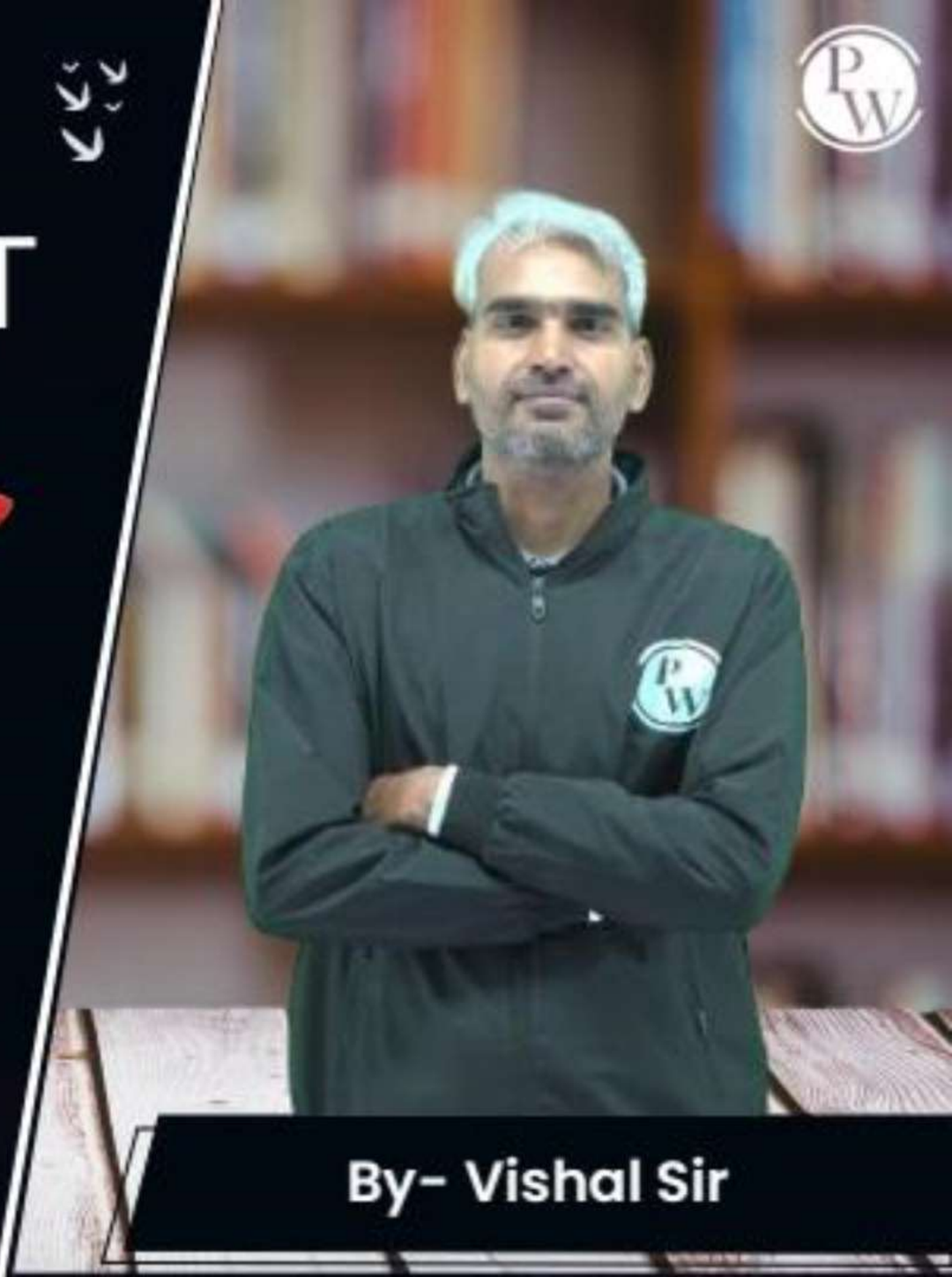
Computer Science & IT

Database Management System

Query Languages

Lecture No. 10



By- Vishal Sir

Recap of Previous Lecture

- Topic: AS clause
- Topic: WITH clause
- Topic: Comparison with NULL
- Topic: Comparison with regular expression

Slide

Topics to be Covered

Topic

Practice questions

Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

P.K

Student		
sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

P.K

Dept	
dNo	dName
D01	CSE
D02	EEE

P.K

Course		
cNo	cName	dNo
C11	DS	D01
C12	OS	D01
C21	DE	D02
C22	PT	D02
C23	CV	D03

P.K

Register	
sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

[NAT: 2022: 2M]

#Q. SQL Query:

```
SELECT * FROM Student AS S
WHERE NOT EXIST
        (SELECT cNo FROM Course WHERE dNo = "D01"
                EXCEPT
         SELECT cNo FROM Register WHERE sNo = S.sNo)
```

outer query

inner query

it can be executed independently

↳ o/p =

CNO.
C11
C12

attribute from relation defined in outer query {i.e. Correlated}

The number of rows returned by the above SQL query is _____.

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student

sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Register

sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student

sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Register

sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student

sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Register

sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student		
sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Register	
sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student

sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Register

sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

Question Continues in Next Slide

#Q. Consider the relational database with the following four schemes and their respective instances.

Student(sNo, sName, dNo) Dept(dNo, dName)
Course(cNo, cName, dNo) Register(sNo, cNo)

Student

sNo	sName	dNo
S01	James	D01
S02	Rocky	D01
S03	Jackson	D02
S04	Jane	D01
S05	Milli	D02

Dept

dNo	dName
D01	CSE
D02	EEE

Course

cNo	cName	dNo
C11	DS	D01
C12	OS	D01
C21	DE	D02
C22	PT	D02
C23	CV	D03

Register

sNo	cNo
S01	C11
S01	C12
S02	C11
S03	C21
S03	C22
S03	C23
S04	C11
S04	C12
S05	C11
S05	C21

C11, C12 ← S01
C11 ← S02
C21, C22, C23 ← S03
C11, C12 ← S04
C11, C21 ← S05

Question Continues in Next Slide

[NAT: 2022: 2M]

#Q. SQL Query:

```
SELECT * FROM Student AS S
WHERE NOT EXIST
    SELECT cNo FROM Course WHERE dNo = "D01"
    EXCEPT (Minus)
    SELECT cNo FROM Register WHERE sNo = S.sNo
```

outer query

inner query

it can be executed independently

↳ o/p =

CNO.
C11
C12

The number of rows returned by the above SQL query is _____.

		o/p minus o/p
S01	C11, C12	Empty
S02	C11	C12
S03	C21, C22, C23	C11, C12
S04	C11, C12	Empty
S05	C11, C21	C12

Not Exists return	o/p
True	S01, James, D01
False	X
False	X
True	S04, Jane, D01
False	X

[NAT: 2022: 2M]

#Q. SQL Query:

```
SELECT * FROM Student AS S
WHERE NOT EXIST
    (SELECT cNo FROM Course WHERE dNo = "D01"
        EXCEPT
    SELECT cNo FROM Register WHERE sNo = S.sNo)
```

All Courses of D01

We are looking for Courses Enrolled by a Particular student

The number of rows returned by the above SQL query is _____.

It will be Empty If student Enrolled for all Courses of D01

It will be non-empty if student did not Enroll at least one Course of D01

[NAT: 2022: 2M]

#Q. SQL Query:

```
SELECT * FROM Student AS S
WHERE NOT EXIST
        (SELECT cNo FROM Course WHERE dNo = "D01".
                EXCEPT
        SELECT cNo FROM Register WHERE sNo = S.sNo)
```

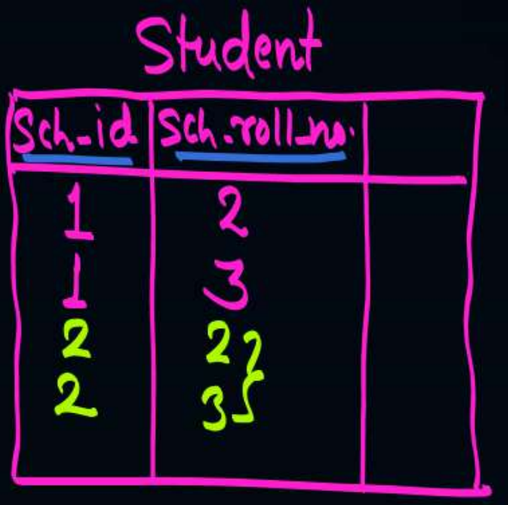
The number of rows returned by the above SQL query is _____ Ans = 2

S01	James	D01
S04	Jam	D01

} two tuples

#Q. Consider The Following Relational Scheme

Student (school-id, sch-roll-no, sname, saddress)
School (school-id, sch-name, sch-address, sch-phone)
Enrolment (school-id, sch-roll-no, erollno, examname)
ExamResult (Erollno, examname, marks)



(A)for each school with more than 200 students appearing in exams, the name of the school and the number of 100s scored by its students

(B)for each school with more than 200 students in it, the name of the school and the number of 100s scored by its students

(C)for each school with more than 200 students in it, the name of the school and the number of its students scoring 100 in at least one exam

(D)nothing; the query has a syntax error

Question Continues in Next Slide

#Q. Consider The Following Relational Scheme

Student (school-id, sch-roll-no, sname, saddress)
School (school-id, sch-name, sch-address, sch-phone)
Enrolment (school-id, sch-roll-no, erollno, examname)
ExamResult (Erollno, examname, marks)

Enrolment

Sch-id	Sch-roll-no.	erollno	Examname
1	2	123	JEE
1	2	100	GUJCET
2	3	123	GUJCET

(A) for each school with more than 200 students appearing in exams, the name of the school and the number of 100s scored by its students

(B) for each school with more than 200 students in it, the name of the school and the number of 100s scored by its students

(C) for each school with more than 200 students in it, the name of the school and the number of its students scoring 100 in at least one exam

(D) nothing; the query has a syntax error

Query is on next slide

Question Continues in Next Slide

#Q. Consider The Following Relational Scheme

Student (school-id, sch-roll-no, sname, saddress)
School (school-id, sch-name, sch-address, sch-phone)
Enrolment (school-id, sch-roll-no, erollno, examname)
ExamResult (Erollno, examname, marks)

Enrolment

Sch-id	Sch-roll-No.	erollno	Examname
1	2	123	JEE
1	2	100	GUJCET
2	3	123	GUJCET

(A) for each school with more than 200 students appearing in exams, the name of the school and the number of 100s scored by its students

(B) for each school with more than 200 students in it, the name of the school and the number of 100s scored by its students

(C) for each school with more than 200 students in it, the name of the school and the number of its students scoring 100 in at least one exam

(D) nothing; the query has a syntax error

Query is on next Slide

Question Continues in Next Slide

[MCQ: 2008: 2M]

#Q. What does the following SQL query output?

```
SELECT sch-name, COUNT (*)
FROM School C, Enrolment E, ExamResult R
WHERE     E.school-id = C.school-id
                    AND
          E.examname = R.examname
                    AND
          E.erollno = R.erollno
                    AND
          R.marks = 100
                    AND
          E.school-id IN
                    (SELECT school-id
                    FROM student GROUP BY school-id HAVING COUNT (*) > 200)
GROUP By school-id
```

School_ids of the schools having more than 200 students

oi Syntax Error.

[MCQ: 2008: 2M]

#Q. What does the following SQL query output?

```
SELECT sch-name, COUNT (*)
FROM School C, Enrolment E, ExamResult R
WHERE   E.school-id = C.school-id
                AND
        E.examname = R.examname
                AND
        E.erollno = R.erollno
                AND
        R.marks = 100
                AND
        E.school-id IN
                (SELECT school-id
                FROM student GROUP BY school-id HAVING COUNT (*) > 200)
GROUP By sch-name, School-id
```

Corresponding to this query option 'B' is the Correct option.

#Q. Consider The Following Relational Scheme

Student (school-id, sch-roll-no, sname, saddress)
School (school-id, sch-name, sch-address, sch-phone)
Enrolment (school-id, sch-roll-no, erollno, examname)
ExamResult (Erollno, examname, marks)

Enrolment

Sch-id	Sch-roll-no.	erollno	Examname
1	2	123	JEE
1	2	100	GUJCET
2	3	123	GUJCET

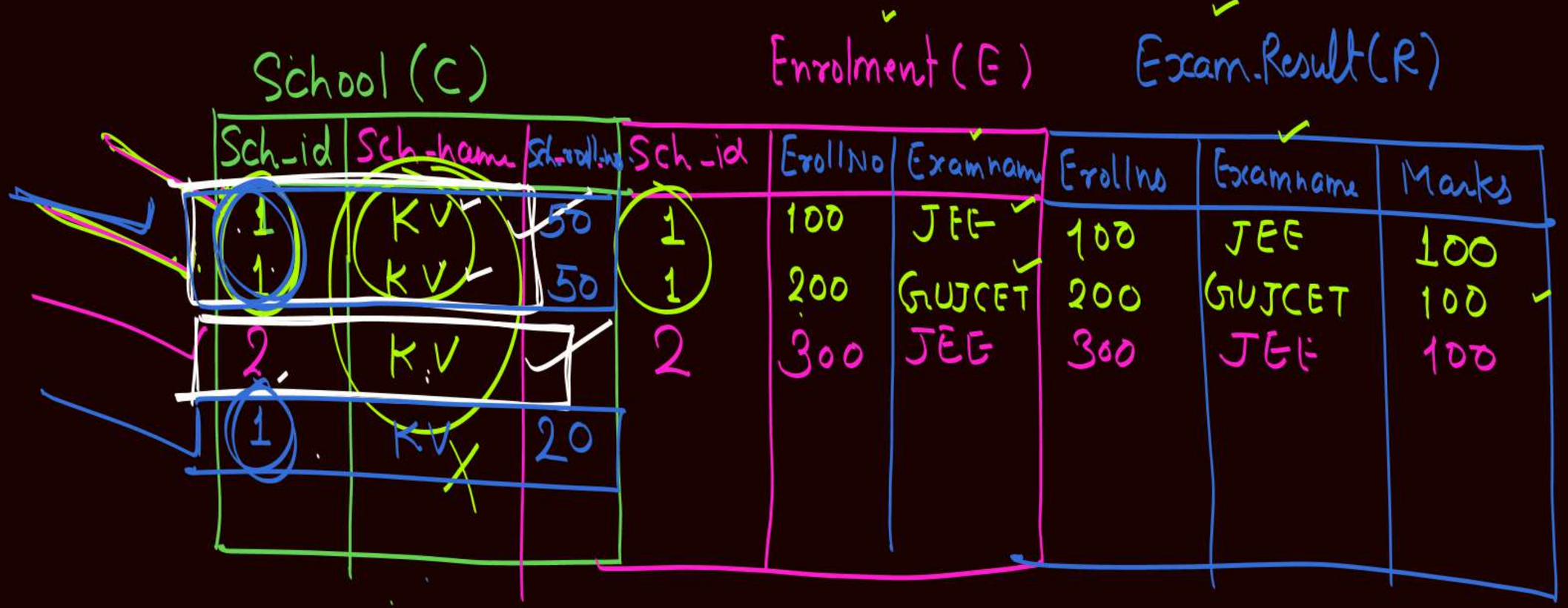
(A) for each school with more than 200 students appearing in exams, the name of the school and the number of 100s scored by its students

(B) for each school with more than 200 students in it, the name of the school and the number of 100s scored by its students { Correct: If Group by School_id, Sch-name

(C) for each school with more than 200 students in it, the name of the school and the number of its students scoring 100 in at least one exam

(D) nothing; the query has a syntax error

Question Continues in Next Slide


School (C)
Sch_id
Sch_name
Sch_rollno
1
1
2
1
KV
KV
KV
KV
50
50
20
Enrolment (E)
Sch_id
EnrollNo
Examname
1
1
2
100
200
300
JEE
GUJCET
JEE
Exam_Result(R)
Enrollno
Examname
Marks
100
200
300
JEE
GUJCET
JEE
100
100
100

#Q. [MCQ: 2009: 2M]

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)

Consider the following relational query on the above database:

```
SELECT S.sname
        FROM Suppliers S
        WHERE S.sid NOT IN
                (SELECT C.sid
                        FROM Catalog C
                        WHERE C.pid NOT IN
                                (SELECT P.pid
                                        FROM Parts P
                                        WHERE P.color<> \'blue\'))
```

inner query (independent)

∴ it will be executed first

Question Continues in Next Slide

#Q. [MCQ: 2009: 2M]

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)

Consider the following relational query on the above database:

```
SELECT S.sname
        FROM Suppliers S
        WHERE S.sid NOT IN
                (SELECT C.sid
                        FROM Catalog C
                        WHERE C.pid NOT IN
                                (SELECT P.pid
                                        FROM Parts P
                                        WHERE P.color<> \'blue\'))
```

we will get Pids of non-blue part

independent inner query

Question Continues in Next Slide

[MCQ: 2009: 2M]

#Q. 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)

Consider the following relational query on the above database:

```
SELECT S.sname
        FROM Suppliers S
        WHERE S.sid NOT IN
            (SELECT C.sid
                FROM Catalog C
                WHERE C.pid NOT IN
                    (SELECT P.pid
                        FROM Parts P
                        WHERE P.color<> \'blue\')
```

Catalog

Sid	Pid
S_1	P_1
S_1	P_2
S_2	P_3

Parts

P_1	Red
P_2	blue
P_3	Red

Sids of the suppliers who have supplied at least one blue color part

independent inner query

o/p = P_1, P_3

we will get Pids of non-blue part

Question Continues in Next Slide

[MCQ: 2009: 2M]

#Q. 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)

Consider the following relational query on the above database:

Supplier

Sid
S_1
S_2
S_3

Catalog

Sid	Pid
S_1	P_1
S_1	P_2
S_2	P_3

Parts

P_1	Red
P_2	blue
P_3	Red

```
SELECT S.sname
    FROM Suppliers S
    WHERE S.sid NOT IN
        (SELECT C.sid
            FROM Catalog C
            WHERE C.pid NOT IN
                (SELECT P.pid
                    FROM Parts P
                    WHERE P.color<> 'blue'))
```

o/p = S_1, S_2, S_3 — Sids of the supplier who did not supply any blue color part.

o/p = S_1

o/p = P_1, P_3

Question Continues in Next Slide

#Q. Assume that relations corresponding to the above schema are not empty. Which one of the following is the correct interpretation of the above query?

A. Find the names of all suppliers who have supplied a non-blue part. → S_1, S_2

B. Find the names of all suppliers who have not supplied a non-blue part. → S_3

i.e., Suppliers who did not supply any part or Supplied only blue Color Part

C. Find the names of all suppliers who have supplied only blue parts. → o/p = { } → ϕ

D. Find the names of all suppliers who have not supplied only blue parts.

↳ Sids of the suppliers who have supplied some other color parts along with some blue color parts

=> o/p = S_1

all options are wrong

2 mins Summary

Topic Practice questions

Slide

THANK - YOU