Database Management System Lab

Assignment - 4

Name :- Harsh Singh

Roll No. :- 244CA018

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

```
SQL> select * from student where tot_cred = 60;

ID    NAME                 DEPT_NAME              TOT_CRED
----- -------------------- -------------------- ----------
76953 Lemoine              Athletics                    60
49618 Stone                Languages                    60
97355 Ratcliff             Languages                    60
97573 Yusop                Physics                      60
5617  Souza                Languages                    60
68554 Larsson              English                      60
5017  Reuter               Statistics                   60
73908 Cruz                 Biology                      60
21556 Negron               Marketing                    60
10033 Zelty                Mech. Eng.                   60
12173 Thimm                English                      60
```

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(distinct course_id) from section where semester='Fall';

COUNT(DISTINCTCOURSE_ID)
------------------------
                      46
```

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

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

ID    NAME                 DEPT_NAME             TOT_CRED
----- -------------------- -------------------- ----------
91569 Pavlovico            Marketing                   90
78552 Douss                History                     90
18007 Chanon               Biology                     90
17086 Hazemi               Math                        90
53165 Dowey                History                     90
14023 Deshpande            History                     90
61414 Ohyama               Elec. Eng.                  90
39238 Kyriakopoulos        Pol. Sci.                   90
9933  Pircher              Geology                     90
48471 Elias                Languages                   90
13504 Zander               Astronomy                   90

ID    NAME                 DEPT_NAME             TOT_CRED
----- -------------------- -------------------- ----------
29849 Solar                Physics                     90
32065 Tapia                Math                        90
87015 Pottos               Accounting                  90
30021 Youseffi             History                     90

15 rows selected.
```

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

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

TITLE
--------------------------------------------------
C  Programming
The Music of Donovan
Electron Microscopy
Geology
Latin
Creative Writing
Diffusion and Phase Transformation
Differential Equations
Music of the 80s
Fractal Geometry
Fiction Writing

TITLE
--------------------------------------------------
Design and Analysis of Algorithms

12 rows selected.
```

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

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

no rows selected
```

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

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

BUILDING        ROOM_NU   CAPACITY
--------------- ------- ----------
Lambeau         348            100
```

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

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

COUNT(DISTINCTCOURSE_ID)
------------------------
                      45
```

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

```
SQL> select distinct student.id, student.name from student join takes on student.id=takes.id where takes.
grade like '%B%' and takes.semester='Spring' and takes.year=2002 and rownum <= 10;

ID    NAME
----- --------------------
21395 Leuen
58307 Tiamp
46442 Kagd
108   Dhav
79352 Rumat
96052 Marcol
93061 Alfaro
24865 Tran-
55859 Eguchi
49611 Karande

10 rows selected.
```

12. Retrieve the names of instructors who have taught in the "Summer" semester of 2022.

```
SQL> select name from instructor join teaches on instructor.id=teaches.id and semester='Fall' and year=20
02;

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

9 rows selected.
```

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

```
SQL> select dept_name, avg(credits) as 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 1 credit.

```
SQL> select * from course where credits = 1;

no rows selected
```

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

```
SQL> select distinct student.id, student.name from student join takes on student.id = takes.id join
section on takes.course_id = section.course_id where building = 'Taylor';

ID    NAME
----- --------------------
7956  Brandsd
10033 Zelty
10076 Duan
10481 Grosch
35498 Lanfr
35588 John
35685 Usi
90372 Rho
29390 Aufr
29399 Sutter
29514 Michael
```

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

```
SQL> select course_id, count(distinct id) as count from takes group by course_id, semester, year, se
c_id;

COURSE_I      COUNT
-------- ----------
242             295
468             315
959             303
169             300
376             297
663             282
421             271
496             298
867             314
334             268
352             291
```

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

```
SQL> select * from section join classroom on section.building = classroom.building and section.room_
number = classroom.room_number and classroom.capacity > 100;

COURSE_I SEC_ID   SEMEST       YEAR BUILDING        ROOM_NU TIME BUILDING        ROOM_NU   CAPACITY
-------- -------- ------ ---------- --------------- ------- ---- --------------- ------- ----------
802      1        Spring       2003 Saucon          113     J    Saucon          113            109
702      1        Spring       2001 Saucon          113     O    Saucon          113            109
334      1        Fall         2009 Taylor          812     O    Taylor          812            115
486      1        Fall         2009 Whitman         134     K    Whitman         134            120
349      1        Spring       2008 Saucon          113     K    Saucon          113            109
642      1        Fall         2004 Saucon          113     D    Saucon          113            109
629      1        Spring       2003 Stabler         105     F    Stabler         105            113
158      2        Spring       2008 Taylor          812     D    Taylor          812            115
704      1        Spring       2008 Taylor          812     E    Taylor          812            115
527      1        Fall         2004 Saucon          113     M    Saucon          113            109
408      1        Spring       2007 Taylor          812     C    Taylor          812            115

COURSE_I SEC_ID   SEMEST       YEAR BUILDING        ROOM_NU TIME BUILDING        ROOM_NU   CAPACITY
-------- -------- ------ ---------- --------------- ------- ---- --------------- ------- ----------
496      1        Fall         2001 Taylor          812     I    Taylor          812            115
603      1        Fall         2003 Taylor          812     P    Taylor          812            115
338      2        Spring       2006 Stabler         105     J    Stabler         105            113

14 rows selected.
```

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

```
SQL> select * from (select distinct student.id, name from student, takes where student.id = takes.id
 and course_id in (select course_id from course join (select dept_name, max(credits) max_credit from
 course group by dept_name) t on t.dept_name=course.dept_name where course.credits = max_credit)) wh
ere rownum <= 10;

ID    NAME
----- --------------------
35    Glaho
56    Kameda
107   Shabuno
108   Dhav
123   Wingb
163   Bandekar
259   Bertranp
282   Rougemont
288   Canellas
336   Constantinescu

10 rows selected.
```

19. Find the departments with the highest total budget.

```
SQL> select * from department where budget >= all (select budget from department);

DEPT_NAME            BUILDING            BUDGET
-------------------- --------------- ----------
Physics              Wrigley          942162.76
```

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;

no rows selected
```

21. List all students who have taken courses with a grade of "C" in the "Winter" semester of 2023.

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

ID    NAME
----- --------------------
92839 Cirsto
32954 Curutchet
76953 Lemoine
58889 Collet
19582 Canas
21789 Bates
29803 Beavis
62549 Komatsu
2286  Ceze
3651  Narayanan
36494 Baccou
```

22. Retrieve the names of instructors who have taught in the "Fall" semester of 2021.

```
SQL> select instructor.id, name, dept_name, salary from instructor join teaches on instructor.id = t
eaches.id where teaches.semester = 'Fall' and year = 2001;

ID    NAME                 DEPT_NAME               SALARY
----- -------------------- -------------------- ----------
19368 Wieland              Pol. Sci.             124651.41
99052 Dale                 Cybernetics            93348.83
```

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

```
SQL> select avg(cnt) from (select count(distinct sec_id) as cnt from section group by course_id);

  AVG(CNT)
----------
1.17647059
```

24. List all courses that have exactly 2 credits.

```
SQL> select * from course where credits = 2;

no rows selected
```

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

```
SQL> select distinct student.id, student.name from student join takes on student.id = takes.id join
section on takes.course_id = section.course_id and takes.sec_id = section.sec_id and takes.semester
= section.semester and takes.year = section.year and section.building = 'Taylor' and rownum <= 10;

ID    NAME
----- --------------------
21395 Leuen
90567 Tomason
35175 Quimby
1968  Sahm
39580 Macias
108   Dhav
21126 McCarter
79352 Rumat
19791 Vanrell
49611 Karande

10 rows selected.
```