Name : Himanshu Shekhar Mumru

Roll No : 244ca019

1. List all classrooms with a capacity greater than 50.

SQL: SELECT \* FROM classroom WHERE capacity > 50;

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

SQL: SELECT name FROM instructor WHERE dept\_name = 'Computer Science';

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

SQL: SELECT title FROM course

WHERE course\_id IN (

SELECT course\_id FROM section WHERE semester = 'Spring' AND year = 2023

);

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

SQL: SELECT name FROM student WHERE tot\_cred > 100;

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

SQL: SELECT dept\_name FROM department WHERE budget > 1000000;

6. List all departments and their respective buildings.

SQL: SELECT dept\_name, building FROM department;

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

SQL: SELECT name FROM student WHERE dept\_name = 'Biology';

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

SQL: SELECT title FROM course WHERE credits = 3;

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

SQL: SELECT name FROM instructor WHERE dept\_name IS NULL;

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

SQL: SELECT building, COUNT(\*) AS total\_classrooms FROM classroom

GROUP BY building;

11. List all courses taught by the instructor with ID "10101".

SQL: SELECT title FROM Course WHERE instructor\_id = 10101;

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

SQL: SELECT dept\_name, COUNT(\*) AS total\_students FROM Student GROUP BY dept\_name;

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

SQL: SELECT S.name

FROM Student S

JOIN Takes T ON S.student\_id = T.student\_id

WHERE T.course\_id = 'CS-101' AND T.grade = 'A';

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

SQL: SELECT name FROM instructor WHERE salary > 50000;

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

SQL: SELECT dept\_name, AVG(salary) AS avg\_salary FROM Instructor GROUP BY dept\_name;

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

SQL: SELECT S.name

FROM student S

LEFT JOIN advisor A ON S.ID = A.s\_ID

WHERE A.i\_ID IS NULL;

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

SQL: SELECT course\_id

FROM prereq

WHERE prereq\_id = 'CS-101';

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

SQL: SELECT C.building, COUNT(\*) AS total\_sections

FROM section S

JOIN classroom C ON S.room\_number = C.room\_number AND S.building = C.building

GROUP BY C.building;

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

SQL: SELECT DISTINCT S.name

FROM Student S

JOIN Takes T ON S.id = T.id

WHERE T.semester = 'Fall' AND T.year = 2022;

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

SQL: SELECT room\_number FROM Classroom WHERE room\_number NOT IN (SELECT room\_number FROM Section);

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

SQL: SELECT title FROM Course WHERE dept\_name = 'Mathematics';

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

SQL: SELECT S.name

FROM student S

JOIN takes T1 ON S.ID = T1.ID

JOIN takes T2 ON S.ID = T2.ID

WHERE T1.semester = 'Fall' AND T2.semester = 'Spring';

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

SQL: SELECT I.name

FROM Instructor I

JOIN Teaches T ON I.id = T.id

GROUP BY I.name

HAVING COUNT(T.sec\_id) > 5;

24. List all courses that have no prerequisites.

SQL: SELECT course\_id FROM Course WHERE course\_id NOT IN (SELECT course\_id FROM prereq);

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

SQL: SELECT S.dept\_name, AVG(C.credits) AS avg\_credits

FROM Student S

JOIN Takes T ON S.id = T.id

JOIN Course C ON T.course\_id = C.course\_id

GROUP BY S.dept\_name;

26. Retrieve the names of students who have taken courses with the instructor "Einstein".

SQL: SELECT DISTINCT S.name

FROM Student S

JOIN Takes T ON S.id = T.id

JOIN Teaches TE ON T.course\_id = TE.course\_id

JOIN Instructor I ON TE.id = I.id

WHERE I.name = 'Einstein';

27. List all sections that are held in the "Watson" building.

SQL: SELECT sec\_id FROM Section

JOIN Classroom ON Section.room\_number = Classroom.room\_number

WHERE Classroom.building = 'Watson';

28. Find the total budget allocated to all departments.

SQL: SELECT SUM(budget) AS total\_budget FROM Department;

29. Retrieve the names of students who have taken at least one course with a grade of "B".

SQL: SELECT DISTINCT S.name

FROM Student S

JOIN Takes T ON S.id = T.id

WHERE T.grade = 'B';

30. List all instructors who have not taught any courses.

SQL: SELECT name FROM Instructor WHERE id NOT IN (SELECT id FROM Teaches);