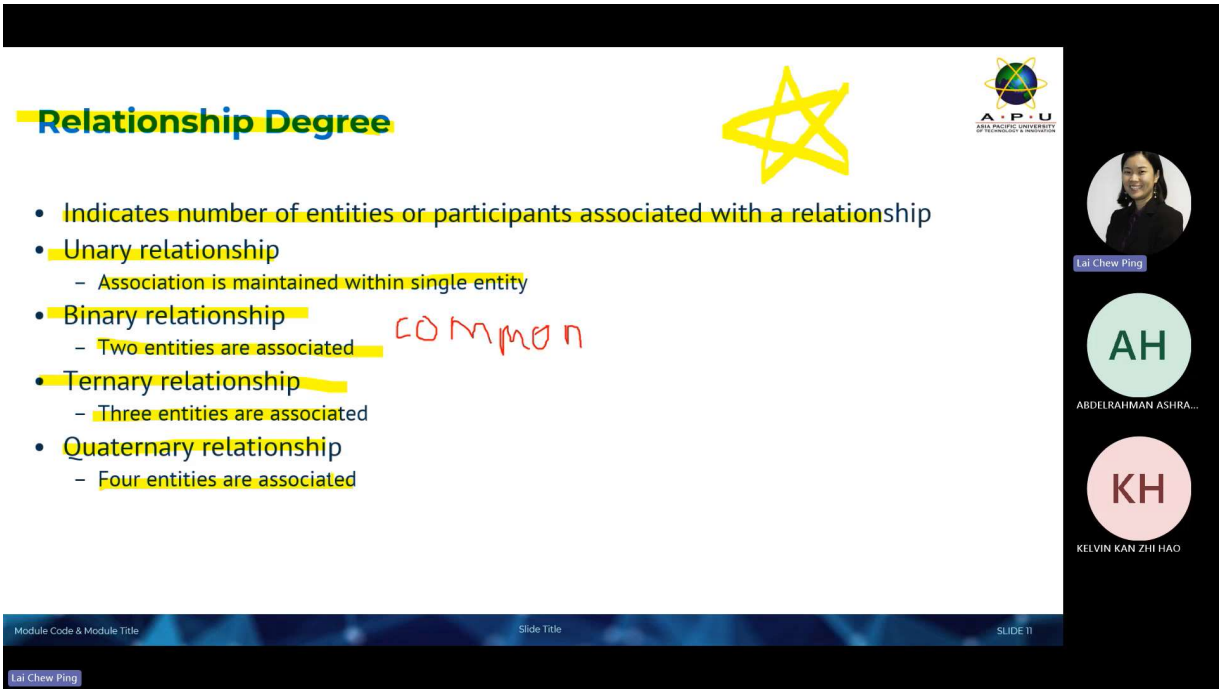
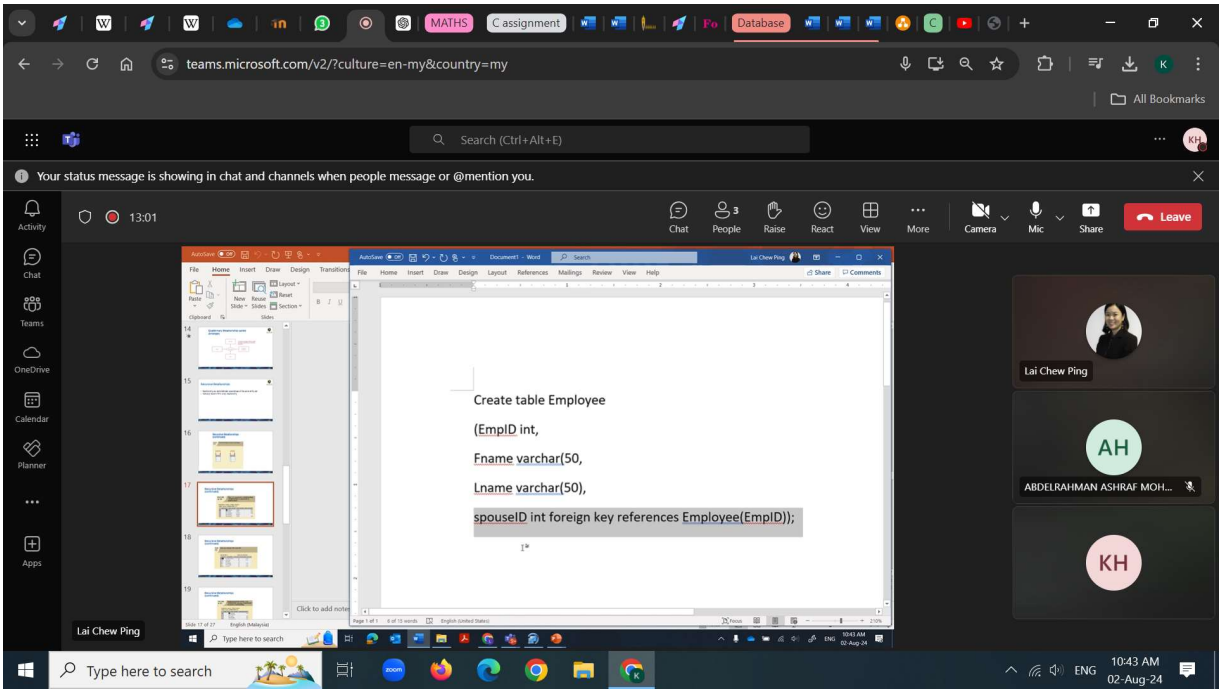

Relationship Degree
Indicates number of entities or participants associated with a relationship
Unary relationship
Association is maintained within single entity
Binary relationship
Two entities are associated
common
Ternary relationship
Three entities are associated
Quaternary relationship
Four entities are associated
Lai Chew Ping
AH
ABDELRAHMAN ASHRA...
KH
KELVIN KAN ZHI HAO
Module Code & Module Title
Slide Title
SLIDE 11
Lai Chew Ping


teams.microsoft.com/v2/?culture=en-my&country=my
Search (Ctrl+Alt+E)
Your status message is showing in chat and channels when people message or @mention you.
13:01
Chat
People
Raise
React
View
More
Camera
Mic
Share
Leave
Create table Employee
(EmpID int,
Fname varchar(50,
Lname varchar(50),
spouseID int foreign key references Employee(EmpID));
Lai Chew Ping
AH
ABDELRAHMAN ASHRAF MOH...
KH
Lai Chew Ping
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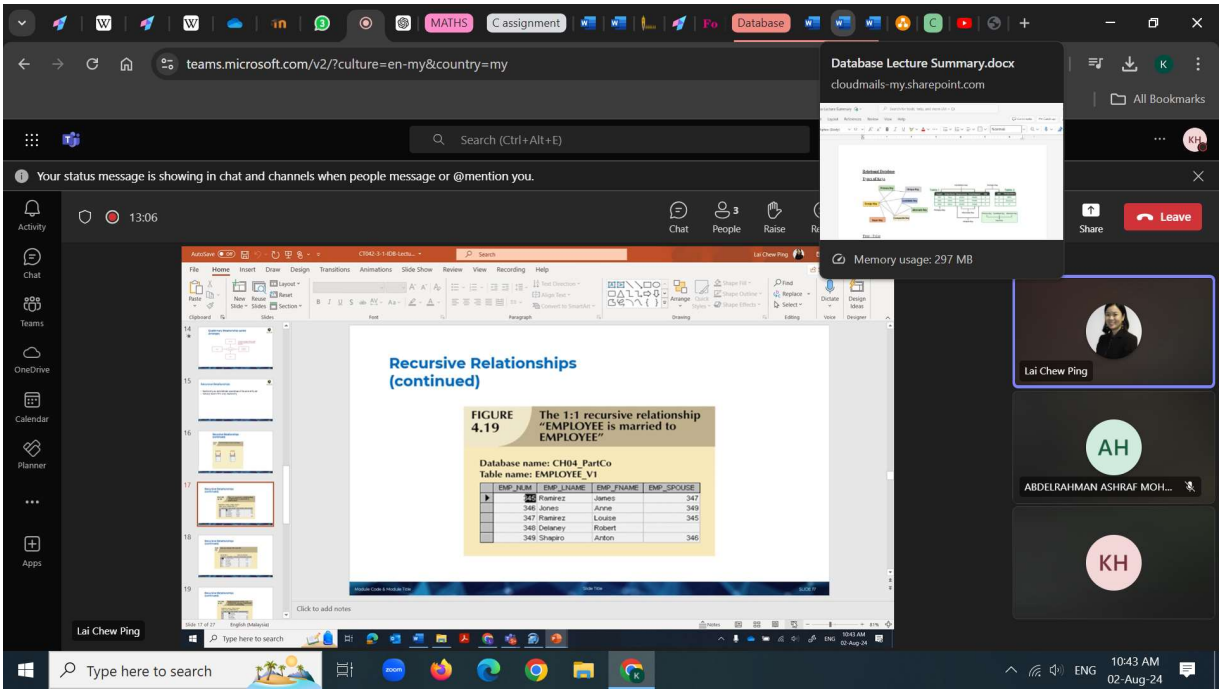
ENG
10:43 AM
02-Aug-24


Database Lecture Summary.docx
cloudmails-my.sharepoint.com
Memory usage: 297 MB
Recursive Relationships
(continued)
FIGURE 4.19
The 1:1 recursive relationship "EMPLOYEE is married to EMPLOYEE"
Database name: CH04_PartCo
Table name: EMPLOYEE_V1
EMP_NUM EMP_LNAME EMP_FNAME EMP_SPOUSE
345 Ramirez James 347
346 Jones Anne 349
347 Ramirez Louise 345
348 Delaney Robert
349 Shapiro Anton 346
Lai Chew Ping
ABDELRAHMAN ASHRAF MOH...
KH
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ENG
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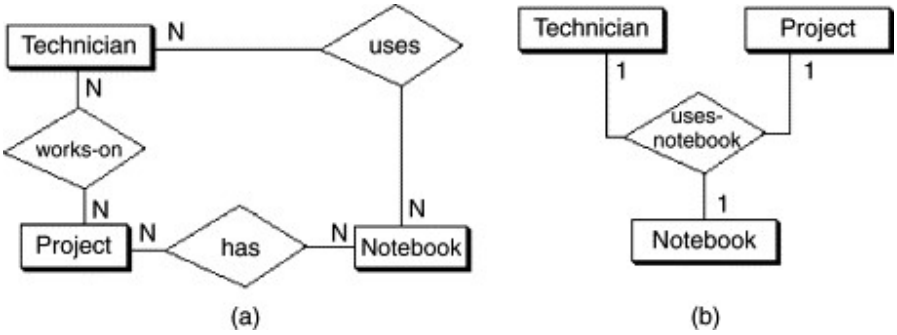
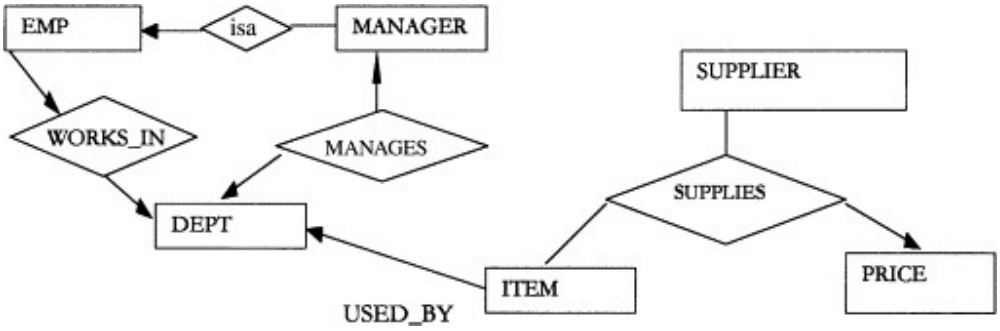
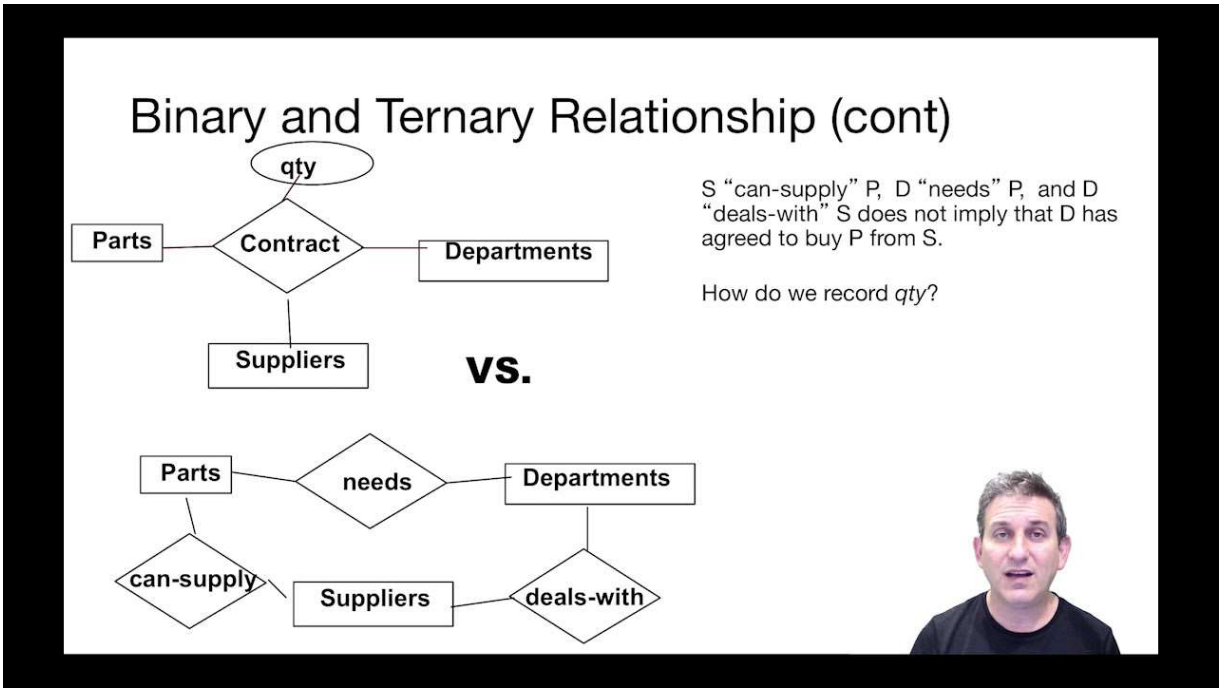

Technician
N
uses
N
works-on
N
Project
N
has
N
Notebook
(a)
Technician
Project
1
1
uses-notebook
1
Notebook
(b)





1.Normalization is a process that is used for changing attributes to entities.

True

False

2.A table is in 2NF if it is in 1NF and it includes no partial dependencies.

True

False

3.It is possible for a table in 2NF to exhibit transitive dependency, where one or more attributes may be functionally dependent on non-key attributes.

True

False

4.A table that is in 1NF and includes no partial dependencies only is said to be in ____.

1NF
2NF
3NF
UNF

5.A table that is in 2NF and contains no transitive dependencies is said to be in ____.
UNF
2NF
3NF
1NF

6.Normalization is a process for assigning ____ to entities.
relations
data
attribute
files

7.Explain ONE advantage of database normalization

-reduce data redundancy