22

Q3 attached

National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Database Systems	Course Code:	CS2005
Degree Program:	BS(Computer Science)	Semester:	Spring 2022
Exam Duration:	60 Minutes	Total Marks:	30
Paper Date:	Thu 24-Mar-2022	Weight	15%
Section:	ALL	Page(s):	4
Exam Type:	Midterm-1	Total Questions:	3

Name: [redacted] Roll No: [redacted] Section: BS SE 4A

Instruction/Notes: Scratch sheet can be used for rough work however, all the questions and steps are to be shown on question paper. *No extra/rough sheets should be submitted with question paper.* You will not get any credit if you do not show proper working, reasoning and steps as asked in question statements.

Q1. *(5 points)* Write SQL statement to create the Student_Representative table given in Question#2. Also specify primary key constraint on Year & AdvisorID columns, foreign key constraint on SID column, foreign key constraint on AdvisorID column, and CHECK constraint on Year column that ensures that Year between 2015 to 2025.

```
create table Student_Representative
(
    SID int,
    Year int,
    AdvisorID int,
    primary key (~~SID~~ Year, AdvisorID)
)

Alter table Student_Representative add
constraint Foreign key (SID) references
Student (SID)

Alter table Student_Representative add
constraint FK_AID Foreign key (AdvisorID)
references Faculty (FacultyID)

Alter table Student_Representative ~~alter~~
~~column Year~~ add constraint CHCK_YR
check (Year > 2015
AND
Year < 2025)
```

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Roll No: [redacted]

Q2. *(10 points)* Consider the following relational database that keeps track of the student representatives of different departmets. Each student representative is selected for a period of one year and works under the supervision of a faculty member, Advisors. The attribute AdvisorID is a foreign key (from Faculty relation).

Student

SID	SName	SDept
1	Hamid	CS
2	Sara	CS
3	Nirma	EE
4	Saba	CV
5	Hamza	EE
6	Ali	MG
7	Kamal	CS
8	James	MG

Student_Representative

SID	Year	AdvisorID
1	2020	1
5	2020	6
1	2021	2
3	2021	2
8	2021	2
7	2018	4
5	2019	5

Faculty

FacultyID	FName	FDept
1	Shoaib	CS
6	Ahmad	EE
3	Sobia	MG
2	Azhar	EE
5	Sadia	CS
4	Romania	MG

Print the result of the following SQL queries for the database state given above.

a.

```
SELECT Year, SDept AS Department, SName AS StudentRep
FROM student S JOIN student_Representative SR ON S.SID=SR.SID JOIN faculty F ON F.facultyID=SR.advisorID AND SDept=FDept
ORDER BY Year DESC, SDept;
```

b.

```
SELECT S.SID, SName, FacultyID, FName
FROM student S FULL OUTER JOIN student_Representative SR ON S.SID=SR.SID FULL OUTER JOIN faculty F ON F.facultyID=SR.advisorID
WHERE SR.SID IS NULL;
```

Part a

Year	Department	StudentRep
2021	EE	Nirma
2021	MG	James
2020	CS	Hamid ✗
2020	EE	Hamza
2018	CS	Kamal ✗

Part b

2	Sara	NULL	NULL
4	Saba	NULL	NULL
6	Ali	NULL	NULL
3	Sobia	null	null

Roll No: [redacted] BSSE 4A

Q3. *(15 points)* Consider the above database, write the SQL statement for the following:

a. Print the name of all the students who were never selected as student representatives.
b. List the name of the faculty member who advised more than one student representative in a year.
c. Find the names of the students who were student representatives for the years 2022 and 2021.

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(a)
```
Select distinct SName
From Student
where SID IN (
        Select SID From Student
        except
        Select SID From
        Student_Representative
)
```

(b)
```
Select FName
From Faculty
where FacultyID IN (
        Select AdvisorID, count(SID)
        From Student_Representative
        group by AdvisorID
        having count(*) > 1
)
```
year — SID

(c)
```
Select SName From Students
inner join Student_Representative
on Student_Representative.SID = Students.SID
where year = 2022 AND year = 2021
```


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