Assignment -4

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Course -B.Tech honours (CSE)

Subject-Database Technology

University Roll Number-2315800020

Section-EA

Q1. Count the total number of Students.

```
1  select count(sid) from student;
```

COUNT(SID)
12

Q2. Calculate the average GPA of all Student.

```
2
3  select sum(GPA)/count(GPA) as "Average GPA" from Student;
```

Average GPA
3.566666666666666666666666666666666666667

Q3. Determine the minimum and maximum GPA. Rename the titles as ‘max_GPA’ and ‘min_GPA’ respectively.

```
5
6  select min(GPA) as "min_GPA",max(GPA) as "max_GPA" from Student;
7
8
9
10
```

min_GPA	max_GPA
2.9	3.9

Q4. Count the number of students having GPA greater than or equal to 3.7.

```
7
8
9  select count(GPA) from Student where GPA>=3.7;
10
11
12
```

COUNT(GPA)
6

Q5. Find Maximum, Average, Minimum, total GPA of all student.

```
11
12 select max(GPA),min(GPA),sum(GPA)/count(GPA),sum(GPA) from Student;
13
14
15
16
```

MAX(GPA)	MIN(GPA)	SUM(GPA)/COUNT(GPA)	SUM(GPA)
3.9	2.9	3.566666666666666666666666666666666666667	42.8

Q6. Find total number of colleges in our Application Database.

```
13
14 select count(Distinct cName) from Apply;
15
16
17
18
19
```

COUNT(DISTINCTCNAME)
4

Q7. Find how many different majors student had applied in.

```
15
16
17 select count(Distinct major) from Apply;
18
19
20
21
```

COUNT(DISTINCTMAJOR)
7

Q8. Find total no. of Applications in our Application System’s Database.

```sql
select count(*) from Apply;
```

COUNT(*)
19

Q9. Find average of all distinct GPA.

```sql
select sum(distinct GPA)/count(distinct GPA) from Student;
```

SUM(DISTINCTGPA)/COUNT(DISTINCTGPA)
3.542857142857142857142857142857142857 14

Q10. Display the total number of application accepted.

```sql
select count(decision) from Apply where decision='Y';
```

COUNT(DECISION)
11

Q11. Find number of students having GPA>3.4 and coming from high school having size>1000.

```
29
30
31  select count(sid) from Student where GPA>3.4 and sizeHS>1000;
32
33
34
35
```

COUNT(SID)
1

Q12. Find how many student applied to ‘marine biology’.

```
1  SELECT COUNT(DISTINCT sID) FROM Apply WHERE major = 'marine biology';
2
```

COUNT(DISTINCTSID)
1

Q13. Find how many applications were rejected and accepted by the colleges.

```
41
42  SELECT decision, COUNT(*) AS count FROM Apply GROUP BY decision;
43
```

DECISION	COUNT
Y	11
N	8

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2 rows selected.

Q14. Find how many students applied to a particular major. (show count(sid) as No_of_applications).

```
16
17  select major,count(sid) from Apply group by major;
18
19
20
21
```

MAJOR	COUNT(SID)
marine biology	1
psychology	1
EE	3
biology	2
history	3
bioengineering	2
CS	7

Q15. Find number of applications received by particular college.

```
19
20  select cName , count(sid) from Apply group by cName;
21
22
23
24
```

CNAME	COUNT(SID)
Berkeley	3
Cornell	6
Stanford	6
MIT	4

Q16. Find number of applications received in a particular major at a particular college.

```
44
45  SELECT cName, major, COUNT(*) AS applications_received FROM Apply GROUP BY cName, major;
46
```

CNAME	MAJOR	APPLICATIONS_RECEIVED
Berkeley	CS	2
Berkeley	biology	1
Stanford	history	2
Cornell	CS	1
Cornell	history	1
Cornell	bioengineering	1
Cornell	psychology	1
MIT	biology	1
MIT	bioengineering	1
Stanford	CS	3

Q17. Give the college name and major, where number of applications received are greater than or equal to 2.

```
46
47  SELECT cName, major FROM Apply GROUP BY cName, major HAVING COUNT(*) >= 2;
48
```

CNAME	MAJOR
Berkeley	CS
Stanford	history
Stanford	CS
Cornell	EE

Q18. Give the name and no of applications of all those colleges which receives applications from 3 or more students.

```
49
50  SELECT cName, COUNT(DISTINCT sID) AS applications_from_students FROM Apply GROUP BY cName HAVING COUNT(DISTINCT sID) >= 3;
51
```

CNAME	APPLICATIONS_FROM_STUDENTS
Berkeley	3
Cornell	3
Stanford	5
MIT	3

Q19. Give state and number of colleges of a state that has more than 1 college.

```
51
52 SELECT state, COUNT(*) AS number_of_colleges FROM College GROUP BY state HAVING COUNT(*) > 1;
53
```

STATE	NUMBER_OF_COLLEGES
MA	2
CA	2

Q20. Find the name of students that are duplicate.

```
53
54 SELECT sName FROM Student GROUP BY sName HAVING COUNT(*) > 1;
55
```

SNAME
Amy
Craig

Q21. Find how many applications are filed by each student. [Hint: use left join as we need information about all 12 students here. If they applied nowhere than show zero in front of them].

```
SELECT Student.sName, COUNT(Apply.sID) AS applications FROM Student LEFT JOIN Apply ON Student.sID = Apply.sID GROUP BY
Student.sName;
```

SNAME	APPLICATIONS
Amy	4
Bob	1
Helen	2
Gary	0
Craig	5
Fay	1
Jay	3
Doris	0
Irene	3
Edward	0

Q22. Provide name of students that file 3 or more applications.

```
SELECT Student.sName FROM Student JOIN Apply ON Student.sID = Apply.sID GROUP BY Student.sName HAVING COUNT(Apply.sID) >= 3;
```

SNAME
Amy
Craig
Jay
Irene

Q23. Provide name of student who have not applied to any college.

```
60
61 SELECT sName FROM Student  LEFT JOIN Apply ON Student.sID = Apply.sID WHERE Apply.sID IS NULL;
62
```

SNAME
Edward
Amy
Doris
Gary

Q24. Find maximum GPA, Average GPA, and minimum GPA among applicants of each college. (i.e. say sID 123, 324 and 987 had applied to Berkley then compute and display max GPA among these three).

```
63 SELECT Apply.cName, MAX(Student.GPA) AS max_GPA, AVG(Student.GPA) AS avg_GPA, MIN(Student.GPA) AS min_GPA FROM Apply
64 JOIN Student ON Apply.sID = Student.sID GROUP BY Apply.cName;
65
```

CNAME	MAX_GPA	AVG_GPA	MIN_GPA
Berkeley	3.9	3.733333333333333333333333333333333333333	3.6
Cornell	3.9	3.366666666666666666666666666666666666667	2.9
Stanford	3.9	3.683333333333333333333333333333333333333	2.9
MIT	3.9	3.675	3.4

Q25. Find how many student have same GPA among all students. (provide this frequency in two column table as GPA 3.9 is 4 times, GPA 2.9 is 2 times).

```
65
66 SELECT GPA, COUNT(*) AS frequency FROM Student GROUP BY GPA;
67
```

GPA	FREQUENCY
3.9	4
3.7	1
2.9	2
3.6	1
3.8	1
3.5	1
3.4	2

Q26. Find how many application of each major are rejected and accepted.

```
68 SELECT major, SUM(CASE WHEN decision = 'Y' THEN 1 ELSE 0 END) AS accepted, SUM(CASE WHEN decision = 'N' THEN 1 ELSE 0 END)
69 AS rejected  FROM Apply  GROUP BY major;
70
```

MAJOR	ACCEPTED	REJECTED
marine biology	0	1
psychology	1	0
EE	1	2
biology	1	1
history	2	1
bioengineering	1	1
CS	5	2

Q27. Find out the acceptance rate for each college. (Acceptance Rate is percentage of number application accepted w. r. t. number of application received).

```
70
71 SELECT cName, ROUND((SUM(CASE WHEN decision = 'Y' THEN 1 ELSE 0 END) / COUNT(*)) * 100, 2) AS acceptance_rate
72 FROM Apply GROUP BY cName;
73
```

CNAME	ACCEPTANCE_RATE
Berkeley	66.67
Cornell	50
Stanford	66.67
MIT	50