MA611 – 2nd Semester MCA, 2024-2025
DATABASE SYSTEMS LAB
<u>Assignment-4</u>

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1. List all students who have taken exactly 60 total credits.

```
ID     NAME                 DEPT_NAME            TOT_CRED
-----  -------------------  -------------------  ----------
6712   Westphal             Math                         60
42956  Ram                  Physics                      60
58919  Schroeder            Languages                    60
50038  Urano                Languages                    60
57787  Alexandri            Marketing                    60
71389  Vegt                 Mech. Eng.                   60
62373  Cheed                Accounting                   60
2133   Nardi                Accounting                   60
71628  Amann                Psychology                   60

20 rows selected.
```

2. Find the names of all courses offered by the "Electrical Engineering" department.

```
SQL> select title from course where dept_name = 'Elec. Eng.';

TITLE
--------------------------------------------------
Compiler Design
Quantum Mechanics
Marine Mammals
The Music of Dave Edmunds
Logic
Compiler Design
Plasma Physics
The Music of Donovan

8 rows selected.
```

3. Retrieve the names of all instructors who earn less than ₹40,000.

```
SQL> select name from instructor where salary < 40000;

NAME
-------------------
Konstantinides
Lembr
Vicentino
Kean
```

4. List all classrooms located in the "Main" building.

```
SQL> select * from classroom where building = 'Main';

BUILDING        ROOM_NU   CAPACITY
--------------- -------   ----------
Main            425             22
Main            45              30
```

5. Find the total number of courses offered in the "Fall" semester.

```
SQL> select count(semester) from section where semester = 'Fall';

COUNT(SEMESTER)
---------------
            51
```

6. List all students who have taken exactly 90 total credits.

```
SQL> select name from student where tot_cred = 90;

NAME
--------------------
Chanon
Hazemi
Dowey
Deshpande
Ohyama
Kyriakopoulos
Pircher
Pavlovico
Douss
Elias
Zander
```

7. Find the names of all courses offered by the "Mechanical Engineering" department.

```
SQL> select * from course where dept_name = 'Mech. Eng.';

COURSE_I TITLE                                    DEPT_NAME               CREDITS
-------- --------------------------------------   --------------------    --------
787        C  Programming                         Mech. Eng.                    4
238        The Music of Donovan                   Mech. Eng.                    3
608        Electron Microscopy                    Mech. Eng.                    3
272        Geology                                Mech. Eng.                    3
887        Latin                                  Mech. Eng.                    3
546        Creative Writing                       Mech. Eng.                    4
101        Diffusion and Phase Transformation     Mech. Eng.                    3
123        Differential Equations                 Mech. Eng.                    3
411        Music of the 80s                       Mech. Eng.                    4
841        Fractal Geometry                       Mech. Eng.                    4
958        Fiction Writing                        Mech. Eng.                    3
```

8. Retrieve the names of all instructors who earn exactly ₹75,000.

```
SQL> select name from instructor where salary >= 75000;

NAME
--------------------
McKinnon
Mird
Luo
Levine
Shuming
Sullivan
Voronina
Arias
Mingoz
Yazdi
Valtchev
```

9. List all classrooms located in the "Lamberton" building.

```
SQL> select * from classroom where building = 'Lamberton';

BUILDING         ROOM_NU   CAPACITY
---------------  -------   ----------
Lamberton        134             10
Lamberton        143             10
```

10. Find the total number of courses offered in the "Spring" semester.

```
SQL> select count(*) from section where semester = 'Spring';

  COUNT(*)
----------
        49
```

11. List all students who have taken courses with a grade of "B" in the "Spring" semester of 2023.

```
SQL> select name from student join takes on takes.id = student.id where takes.grade like 'B%' a
nd takes.semester = 'Spring' and takes.year = 2003;

NAME
------------------
Makarychev
Makarychev
Ariav
Snif
Snif
Kaminsky
Thimm
Lacruz
Baba
Vieira
Vieira
```

12. Retrieve the names of instructors who have taught in the "Fall" semester of 2002.

```
SQL> select name from instructor join teaches on teaches.id = instructor.id where teaches.semes
ter = 'Fall' and teaches.year = 2002;

NAME
------------------
Queiroz
Sullivan
Choll
Ullman
Liley
Gustafsson
Bondi
Romero
Dale
```

13. Find the average number of credits offered by each department.

```
SQL> select dept_name, avg(credits) from course group by dept_name;

DEPT_NAME              AVG(CREDITS)
-------------------- ------------
Elec. Eng.                    3.5
Physics                       3.8
Accounting             3.33333333
Astronomy                     3.7
Cybernetics                  3.35
Athletics              3.33333333
Mech. Eng.             3.33333333
Comp. Sci.                    3.7
Pol. Sci.              3.83333333
English                       3.5
Languages                     3.7
```

14. List all courses that have exactly 3 credit.

```
SQL> select * from course where credits = 3;

COURSE_I TITLE                                  DEPT_NAME                CREDITS
-------- -------------------------------------- -------------------- ---------
238      The Music of Donovan                   Mech. Eng.                   3
608      Electron Microscopy                    Mech. Eng.                   3
539      International Finance                  Comp. Sci.                   3
391      Virology                               Biology                      3
814      Compiler Design                        Elec. Eng.                   3
272      Geology                                Mech. Eng.                   3
612      Mobile Computing                       Physics                      3
237      Surfing                                Cybernetics                  3
313      International Trade                    Marketing                    3
887      Latin                                  Mech. Eng.                   3
328      Composition and Literature            Cybernetics                  3
```

15. Retrieve the names of students who have taken courses in the "Painter" building.

```
SQL> select name from student join department on student.dept_name = department.dept_name where
 department.building = 'Palmer';

NAME
--------------------
Ariav
Larsson
Loher
Godfrey
Kerz
Rowe
Breed
Whitley
Bayn
Soni
Nishida
```

16. Find the total number of students enrolled in each course.

```
SQL> select title, count(*) from course join takes on course.course_id = takes.course_id group
by course.title;

TITLE                                            COUNT(*)
---------------------------------------------    ----------
Martian History                                       312
Calculus                                              313
The Music of Donovan                                  282
Manufacturing                                         304
Numerical Methods                                     264
Tort Law                                              908
Colloid and Surface Chemistry                         294
Marine Mammals                                        898
Bankruptcy                                            591
Accounting                                            304
Systems Software                                      550
```

17. List all sections that are held in rooms with a capacity of more than 100.

```
SQL> select distinct sec_id from section join classroom on classroom.room_number = section.room
_number where classroom.capacity > 100;

SEC_ID
--------
1
2
```

18. Retrieve the names of students who have taken courses with the highest number of
credits in their department.

```
SQL> select distinct name  from student s join takes t on s.id = t.id join course c1 on t.course_id =
 c1.course_id where credits = (select max(credits) from course c2 where c1.dept_name = c2.dept_name g
roup by c2.dept_name);

NAME
--------------------
Manber
Chaney
Yihn
Lewis
Finney
Abu-B
Shuming
Hawkins
Tillmann
Klimasauskas
Abraham
```

19. Find the departments with the highest total budget.

```
SQL> select dept_name from department where budget = (select max(budget) from department);

DEPT_NAME
------------------
Physics
```

20. List all courses that have been taught by more than 2 instructors.

```
SQL> select course_id from teaches group by course_id having count(distinct id) >= 2;

COURSE_I
--------
867
158
200
960
468
```

21. List all students who have taken courses with a grade of "C" in the "Spring" semester of 2003.

```
SQL> select distinct name from student join takes on takes.id = student.id  where grade like 'C%' and
 semester = 'Spring' and year = 2003;

NAME
------------------
Shevade
Finney
Lum
Mozayani
Sud
Nicol
Reuter
Duong
Liang
Ray
Farahvash
```

22. Retrieve the names of instructors who have taught in the "Fall" semester of 2002.

```
SQL> select name from instructor join  teaches on instructor.id = teaches.id where semester = 'Fall'
and year = 2002;

NAME
------------------
Queiroz
Sullivan
Choll
Ullman
Liley
Gustafsson
Bondi
Romero
Dale

9 rows selected.
```

23. Find the average number of sections taught per course.

```
SQL> select avg(count_sec) from (select count(sec_id) as count_sec from section join course on sectio
n.course_id = course.course_id group by title);

AVG(COUNT_SEC)
--------------
    1.36986301
```

24. List all courses that have exactly 3 credits.

```
SQL> select * from course where credits = 3;

COURSE_I TITLE                                        DEPT_NAME                CREDITS
-------- -------------------------------------------- -------------------- ----------
238      The Music of Donovan                         Mech. Eng.                     3
608      Electron Microscopy                          Mech. Eng.                     3
539      International Finance                         Comp. Sci.                     3
391      Virology                                     Biology                        3
814      Compiler Design                              Elec. Eng.                     3
272      Geology                                      Mech. Eng.                     3
612      Mobile Computing                             Physics                        3
237      Surfing                                      Cybernetics                    3
313      International Trade                           Marketing                      3
887      Latin                                        Mech. Eng.                     3
328      Composition and Literature                   Cybernetics                    3
```

25. Retrieve the names of students who have taken courses in the "Taylor" building.

```
SQL> select distinct s.id,  s.name from student s join takes t on s.id = t.id joi
n section sc on t.course_id = sc.course_id where sc.building = 'Taylor';

ID    NAME
----- --------------------
7956  Brandsd
10033 Zelty
10076 Duan
10481 Grosch
35498 Lanfr
35588 John
35685 Usi
20180 Reyes
20974 Hawkins
68263 Roessler
68453 Kjellmer
```