MA611 – 2nd Semester MCA, 2024-2025
DATABASE MANAGEMENT SYSTEMS
LAB
Assignment-1

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1. List all classrooms with a capacity greater than 50

```
SQL> select  building , room_number from classroom where capacity > 50;

BUILDING        ROOM_NU
--------------- -------
Engineering Bdg 201
Engineering Bdg 202
```

2. Find the names of instructors in the "Computer Science" department.

```
SQL> select name from instructor where dept_name = 'Computer Science';

NAME
--------------------
Olivia Taylor
John Doe
```

3. Retrieve the titles of all courses offered in the "Spring" semester of 2023.

```
SQL> select course.title from course join section on course.course_id = section.
course_id where section.semester = 'Spring';

TITLE
--------------------------------------------------
Calculus I
Classical Mechanics
Data Structures
World History
Principles of Management
```

4. List all students have taken more than 100 total credits.

```
SQL> select name from student where tot_cred > 100;

NAME
--------------------
Alice
Grace
Henry
```

5. Find the names of all departments with a budget greater than ₹1,000,000.

```
SQL> select dept_name from department where budget > 100000;

DEPT_NAME
--------------------
Computer Science
Physics
Business
```

6. List all departments and their respective buildings.

```
SQL> select dept_name , building from department;

DEPT_NAME            BUILDING
-------------------- --------------
Computer Science     Science Hall
Mathematics          Engineering Bdg
Physics              Science Hall
Chemistry            Research Center
Biology              Life Sciences
English              Arts Center
History              Humanities Wing
Business             Business Wing
Economics            Business Wing
Psychology           Social Sciences

10 rows selected.
```

7. Find the names of all students enrolled in the "Physics" department.

```
SQL> select name from student where dept_name = 'Physics';

NAME
--------------------
Charlie
Jack
```

8. Retrieve the titles of all courses with 3 credits.

```
TITLE
--------------------------------------------------
Introduction to Computer Science
Calculus I
Linear Algebra
General Biology
English Literature
World History
Principles of Management

7 rows selected.
```

9. List all instructors who do not belong to any department.

```
SQL> select name from instructor where dept_name is null;

NAME
--------------------
Duck Quack
```

10. Find the total number of classrooms in each building.

```
SQL> select building , count(room_number) as total_classrooms from classroom group by building;

BUILDING        TOTAL_CLASSROOMS
--------------- ----------------
Arts Center                    2
Business Wing                  2
Engineering Bdg                2
Library                        2
Science Hall                   2
```

11. List all courses taught by the instructor with ID "I001".

```
SQL> select course.title from course join teaches on teaches.course_id = course.course_id join  in
structor on teaches.id = instructor.id where teaches.id = 'I001';

TITLE
-----------------------------------------------
Introduction to Computer Science
```

12. Find the total number of students enrolled in each department.

```
SQL> select dept_name , count(name) from student group by dept_name;

DEPT_NAME            COUNT(NAME)
-------------------- -----------
Mathematics                    2
Physics                        2
Business                       1
Computer Science               2
English                        1
History                        1
Psychology                     1

7 rows selected.
```

13. Retrieve the names of students who have taken the course "CS-101" and received an "A" grade.

```
SQL> select student.name from student join takes on student.id = takes.id where course_id = 'CS101
' and grade = 'A';

NAME
------------------
Alice
```

14. List all instructors who earn a salary greater than ₹50,000.

```
SQL> select name from instructor where salary > 50000;

NAME
--------------------
Duck Quack
Jane Smith
David Lee
Michael Brown
Daniel Wilson
Olivia Taylor
James Anderson

7 rows selected.
```

15. Find the average salary of instructors in each department.

```
SQL> select dept_name , avg(salary) from instructor where dept_name is NOT NULL group by dept_name
;

DEPT_NAME            AVG(SALARY)
-------------------- -----------
Mathematics                59000
Physics                    52000
Business                   70000
Computer Science           57500
English                    45000
History                    48000
Psychology                 52000

7 rows selected.
```

16. Retrieve the names of students who have not been assigned an advisor.

```
SQL> select student.name from student left join advisor on advisor.s_id = student.id where advisor
.i_id is null;

NAME
--------------------
Eve
Henry
```

17. List all courses that have "CS-101" as a prerequisite.

```
SQL> select title from course join prereq on prereq.course_id = course.course_id where prereq.prer
eq_id = 'CS101';

TITLE
--------------------------------------------------
Data Structures
```

18. Find the total number of sections taught in each building.

```
SQL> select building , count(sec_id) from section group by building;

BUILDING        COUNT(SEC_ID)
--------------- -------------
Science Hall                2
Engineering Bdg             2
Arts Center                 2
Business Wing               2
Library                     2
```

19. Retrieve the names of students who have taken at least one course in the "Fall" semester of 2023.

```
SQL> select student.name from student join takes on student.id = takes.id where year = 2023 and se
mester = 'Fall';

NAME
--------------------
Alice
Charlie
Eve
Grace
Ivy
```

20. List all classrooms that have not been assigned to any section.

```
SQL> select room_number from classroom minus select room_number from section;

ROOM_NU
-------
M991
M992
```

21. List all courses offered by the "Mathematics" department.

```
SQL> select course_id , title from course where dept_name = 'Mathematics';

COURSE_I TITLE
-------- --------------------------------------------------
MATH201  Calculus I
MATH202  Linear Algebra
```

22. Find the names of students who have taken courses in both "Fall" and "Spring" semesters.

```
SQL> select name from student s join (select id from takes t1 where semester = 'S
pring' intersect select id from takes t2 where semester = 'Fall') t on s.id = t.i
d ;

NAME
--------------------
Manber
Zelty
Duan
Colin
Mediratta
Rzecz
Hilberg
Ugarte
Grosch
Kieras
Reed
```

23. Retrieve the names of instructors who have taught more than 5 sections.

```
SQL> select * from (select i.name, count(t.id) nos from instructor i join teaches t on
t.id = i.id group by i.name) tb where tb.nos > 5;

NAME                        NOS
-------------------- ----------
Ullman                       6
DAgostino                   13
Mahmoud                      6
Voronina                     6
Mingoz                      10
Dale                         9

6 rows selected.
```

24. List all courses that have no prerequisites.

```
SQL> select course.title from course left join prereq on course.course_id = prereq.course_id where
 prereq.course_id is NULL;

TITLE
--------------------------------------------
Organic Chemistry
World History
Linear Algebra
```

25. Find the average number of credits taken by students in each department.

```
SQL> select dept_name , avg(tot_cred) from student group by dept_name;

DEPT_NAME            AVG(TOT_CRED)
-------------------- -------------
Mathematics                   42.5
Physics                         15
Business                        15
Computer Science             105.5
English                         60
History                         35
Psychology                     115

7 rows selected.
```