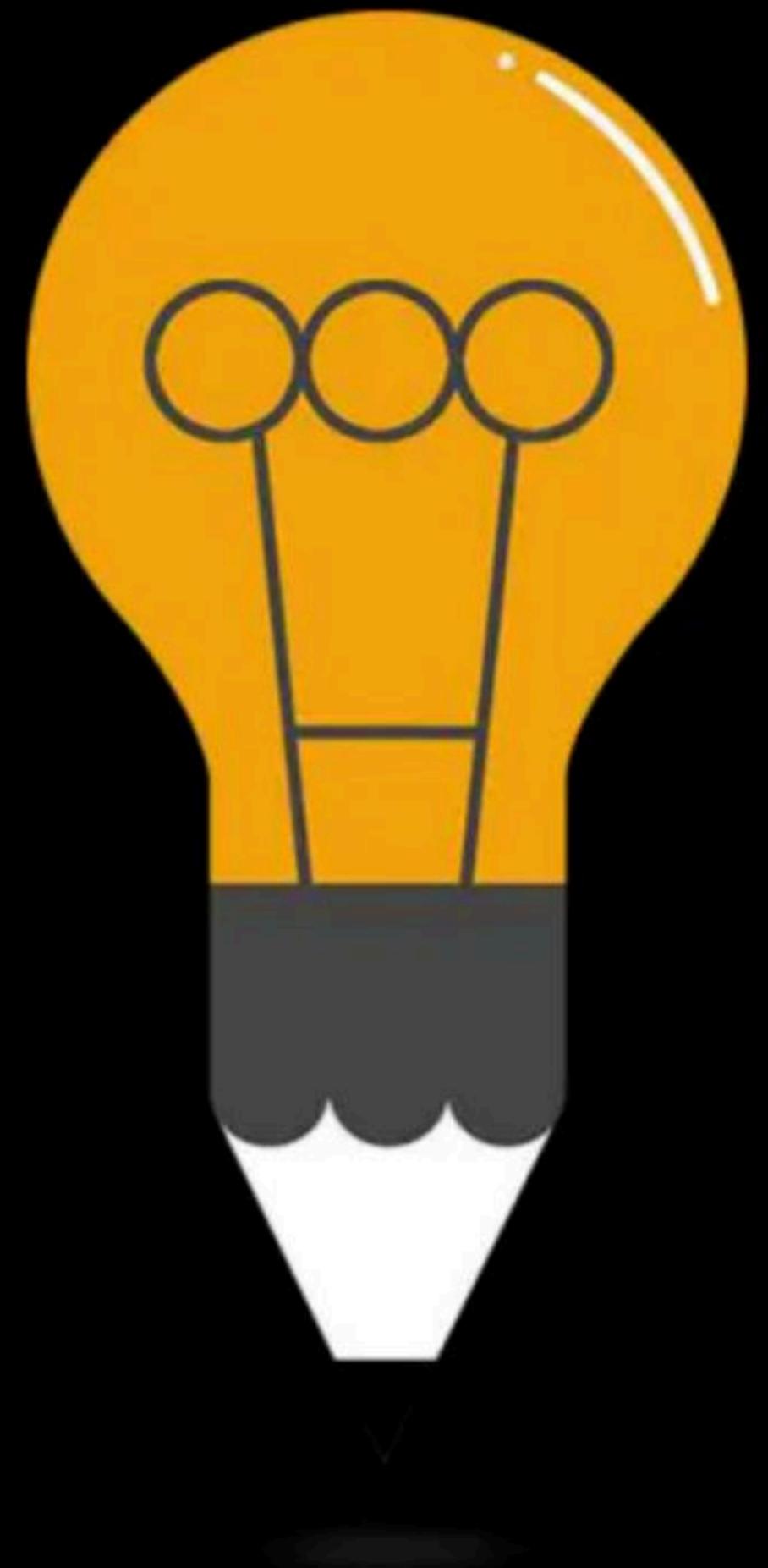




RDBMS PYQ Discussion: Part 3

Special class



PYQ: **Relational DB**

By: **Vishvadeep Gothi**

Question GATE-1990

Choose the correct alternatives (More than one may be correct).

Indicate which of the following statements are true:

A relational database which is in 3NF may still have undesirable data redundancy because there may exist:

- A. Transitive functional dependencies
- B. Non-trivial functional dependencies involving prime attributes on the right-side.
- C. Non-trivial functional dependencies involving prime attributes only on the left-side.
- D. Non-trivial functional dependencies involving only prime attributes.

Question GATE-1999

Consider the schema $R = (S, T, U, V)$ and the dependencies $S \rightarrow T, T \rightarrow U, U \rightarrow V$ and $V \rightarrow S$. Let $R = (R_1 \text{ and } R_2)$ be a decomposition such that $R_1 \cap R_2 \neq \phi$. The decomposition is

- A. not in $2NF$
- B. in $2NF$ but not $3NF$
- C. in $3NF$ but not in $2NF$
- D. in both $2NF$ and $3NF$

Question GATE-1999

Let $R = (A, B, C, D, E, F)$ be a relation scheme with the following dependencies $C \rightarrow F, E \rightarrow A, EC \rightarrow D, A \rightarrow B$. Which one of the following is a key for R ?

- A. CD
- B. EC
- C. AE
- D. AC

Question GATE-2000

Given the following relation instance.

X	Y	Z
1	4	2
1	5	3
1	6	3
3	2	2

Which of the following functional dependencies are satisfied by the instance?

- A. $XY \rightarrow Z$ and $Z \rightarrow Y$
- B. $YZ \rightarrow X$ and $Y \rightarrow Z$
- C. $YZ \rightarrow X$ and $X \rightarrow Z$
- D. $XZ \rightarrow Y$ and $Y \rightarrow X$

Question GATE-2001

Consider a schema $R(A, B, C, D)$ and functional dependencies $A \rightarrow B$ and $C \rightarrow D$. Then the decomposition of R into $R_1(A, B)$ and $R_2(C, D)$ is

- A. dependency preserving and lossless join
- B. lossless join but not dependency preserving
- C. dependency preserving but not lossless join
- D. not dependency preserving and not lossless join

Question GATE-2001

$R(A, B, C, D)$ is a relation. Which of the following does not have a lossless join, dependency preserving $BCNF$ decomposition?

- A. $A \rightarrow B, B \rightarrow CD$
- B. $A \rightarrow B, B \rightarrow C, C \rightarrow D$
- C. $AB \rightarrow C, C \rightarrow AD$
- D. $A \rightarrow BCD$

Question GATE-2002

Relation R with an associated set of functional dependencies, F , is decomposed into BCNF. The redundancy (arising out of functional dependencies) in the resulting set of relations is

- A. Zero
- B. More than zero but less than that of an equivalent $3NF$ decomposition
- C. Proportional to the size of F^+
- D. Indeterminate

Question GATE-2002

From the following instance of a relation schema $R(A, B, C)$, we can conclude that:

A	B	C
1	1	1
1	1	0
2	3	2
2	3	2

- A. A functionally determines B and B functionally determines C
- B. A functionally determines B and B does not functionally determine C
- C. B does not functionally determine C
- D. A does not functionally determine B and B does not functionally determine C

Question GATE-2002

Relation R is decomposed using a set of functional dependencies, F , and relation S is decomposed using another set of functional dependencies, G . One decomposition is definitely BCNF, the other is definitely $3NF$, but it is not known which is which. To make a guaranteed identification, which one of the following tests should be used on the decompositions? (Assume that the closures of F and G are available).

- A. Dependency-preservation
- B. Lossless-join
- C. BCNF definition
- D. $3NF$ definition

Question GATE-2004

The relation scheme Student Performance (name, courseNo, rollNo, grade) has the following functional dependencies:

- $\text{name, courseNo, } \rightarrow \text{grade}$
- $\text{rollNo, courseNo} \rightarrow \text{grade}$
- $\text{name} \rightarrow \text{rollNo}$
- $\text{rollNo} \rightarrow \text{name}$

The highest normal form of this relation scheme is

- A. 2NF B. 3NF C. BCNF D. 4NF

Question GATE-2004

A relation Empdtl is defined with attributes empcode (unique), name, street, city, state and pincode. For any pincode, there is only one city and state. Also, for any given street, city and state, there is just one pincode. In normalization terms, Empdtl is a relation in

- A. 1NF only
- B. 2NF and hence also in 1NF
- C. 3NF and hence also in 2NF and 1NF
- D. BCNF and hence also in 3NF, 2NF and 1NF

Question GATE-2005

In a schema with attributes A, B, C, D and E following set of functional dependencies are given

- $A \rightarrow B$
- $A \rightarrow C$
- $CD \rightarrow E$
- $B \rightarrow D$
- $E \rightarrow A$

Which of the following functional dependencies is NOT implied by the above set?

- A. $CD \rightarrow AC$ B. $BD \rightarrow CD$ C. $BC \rightarrow CD$ D. $AC \rightarrow BC$

Question GATE-2005

Which one of the following statements about normal forms is FALSE?

- A. BCNF is stricter than $3NF$
- B. Lossless, dependency-preserving decomposition into $3NF$ is always possible
- C. Lossless, dependency-preserving decomposition into BCNF is always possible
- D. Any relation with two attributes is in BCNF

Question GATE-2005

Consider a relation scheme $R = (A, B, C, D, E, H)$ on which the following functional dependencies hold: $\{ A \rightarrow B, BC \rightarrow D, E \rightarrow C, D \rightarrow A \}$. What are the candidate keys R?

- A. AE, BE
- B. AE, BE, DE
- C. AEH, BEH, BCH
- D. AEH, BEH, DEH

Question GATE-2005

A table has fields $F1, F2, F3, F4, F5$ with the following functional dependencies

$$F1 \rightarrow F3 \quad F2 \rightarrow F4 \quad (F1, F2) \rightarrow F5$$

In terms of Normalization, this table is in

- A. 1NF
- B. 2NF
- C. 3NF
- D. None of these

Question GATE-2005

Let r be a relation instance with schema $R = (A, B, C, D)$. We define $r_1 = \pi_{A,B,C}(R)$ and $r_2 = \pi_{A,D}(r)$. Let $s = r_1 * r_2$ where $*$ denotes natural join. Given that the decomposition of r into r_1 and r_2 is lossy, which one of the following is TRUE?

- A. $s \subset r$
- B. $r \cup s = r$
- C. $r \subset s$
- D. $r * s = s$

Question GATE-2006

The following functional dependencies are given:

$$AB \rightarrow CD, AF \rightarrow D, DE \rightarrow F, C \rightarrow G, F \rightarrow E, G \rightarrow A$$

Which one of the following options is false?

- A. $\{CF\}^* = \{ACDEFG\}$
- B. $\{BG\}^* = \{ABCDG\}$
- C. $\{AF\}^* = \{ACDEFG\}$
- D. $\{AB\}^* = \{ABCDG\}$

Question GATE-2006

Consider a relation R with five attributes V, W, X, Y, and Z. The following functional dependencies hold:
 $VY \rightarrow W$, $WX \rightarrow Z$, and $ZY \rightarrow V$.

Which of the following is a candidate key for R?

- A. VXZ
- B. VXY
- C. VWXY
- D. VWXYZ

Question GATE-2007

Which one of the following statements is FALSE?

- A. Any relation with two attributes is in BCNF
- B. A relation in which every key has only one attribute is in $2NF$
- C. A prime attribute can be transitively dependent on a key in a $3NF$ relation
- D. A prime attribute can be transitively dependent on a key in a BCNF relation

Question GATE-2008

Consider the following relational schemes for a library database:

Book (Title, Author, Catalog_no, Publisher, Year, Price)

Collection (Title, Author, Catalog_no)

with the following functional dependencies:

- I. Title Author → Catalog_no
- II. Catalog_no → Title Author Publisher Year
- III. Publisher Title Year → Price

Assume { Author, Title } is the key for both schemes. Which of the following statements is true?

- | | |
|---|---|
| A. Both Book and Collection are in BCNF | B. Both Book and Collection are in 3NF only |
| C. Book is in 2NF and Collection in 3NF | D. Both Book and Collection are in 2NF only |

Question GATE-2008

Let $R(A, B, C, D)$ be a relational schema with the following functional dependencies :

$A \rightarrow B$, $B \rightarrow C$, $C \rightarrow D$ and $D \rightarrow B$. The decomposition of R into (A, B) , (B, C) , (B, D)

- A. gives a lossless join, and is dependency preserving
- B. gives a lossless join, but is not dependency preserving
- C. does not give a lossless join, but is dependency preserving
- D. does not give a lossless join and is not dependency preserving

Question GATE-2008

Let $R(A, B, C, D, E, P, G)$ be a relational schema in which the following functional dependencies are known to hold: $AB \rightarrow CD$, $DE \rightarrow P$, $C \rightarrow E$, $P \rightarrow C$ and $B \rightarrow G$. The relational schema R is

- A. in BCNF
- B. in 3NF, but not in BCNF
- C. in 2NF, but not in 3NF
- D. not in 2NF

Question GATE-2009

Consider the following relational schema:

Suppliers(sid:integer, sname:string, city:string, street:string)

Parts(pid:integer, pname:string, color:string)

Catalog(sid:integer, pid:integer, cost:real)

Assume that, in the suppliers relation above, each supplier and each street within a city has unique name, and (sname, city) forms a candidate key. No other functional dependencies are implied other than those implied by primary and candidate keys.

Which one of the following is TRUE about the above schema?

- A. The schema is in BCNF
- B. The schema is in $3NF$ but not in BCNF
- C. The schema is in $2NF$ but not in $3NF$
- D. The schema is not in $2NF$

Question GATE-2010

The following functional dependencies hold for relations $R(A, B, C)$ and $S(B, D, E)$.

- $B \rightarrow A$
- $A \rightarrow C$

The relation R contains 200 tuples and the relation S contains 100 tuples. What is the maximum number of tuples possible in the natural join $R \bowtie S$?

- A. 100 B. 200 C. 300 D. 2000

Question GATE-2011

Consider a relational table with a single record for each registered student with the following attributes:

1. Registration_Num: Unique registration number for each registered student
2. UID: Unique identity number, unique at the national level for each citizen
3. BankAccount_Num: Unique account number at the bank. A student can have multiple accounts or joint accounts. This attribute stores the primary account number.
4. Name: Name of the student
5. Hostel_Room: Room number of the hostel

Which of the following options is **INCORRECT**?

- A. BankAccount_Num is a candidate key
- B. Registration_Num can be a primary key
- C. UID is a candidate key if all students are from the same country
- D. If S is a super key such that $S \cap \text{UID}$ is NULL then $S \cup \text{UID}$ is also a superkey

Question GATE-2012

Which of the following is **TRUE**?

- A. Every relation in 3NF is also in BCNF
- B. A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R
- C. Every relation in BCNF is also in 3NF
- D. No relation can be in both BCNF and 3NF

Question GATE-2013

Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. $F = \{CH \rightarrow G, A \rightarrow BC, B \rightarrow CFH, E \rightarrow A, F \rightarrow EG\}$ is a set of functional dependencies (FDs) so that F^+ is exactly the set of FDs that hold for R .

How many candidate keys does the relation R have?

- A. 3
- B. 4
- C. 5
- D. 6

Question GATE-2013

Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. $F = \{CH \rightarrow G, A \rightarrow BC, B \rightarrow CFH, E \rightarrow A, F \rightarrow EG\}$ is a set of functional dependencies (FDs) so that F^+ is exactly the set of FDs that hold for R .

The relation R is

- A. in $1NF$, but not in $2NF$.
- B. in $2NF$, but not in $3NF$.
- C. in $3NF$, but not in BCNF.
- D. in BCNF.

Question GATE-2014

Consider the relation scheme $R = (E, F, G, H, I, J, K, L, M, N)$ and the set of functional dependencies

$$\{\{E, F\} \rightarrow \{G\}, \{F\} \rightarrow \{I, J\}, \{E, H\} \rightarrow \{K, L\}, \{K\} \rightarrow \{M\}, \{L\} \rightarrow \{N\}\}$$

on R . What is the key for R ?

- A. $\{E, F\}$
- B. $\{E, F, H\}$
- C. $\{E, F, H, K, L\}$
- D. $\{E\}$

Question GATE-2014

The maximum number of superkeys for the relation schema $R(E, F, G, H)$ with E as the key is ____.

Question GATE-2014

Given an instance of the STUDENTS relation as shown as below

StudentID	StudentName	StudentEmail	StudentAge	CPI
2345	Shankar	shankar@math	X	9.4
1287	Swati	swati@ee	19	9.5
7853	Shankar	shankar@cse	19	9.4
9876	Swati	swati@mech	18	9.3
8765	Ganesh	ganesh@civil	19	8.7

For (StudentName, StudentAge) to be a key for this instance, the value X should NOT be equal to _____.

Question GATE-2014

A *prime attribute* of a relation scheme R is an attribute that appears

- A. in all candidate keys of R
- B. in some candidate key of R
- C. in a foreign key of R
- D. only in the primary key of R

Question GATE-2014

Given the following two statements:

S1: Every table with two single-valued attributes is in 1NF, 2NF, 3NF and BCNF.

S2: $AB \rightarrow C, D \rightarrow E, E \rightarrow C$ is a minimal cover for the set of functional dependencies $AB \rightarrow C, D \rightarrow E, AB \rightarrow E, E \rightarrow C$.

Which one of the following is **CORRECT**?

- A. S1 is TRUE and S2 is FALSE.
- B. Both S1 and S2 are TRUE.
- C. S1 is FALSE and S2 is TRUE.
- D. Both S1 and S2 are FALSE.

Question GATE-2015

Consider two relations $R_1(A, B)$ with the tuples $(1, 5), (3, 7)$ and $R_2(A, C) = (1, 7), (4, 9)$. Assume that $R(A, B, C)$ is the full natural outer join of R_1 and R_2 . Consider the following tuples of the form (A, B, C) :

$a = (1, 5, \text{null}), b = (1, \text{null}, 7), c = (3, \text{null}, 9), d = (4, 7, \text{null}), e = (1, 5, 7), f = (3, 7, \text{null}), g = (4, \text{null}, 9)$

Which one of the following statements is correct?

- A. R contains a, b, e, f, g but not c, d .
- B. R contains all a, b, c, d, e, f, g .
- C. R contains e, f, g but not a, b .
- D. R contains e but not f, g .

R_1		R_2	
A	B	A	C
1	5	1	7
3	7	4	9

R		
A	B	C
1	5	7
3	7	NULL
4	NULL	9

Question GATE-2015

Consider the relation $X(P, Q, R, S, T, U)$ with the following set of functional dependencies

$$F = \{ \{P, R\} \rightarrow \{S, T\}, \{P, S, U\} \rightarrow \{Q, R\} \}$$

Which of the following is the trivial functional dependency in F^+ , where F^+ is closure to F?

A. $\{P, R\} \rightarrow \{S, T\}$
C. $\{P, S\} \rightarrow \{S\}$

B. $\{P, R\} \rightarrow \{R, T\}$
D. $\{P, S, U\} \rightarrow \{Q\}$

$$\rho \rightarrow \sigma \quad \text{RHS} \subseteq \text{LHS}$$

$$\rho S \rightarrow \rho$$

$$\begin{aligned} P S &\rightarrow S \\ P T &\rightarrow \Gamma \\ P T &\rightarrow \rho \end{aligned}$$

Question GATE-2016

Which of the following is NOT a superkey in a relational schema with attributes V, W, X, Y, Z and primary key XY ?

- A. $VXYZ$
- B. $VWXZ$
- C. $VWXY$
- D. $VWXYZ$

Question GATE-2016

A database of research articles in a journal uses the following schema.

(VOLUME, NUMBER, STARTPAGE, ENDPAGE, TITLE, YEAR, PRICE)

The primary key is '(VOLUME, NUMBER, STARTPAGE, ENDPAGE)

and the following functional dependencies exist in the schema.

(VOLUME , NUMBER, STARTPAGE, ENDPAGE) → TITLE

(VOLUME, NUMBER) → YEAR

(VOLUME, NUMBER, STARTPAGE, ENDPAGE) → PRICE

The database is redesigned to use the following schemas

(VOLUME, NUMBER, STARTPAGE, ENDPAGE, TITLE, PRICE)(VOLUME, NUMBER, YEAR)

Which is the weakest normal form that the new database satisfies, but the old one does not?

A. 1NF

B. 2NF

C. 3NF

D. BCNF

Question GATE-2017

The following functional dependencies hold true for the relational schema $R\{V, W, X, Y, Z\}$:

$$V \rightarrow W$$

$$VW \rightarrow X$$

$$Y \rightarrow VX$$

$$Y \rightarrow Z$$

Which of the following is irreducible equivalent for this set of functional dependencies?

A. $V \rightarrow W$

$$V \rightarrow X$$

$$Y \rightarrow V$$

$$Y \rightarrow Z$$

~~B.~~ $V \rightarrow W$

$$W \rightarrow X$$

$$Y \rightarrow V$$

$$Y \rightarrow Z$$

~~C.~~ $V \rightarrow W$

$$V \rightarrow X$$

$$Y \rightarrow V$$

$$Y \rightarrow X$$

$$Y \rightarrow Z$$

~~D.~~ $V \rightarrow W$

$$W \rightarrow X$$

$$Y \rightarrow V$$

$$Y \rightarrow X$$

$$Y \rightarrow Z$$

$$\begin{aligned} & V \rightarrow W \\ & VW \rightarrow X \text{ or } V \rightarrow X \\ & Y \rightarrow Vxz \end{aligned}$$

Question GATE-2018

Consider the following four relational schemas. For each schema , all non-trivial functional dependencies are listed, The **bolded** attributes are the respective primary keys.

Schema I: Registration(**rollno**, courses)

Field 'courses' is a set-valued attribute containing the set of courses a student has registered for.

Non-trivial functional dependency

$\text{rollno} \rightarrow \text{courses}$

Schema II: Registration (**rollno**, **coursid**, email)

Non-trivial functional dependencies:

$\text{rollno}, \text{courseid} \rightarrow \text{email}$

$\text{email} \rightarrow \text{rollno}$

$$\begin{array}{c} r \ c \ m \ g \\ \overbrace{\quad\quad\quad}^{\text{r,c}} \rightarrow m \ g \\ m \rightarrow g \end{array}$$

Schema III: Registration (**rollno**, **courseid**, marks, grade)

Non-trivial functional dependencies:

$\text{rollno}, \text{courseid} \rightarrow \text{marks, grade}$

$\text{marks} \rightarrow \text{grade}$

Schema IV: Registration (**rollno**, **courseid**, credit)

Non-trivial functional dependencies:

$\text{rollno}, \text{courseid} \rightarrow \text{credit}$

$\text{courseid} \rightarrow \text{credit}$

Which one of the relational schemas above is in 3NF but not in BCNF?

A. Schema I

B. Schema II

C. Schema III

D. Schema IV

Question GATE-2019

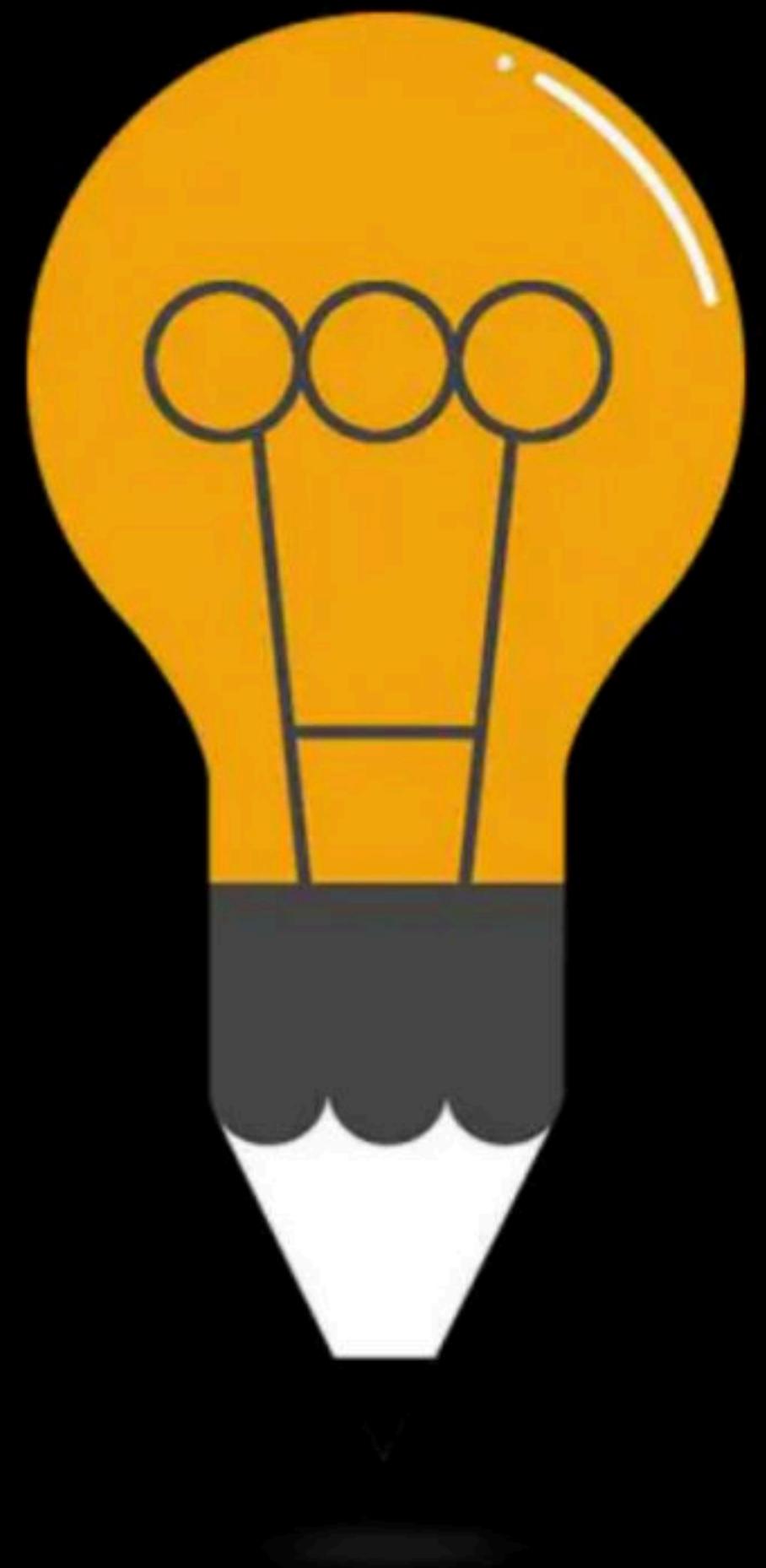
Let the set of functional dependencies $F = \{QR \rightarrow S, R \rightarrow P, S \rightarrow Q\}$ hold on a relation schema $X = (PQRS)$. X is not in BCNF. Suppose X is decomposed into two schemas Y and Z , where $Y = (PR)$ and $Z = (QRS)$.

Consider the two statements given below.

- I. Both Y and Z are in BCNF
- II. Decomposition of X into Y and Z is dependency preserving and lossless

Which of the above statements is/are correct?

- A. Both I and II
- B. I only
- C. ✓ II only
- D. Neither I nor II

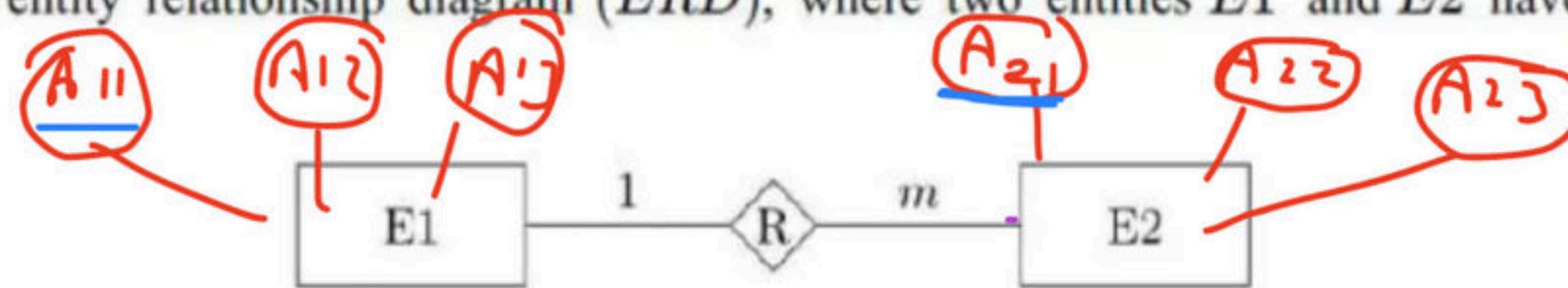


PYQ: **ER Diagram**

By: **Vishvadeep Gothi**

Question GATE-2004

Consider the following entity relationship diagram (ERD), where two entities E_1 and E_2 have a relation R of cardinality 1:m.



The attributes of E_1 are A_{11} , A_{12} and A_{13} where A_{11} is the key attribute. The attributes of E_2 are A_{21} , A_{22} and A_{23} where A_{21} is the key attribute and A_{23} is a multi-valued attribute. Relation R does not have any attribute. A relational database containing minimum number of tables with each table satisfying the requirements of the third normal form (3NF) is designed from the above ERD. The number of tables in the database is

- A. 2 B. 3 C. 5 D. 4

$E_1 (\underline{A_{11}}, A_{12}, A_{13})$

$E_2 (\underline{A_{21}}, A_{22}, A_{23}, A_{11}) \rightarrow E_{21} (\underline{A_{21}}, A_{22}, A_{11})$

$E_{22} (\underline{A_{21}}, \underline{A_{23}})$

Question GATE-2005

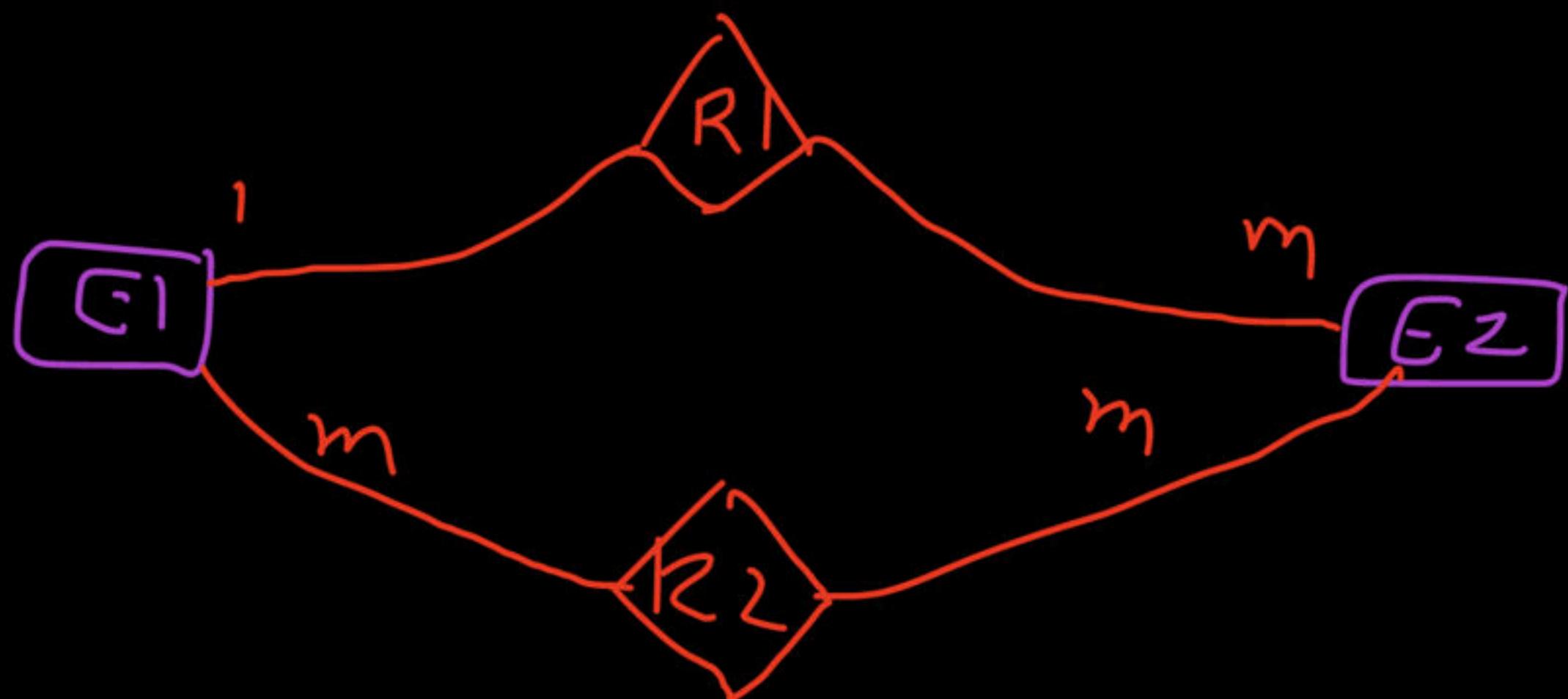
Let E_1 and E_2 be two entities in an E/R diagram with simple-valued attributes. R_1 and R_2 are two relationships between E_1 and E_2 , where R_1 is one-to-many and R_2 is many-to-many. R_1 and R_2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?

A. 2

B. 3

C. 4

D. 5

 E_1 E_2 R_2

Question GATE-2005

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

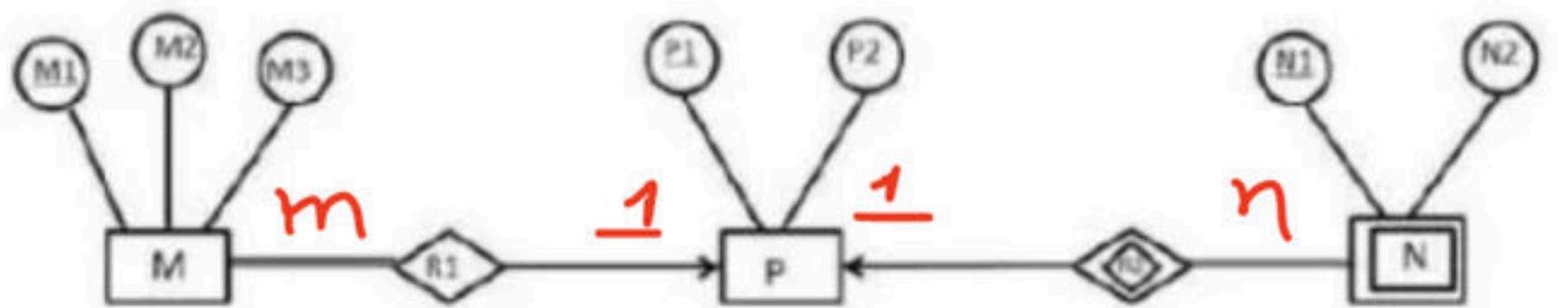


If we wish to store information about the rent payment to be made by person (s) occupying different hotel rooms, then this information should appear as an attribute of

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

Question GATE-2008

Consider the following *ER* diagram



The minimum number of tables needed to represent **M**, **N**, **P**, **R1**, **R2** is

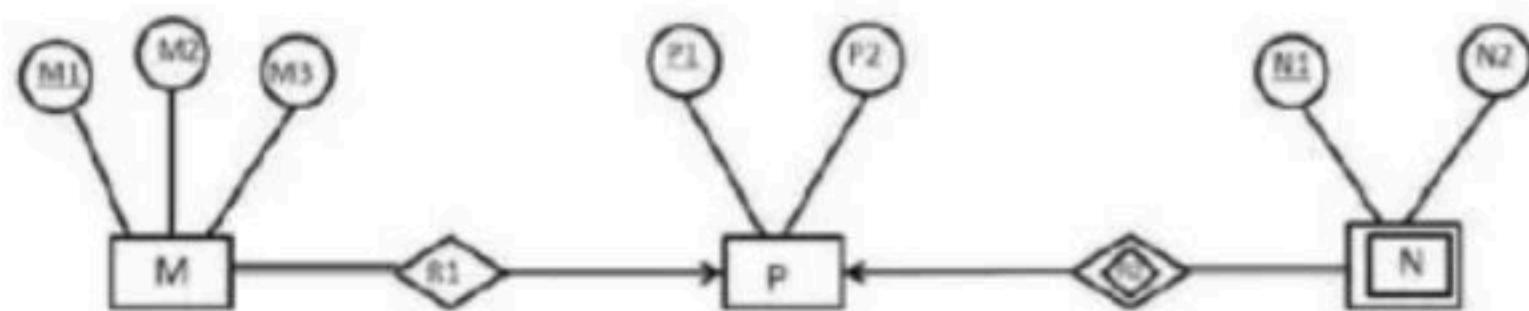
- A. 2
- ~~B. 3~~
- C. 4
- D. 5

M (**M₁**, **M₂**, **M₃**, **P₁**)

P (**P₁**, **P₂**)

N (**P₁**, **N₁**, **N₂**)

Question GATE-2008



Consider the following ER diagram

The minimum number of tables needed to represent $M, N, P, R1, R2$ is

Which of the following is a correct attribute set for one of the tables for the minimum number of tables needed to represent $M, N, P, R1, R2$?

- A. $M1, M2, M3, P1$ B. $M1, P1, N1, N2$ C. $M1, P1, N1$ D. $M1, P1$

Question GATE-2012

Given the basic ER and relational models, which of the following is **INCORRECT**?

- A. An attribute of an entity can have more than one value → T
- B. An attribute of an entity can be composite → T
- C. In a row of a relational table, an attribute can have more than one value → F
- D. In a row of a relational table, an attribute can have exactly one value or a NULL value → T

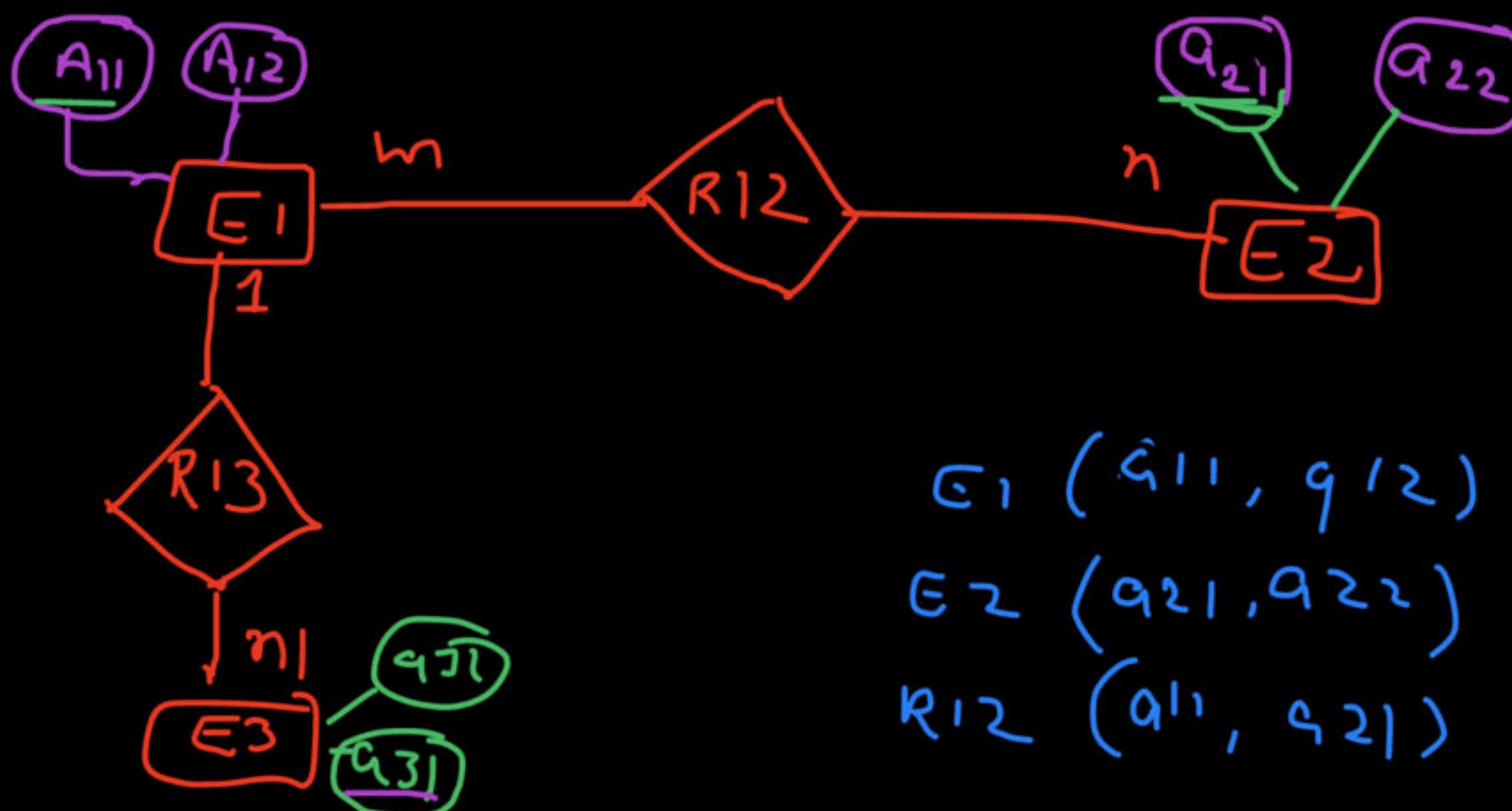
Question GATE-2015

Aus = 4

Consider an Entity-Relationship (ER) model in which entity sets E_1 and E_2 are connected by an m:n relationship R_{12} . E_1 and E_3 are connected by a 1 : n (1 on the side of E_1 and n on the side of E_3) relationship R_{13} .

E_1 has two-singled attributes a_{11} and a_{12} of which a_{11} is the key attribute. E_2 has two singled-valued attributes a_{21} and a_{22} of which a_{21} is the key attribute. E_3 has two single-valued attributes a_{31} and a_{32} of which a_{31} is the key attribute. The relationships do not have any attributes.

If a relational model is derived from the above ER model, then the minimum number of relations that would be generated if all relation are in 3NF is 4.



- $E_1 (a_{11}, a_{12})$
- $E_2 (a_{21}, a_{22})$
- $R_{12} (a_{11}, a_{21})$
- $E_3 (a_{31}, a_{32}, a_{11})$

Question GATE-2017

An ER model of a database consists of entity types A and B . These are connected by a relationship R which does not have its own attribute. Under which one of the following conditions, can the relational table for R be merged with that of A ?

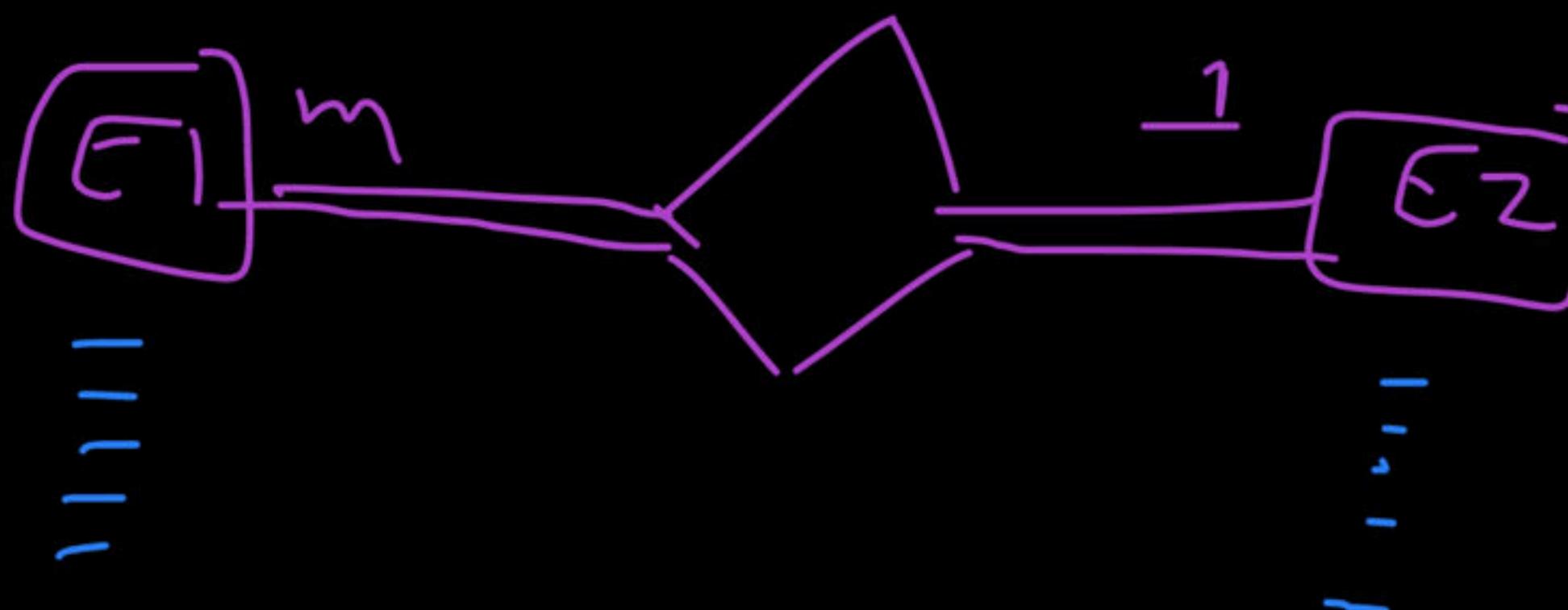
- A. Relationship R is one-to-many and the participation of A in R is total
- B. Relationship R is one-to-many and the participation of A in R is partial
- C. Relationship R is many-to-one and the participation of A in R is total
- D. Relationship R is many-to-one and the participation of A in R is partial

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



Happy Learning.!



▲ 1 • Asked by Shreyas

Sir statement s2 nahi samjha

~~Q1~~ D_1 is a lossless decomposition, but D_2 is a lossy decomposition.

[2021 (Set-1) : 2 Marks]

2.52 Consider the following statements S_1 and S_2 about the relational data model:

S_1 : A relation scheme can have at most one foreign key. ~~F~~

S_2 : A foreign key in a relation scheme R cannot be used to refer to tuples of R . ~~F~~ ~~F~~

~~(a)~~ Both S_1 and S_2 are false.

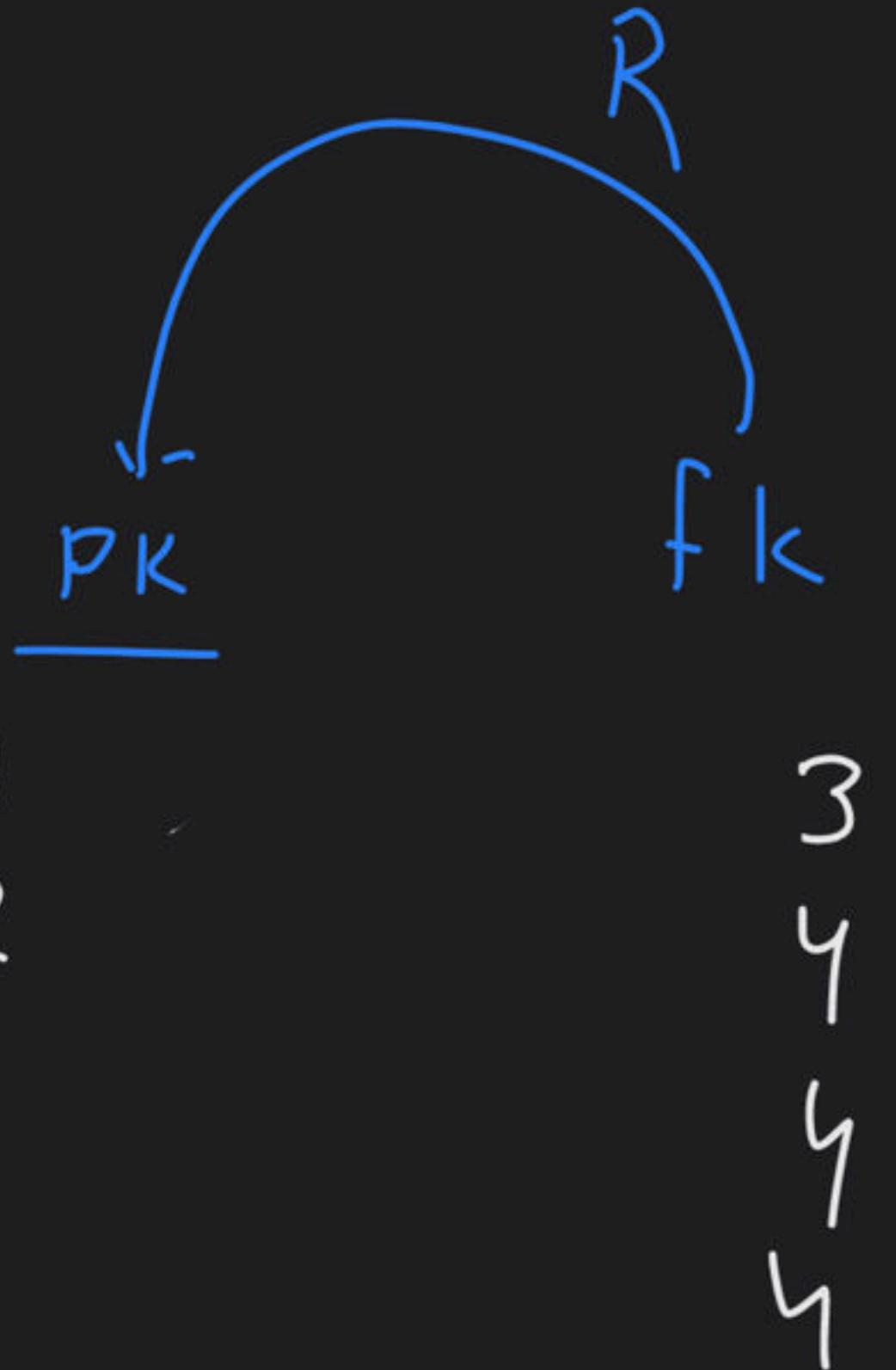
(b) S_1 is true and S_2 is false.

(c) S_1 is false and S_2 is true.

(d) Both S_1 and S_2 are true.

[2021 (Set-2) : 1 Mark]

2.53 Suppose the following functional dependencies hold on a relation U with attributes P, Q, R, S



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▲ 1 • Asked by Shreyas

Please help me with this doubt

- (d) Both Book and Collection are in 2NF only
[2008 : 2 Marks]

2.32 The following functional dependencies hold for relations R(A, B, C) and S(B, D, E):

$$B \rightarrow A$$

B

$$A \rightarrow C$$

The relation R contains 200 tuples and the relation S contains 100 tuples. What is the maximum number of tuples possible in the natural join $R \bowtie S$?

(a) 100

(b) 200

(c) 300

(d) 2000

[2010 : 2 Marks]

2.33 Consider a relational table with a single record from each registered student with the following attributes: