

NAME - SAYAN PAUL

ROLL - 21CS8056

REG - 21U10209

ASSIGNMENT - 2

1. List all unique academic programs offered.

```
[mysql> select distinct pname from programme;
+-----+
| pname |
+-----+
| B.Tech-Cse |
| B.Tech-ECE |
| B.Tech-EE  |
| B.Tech-ME  |
| M.Tech-Cse |
| M.Tech-ECE |
+-----+
6 rows in set (0.00 sec)
```

2. Retrieve the courses offered by a specific department.

```
[mysql> select coursenum,title,credit from course where dcode=1;
+-----+-----+-----+
| coursenum | title | credit |
+-----+-----+-----+
| 1         | DSA   | 4       |
| 2         | DLD   | 4       |
| 3         | OS    | 4       |
| 4         | DAA   | 4       |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

3. Get the names of all teachers in a specific department.

```
[mysql> select tname
-> from teacher
-> where dcode = 2;

+-----+
| tname          |
+-----+
| Tanmoy De      |
| Sankar Mahato  |
| Aritro De      |
+-----+
```

4. Find the semester of a specific student using their roll number.

```
mysql> select semester
-> from student
-> where rollno = '21CS8077';

+-----+
| semester |
+-----+
|         6 |
+-----+

[1 row in set (0.04 sec)
```

5. List all courses a student has registered for in a particular semester.

```
[mysql> select coursenum,title,credit  
[      -> from course  
[      -> where coursenum in(  
[      -> select coursenum  
[      -> from student_course  
[      -> where rollno = '21CS8077' and semester = 4  
[      -> );
```

coursenum	title	credit
3	OS	4
4	DAA	4

2 rows in set (0.01 sec)

6. Retrieve the duration of a specific academic program.

```
[mysql> select duration  
[      -> from programme  
[      -> where pcode = 4;
```

duration
4

1 row in set (0.00 sec)

7. Get the total credits earned by a student in all semesters, till now.

```
[mysql> select s.rollno,s.sname,sum(c.credit) as total_credits
-> from student as s
-> left join student_course sc on s.rollno = sc.rollno
-> LEFT JOIN course c ON sc.coursenum = c.coursenum
-> where s.rollno = '21CS8077'
-> group by s.rollno;
```

rollno	sname	total_credits
21CS8077	Vedang	16

1 row in set (0.00 sec)

8. Retrieve the teachers who are also Heads of Department (HoD).

```
[mysql> select teacher.*
-> from teacher
-> join department d on teacher.empcode = d.hod;
```

empcode	tname	dcode	designation
5	Subhrata Nandi	1	Professor
7	Sankar Mahato	2	Professor
12	Durbal Mandal	3	Associate-Professor
9	Asit Baran Puri	4	Professor
13	Dipesh Das	5	Professor

5 rows in set (0.00 sec)

9. Count the number of courses offered by each department.

```
[mysql> select d.dcode,d.dname,count(c.coursenum) total_courses
-> from department d
-> left join course c on c.dcode = d.dcode
-> group by d.dcode;
```

dcode	dname	total_courses
1	Computer Science Department	4
2	Electrical Department	1
3	Electronics Department	4
4	Mechanical Department	0
5	Civil Department	0

5 rows in set (0.01 sec)

10. Find the names of students who obtained an 'A' grade in a specific course.
(Note: In the database we consider grade 10 as 'A')

```
[mysql> select student.sname
-> from student
-> join student_course sc on sc.rollno = student.rollno
-> where sc.coursenum = 1 and sc.grade = 10;
```

sname
Devanjana

1 row in set (0.01 sec)

11. Display list the courses with their corresponding teachers.

```
[mysql> select c.coursenum,c.title,c.credit,t.tname
-> from course as c
-> left join course_teacher ct on ct.coursenum = c.coursenum
-> left join teacher t on t.empcode = ct.empcode;
```

coursenum	title	credit	tname
1	DSA	4	Mousami Saha
2	DLD	4	Bibhash Sen
3	OS	4	Subhrata Nandi
4	DAA	4	Suvrojit Das
5	Power Systems	3	Sankar Mahato
6	control systems	4	Durbal Mandal
7	VLSI	3	Durbal Mandal
8	Basic Electronics	4	Rajat Mahapatra
9	Antenna	3	NULL
10	Thermodynamics	3	Animesh Patari
11	Fluid Mechanics	4	Nirmal Baran Hui
12	Machine Design	4	Asit Baran Puri
13	Heat Transfer	3	NULL
14	Control Engineering	4	NULL
15	Network Analysis	3	Aritro De

15 rows in set (0.00 sec)

12. Get details of students enrolled in a specific course.

```
mysql> SELECT student.*  
-> FROM student  
-> JOIN student_course ON student.rollno = student_course.rollno  
[ -> WHERE student_course.coursenum = 2;
```

rollno	sname	address	semester	pcode
21CS8017	Navneet	Jaipur,Rajasthan	6	1
21CS8046	Devanjana	Mumbai	6	1
21CS8056	Oishik	Kolkata	6	1
21CS8077	Vedang	Kashipur	6	1

4 rows in set (0.00 sec)

13. Find the Head of Department (HoD) for a specific department.

```
[mysql> select t.*  
[ -> from teacher t  
[ -> join department d on t.empcode = d.hod  
[ -> where d.dcode = 2;
```

empcode	tname	dcode	designation
7	Sankar Mahato	2	Professor

1 row in set (0.00 sec)

14. List all departments with their corresponding HoD names.

```
[mysql> select d.dname as department_name,t.tname as hod_name  
[ -> from department d  
[ -> join teacher t on d.hod = t.empcode;
```

department_name	hod_name
Computer Science Department	Subhrata Nandi
Electrical Department	Sankar Mahato
Electronics Department	Durbal Mandal
Mechanical Department	Asit Baran Puri
Civil Department	Dipesh Das

5 rows in set (0.00 sec)

15. Get the student with the highest grade in a particular course.

```
mysql> SELECT s.*
      -> FROM student s
      -> JOIN student_course sc ON s.rollno = sc.rollno
      -> WHERE sc.coursenum = 1
      -> ORDER BY sc.grade DESC
      -> LIMIT 1;
```

rollno	sname	address	semester	pcode
21CS8046	Devanjana	Mumbai	6	1

1 row in set (0.00 sec)

16. Show all academic programs offered by a specific department.

```
[mysql> select *
      -> from programme
      -> where dcode = 3;
```

pname	pcode	duration	dcode
B.Tech-ECE	3	4	3
M.Tech-ECE	6	2	3

2 rows in set (0.00 sec)

17. Get the total number of students enrolled in a specific department.

```
[mysql> select count(*) as total_students
      -> from student s
      -> join programme p on s.pcode = p.pcode
      -> where p.dcode = 1;
```

total_students
6

1 row in set (0.00 sec)

18. Find the course with the highest average grade in a semester.

```
[mysql> select sc.coursenum,c.title as title,avg(sc.grade) as avg_grade
[      -> from student_course as sc
[      -> join course c on sc.coursenum = c.coursenum
[      -> where semester = 5
[      -> group by coursenum
[      -> order by avg_grade desc
[      -> limit 1;

+-----+-----+-----+
| coursenum | title | avg_grade |
+-----+-----+-----+
|          3 | OS   |    9.5000 |
+-----+-----+-----+

1 row in set (0.00 sec)
```