CS & IT ENGINEERING

Database Management System

Referential Integrity

DPP 01 Discussion Notes

By- Vijay Agarwal sir

01 Question

02 Discussion

Q.1 [MCQ]

Consider the following relation Supervision(EmployeeID, Name, SupervisorID)pertaining to a company's database:

The key SupervisorID acts as a Foreign key in the relation Supervision.

The following operations are performed on the relation:

Supervision

EmployeeID	Name	SupervisorID
1	A	4
2	A	3
3	B	1
4	C	5
5	D	2
6	E	5
7	B	3
8	A	1

F.K

4 → 0 → Violation → Rel2 → 0 is Not Present in P.K (Referenced Relation)

I: Insert a new employee having EmployeeID=='9'and Name = A and SupervisorID as '1';

II: Set SupervisorID as 'NULL' where EmployeeID==2 OR EmployeeID==4;

III: Set SupervisorID as '0' where EmployeeID==1;

Ans (B)

Which of the above operation(s) is/are ALLOWED?

A. I only B. I and II only C. III only D. I and III only

Referencing Relation

('foreign key') Attribute present in Referencing Rel^n

→ Must be present in Referenced Relation.

foreign key May Contain Duplicates & Null Value

Q.2

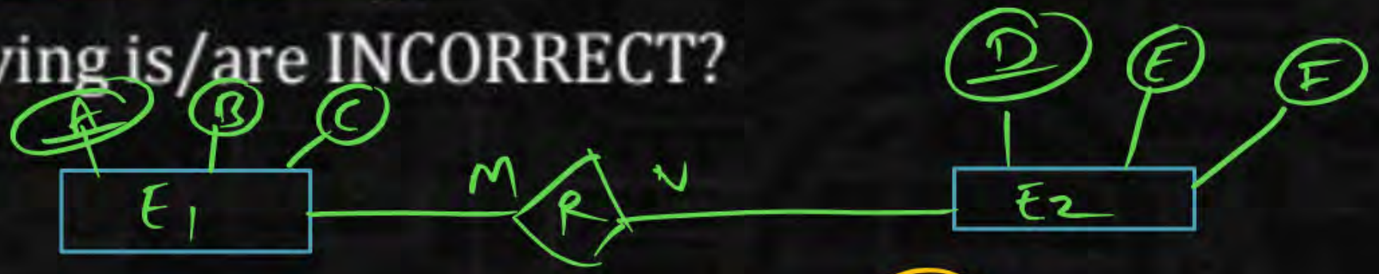
[MCQ]

Consider the following statements:

P: At most one foreign key is possible for a relational schema. → 0 or More foreign key

Q: A foreign key declaration can always be replaced by an equivalent check assertion in SQL.

Which of the following is/are INCORRECT?



A. P only

B. Q only

C. Both P and Q

D. Neither P nor Q

Any (C)

3 Table

F.k

F.k

E1(ABC) → No F.k

R(AD) → 2 Foreign key

E2(DEF) → No F.k

Check assertion in SQL

F.k may Contain Null & Duplicate.

Q.3

[MSQ]

Consider the relations-

Two relations are given as R_1(PaperCode, NumberofCandidates) and R_2(RollNo, Papercode). Assume that each roll no must have only one papercode but one paper can be chosen by many candidates. Which of the following is/are INCORRECT?

Incorrect

A. Papercode can either act as a primary key and a foreign key in R_2.

Correct

B. Papercode acts as a foreign key in R_2.

R_1 (Paper Code, No. of Candidate)
R_2 (Roll No, Paper Code)

Incorrect

C. Papercode satisfies UNIQUE and NOT NULL constraint R_2.

Incorrect

D. Papercode allows NULL values in R_2.

$P_1 \rightarrow C_1$
$P_1 \rightarrow C_2$

Ans (A) (C) & (D.)

Q.4 [NAT]

Consider the following SQL Query:

Create table department

{

a integer;

b integer;

primary key (a);

foreign key (b) reference department ON

DELETE CASCADE

};

3 Tuples additionally Deleted

(3,0) (5,0) (7,3)

Ans (3)

(3, 0) (5, 0)

Primary key ⇒ 3 & 5 also Deleted

The Tuples (a, b) currently in the table department are:

(0, 2) (1, 2) (2, 1) (3, 0) (5, 0) (7, 3) (4, 2) (6, 1)

(7,3) also Deleted

P.k → Delete.

Consider the following query

Delete from department where a = 0

The number of Tuples that must be additionally deleted to preserve referential integrity is _____.

3

Department

a (P.K)	b (F.K)
0	2
1	2
2	1
3	0
5	0
7	3
4	2
6	1

(1) (2) (3)

Q.5

[NAT]

Consider the following relation Supervision (EmployeeID, Name, SupervisorID) pertaining to a company's database:

The key SupervisorID acts as a Foreign key in the relation Supervision. The schema follows "On Delete Cascade" constraint.

The employee having EmployeeID '5' is deleted from the relation Supervision. The number of tuples remaining in the relation are _____.

Supervision

EmployeeID	Name	SupervisorID
1	A	4
2	A	6
3	B	2
4	C	5
5	D	2
6	E	3
7	B	4
8	A	1

F.K

(5, D, 2) ⇒ P.k '5' Deleted

(4 < 5) ⇒ P.k '4' Deleted

(1 A 4) (7 B 4) ⇒ P.k (1 & 7 Deleted)

(8, A, 1)

Total 5 Tuples Deleted

Remaining Tuples = 3

Ans 3

Q.6

[NAT]

Consider the following relational schemas:

All the items supplied by M/s Balaji Furniture are banned. Moreover, the company no longer sells steel items. The schema follows "On Delete Cascade" constraint. Delete all the records from Catalogue where sno = S2 OR pno = P3 OR pno = P4. The number of tuples deleted from the Catalogue relation is _____

Catalogue

sno	pno	cost
S1	P1	150
S1	P2	50
S1	P3	100
S2	P4	200
S2	P5	250
S3	P1	250
S3	P2	150
S3	P5	300
S3	P4	250

Suppliers

sno	sname	location
S1	M/s Royal furniture	Delhi
S2	M/s Balaji furniture	Bangalore
S3	M/s Premium furniture	Chennai

Parts

pno	pname	part_spec
P1	Table	Wood
P2	Chair	Wood
P3	Table	Steel
P4	Almirah	Steel
P5	Almirah	Wood

Ans (4)

Q.7

[MCQ]

Consider the following statements:

P: Insertion of tuples into referenced relation may cause foreign key violation.

Not correct

Q: Insertion of tuples into referencing relation may cause foreign key violation.

YES correct

Which of the following is/are CORRECT?

Contain foreign key → Referencing Relation

Referenced Relation

A. P only

Ans (b)

B. Q only

C. Both P and Q

D. Neither P nor Q

Insert ✓

Delete ✗ Violation

Insert ✗ Violation occur

Delete ✓

Q.8 [MCQ]

Consider the following statements:

P: Updation of tuples into referenced relation may cause foreign key violation.

Q: Updation of tuples into referencing relation may cause foreign key violation.

Which of the following is/are INCORRECT?

A. P only

B. Q only

C. Both P and Q

D. Neither P nor Q

Ans (D)

(P) Referenced Relⁿ

UPDATE ⇒ May Cause Violation if that P.k used in the Referencing Relation then Violation occurs.

(Q) Referencing Relation

Update then Violation occur Bcz if Updated Value Not Present in the P.k of Referenced Relation.


THANK YOU GW
SOLDIERS !