ASSIGNMENT - 1
Name – Kanhaiya
Roll No.- 244CA022

1. List all classrooms with a capacity greater than 50.
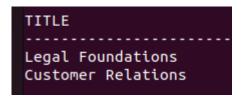
SQL> select * from classroom
  2 where capacity > 50;

```
BUILDING        ROOM_NU   CAPACITY
--------------  -------   ----------
A               101              55
C               301              60
C               302              55
```

2. Find the names of all instructors in the "Computer Science" department
SQL> select name from instructor
  2 where dept_name = 'CSE';

```
NAME
--------------------
Steven Smith
David Warner
```

3. Retrieve the titles of all courses offered in the "Spring" semester of 2023
SQL> select course.title from course
  2   JOIN section ON course.course_id = section.course_id and section.semester = 'Spring' and year = 2023;

```
TITLE
----------------------
Legal Foundations
Customer Relations
```
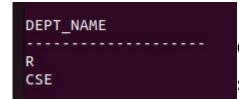
4. List all students who have taken more than 100 total credits
SQL> select * from student
  2 where tot_cred > 100;

```
ID     NAME                 DEPT_NAME             TOT_CRED
-----  -------------------  --------------------  ----------
S003   James Brown          IT                           105
S005   Michael Johnson      Sales                        110
S006   Sarah Wilson         Operations                   115
S008   Olivia Harris        R                            120
```

5. Find the names of all departments with a budget greater than ₹1,000,000
SQL> select dept_name from department

```
 2  where budget > 100000;
```

```
DEPT_NAME
--------------------
R
CSE
```

6. List all departments and their respective buildings.

SQL> select dept_name,building from department;

```
DEPT_NAME                BUILDING
--------------------     ----------------
HR                       Building A
Finance                  Building B
IT                       Building C
Marketing                Building D
Sales                    Building E
Operations               Building F
Legal                    Building G
R                        Building H
Customer Service         Building I
Public Relations         Building J
CSE                      Building A
```

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

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

```
NAME
--------------------
Amilia Kerr
Annabel Sutherland
```

8. Retrieve the titles of all courses with 3 credits.
```
SQL> select title from course
 2  where credits = 3;
```

```
TITLE
------------------------------------
Intro to HR
Advanced IT
Marketing Strategies
Legal Foundations
Public Relations Strategies
```

9. List all instructors who do not belong to any department
```
SQL> select * from instructor
 2  where dept_name IS NULL or dept_name = '';
```

```
ID     NAME                     DEPT_NAME              SALARY
-----  --------------------     --------------------   ----------
I013   Jess Jonathan                                   30000
```

10. Find the total number of classrooms in each building

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

```
BUILDING          COUNT(ROOM_NUMBER)
--------------    ------------------
A                                  3
B                                  3
C                                  2
D                                  2
```

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

```
SQL> select title from course
  2  JOIN instructor ON course.dept_name = instructor.dept_name and instructor.id = 'I001';
```

```
TITLE
---------------------------------------
Intro to HR
```

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

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

```
 COUNT(ID) DEPT_NAME
---------- --------------------
         1 Legal
         1 R
         2 IT
         1 Public Relations
         2 HR
         1 Customer Service
         2 CSE
         1 Finance
         1 Sales
         1 Marketing
         2 Biology

 COUNT(ID) DEPT_NAME
---------- --------------------
         1 Operations
```

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

```
SQL> select student.name,student.dept_name from student
  2  JOIN takes ON student.id = takes.id and grade = 'A' and dept_name = 'CSE';
```

```
NAME                      DEPT_NAME
------------------        ---------------
Kevin Peterson            CSE
Glenn Maxwell             CSE
```

14. List all instructors who earn a salary greater than ₹50,000.
SQL> select * from instructor
  2 where salary > 50000;

```
ID     NAME                   DEPT_NAME              SALARY
-----  ------------------     -------------------    ----------
I002   Bob Johnson            Finance                 65000
I003   Carol Davis            IT                      75000
I005   Eva Brown              Sales                   55000
I006   Frank Taylor           Operations              80000
I008   Henry Harris           R                      120000
I012   David Warner           CSE                     60000
```

15. Find the average salary of instructors in each department

SQL> SELECT DEPT_NAME, AVG(SALARY) FROM INSTRUCTOR
  2 GROUP BY DEPT_NAME;

```
DEPT_NAME              AVG(SALARY)
------------------     -----------
                             30000
Legal                        40000
R                           120000
IT                           75000
Public Relations             38000
HR                           50000
Customer Service             35000
CSE                          55000
Finance                      65000
Sales                        55000
Marketing                    45000

DEPT_NAME              AVG(SALARY)
------------------     -----------
Operations                   80000
```

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

SQL> SELECT NAME FROM STUDENT
  2 LEFT JOIN ADVISOR ON STUDENT.ID = ADVISOR.s_ID
  3 WHERE ADVISOR.I_ID IS NULL

```
NAME
-------------------
Annabel Sutherland
Amilia Kerr
Kevin Peterson
Glenn Maxwell
Sarah Taylor
Sam Kontas
```

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

SELECT c.COURSE_ID, c.TITLE, c.DEPT_NAME, c.CREDITS

FROM COURSE c

WHERE c.COURSE_ID IN (

SELECT p.COURSE_ID

FROM PREREQ p

JOIN COURSE cse ON p.PREREQ_ID = cse.COURSE_ID

WHERE cse.DEPT_NAME = 'CSE');

```
COURSE_I TITLE                                              DEPT_NAME
-------- -------------------------------------------------- ----------------
   CREDITS
----------
C103     Advanced IT                                        IT
         3
```

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

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

```
COUNT(SEC_ID) BUILDING
------------- ---------------
            4 D
            4 A
            3 B
            2 C
```

19. Retrieve the names of students who have taken at least one course in the "Fall" semester of 2022

SQL> select student.name from student
  2 JOIN takes ON student.id= takes.id
  3 where takes.semester = 'Fall' and takes.year = 2022;

```
NAME
--------------------
Liam Clark
```

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

SELECT c.BUILDING, c.ROOM_NUMBER, c.CAPACITY
FROM classroom c
LEFT JOIN section s
  ON c.BUILDING = s.BUILDING AND c.ROOM_NUMBER = s.ROOM_NUMBER
  5 WHERE s.COURSE_ID IS NULL;

```
BUILDING          ROOM_NU   CAPACITY
--------------    -------   ----------
A                 104             40
```

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

```
SQL> select * from course
  2  where dept_name = 'Math' and rownum < 10;

COURSE_I TITLE                                          DEPT_NAME
-------- --------------------------------------------   --------------------
   CREDITS
----------
843      Environmental Law                              Math
         4

679      The Beatles                                    Math
         3

461      Physical Chemistry                             Math
         3


COURSE_I TITLE                                          DEPT_NAME
-------- --------------------------------------------   --------------------
   CREDITS
----------
235      International Trade                             Math
         3

858      Sailing                                        Math
         4

919      Computability Theory                           Math
         3


COURSE_I TITLE                                          DEPT_NAME
-------- --------------------------------------------   --------------------
   CREDITS
----------
659      Geology                                        Math
         4

258      Colloid and Surface Chemistry                  Math
         3

694      Optics                                         Math
         3


9 rows selected.
```

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

SELECT student.name
FROM student
JOIN takes ON student.ID = takes.ID
WHERE semester IN ('Spring', 'Fall') AND ROWNUM < 30
GROUP BY student.name
HAVING COUNT(DISTINCT semester) = 2;

```
NAME
-------------------
Manber
Zelty
```

23. Retrieve the names of instructors who have taught more than 5 sections
SELECT instructor.name
FROM instructor
JOIN teaches ON instructor.ID = teaches.ID
GROUP BY instructor.name
HAVING COUNT(teaches.sec_ID) > 5;

```
NAME
-------------------
Ullman
DAgostino
Mahmoud
Voronina
Mingoz
Dale

6 rows selected.
```

24. List all courses that have no prerequisites

SELECT course_id
FROM course
WHERE course_id NOT IN (SELECT prereq_ID FROM prereq)
AND ROWNUM < 10;

```
COURSE_I
--------
411
337
359
577
313
770
580
795
949

9 rows selected.
```

25. Find the average number of credits taken by students in each department
SQL> select avg(tot_cred),dept_name from student
  2 where rownum < 10
  3 group by dept_name;

```
AVG(TOT_CRED) DEPT_NAME
------------- --------------------
          109 Astronomy
           30 Cybernetics
           64 Mech. Eng.
           12 Languages
         18.5 Civil Eng.
           19 Math
           58 Psychology
           22 History

8 rows selected.
```