1.Find the Total Number of Students in Each Department

SELECT d. department\_name, COUNT(s.student\_id) AS total\_students

FROM Students s JOIN Departments d ON s. department\_id = d. department\_id

GROUP BY d.department\_name;

2. . List All Courses Taught by a Specific Professor

SELECT c.course\_name FROM Courses c JOIN Professors p ON c.professor\_id = p.professor\_id WHERE p.professor\_id = 2;

3. Find the Average Grade of Students in Each Course

SELECT ROUND(AVG( CASE WHEN grade = 'A' THEN 4.0

WHEN grade = 'B' THEN 3.0

WHEN grade = 'C' THEN 2.0

WHEN grade = 'D' THEN 1.0

ELSE 0 END ), 2)

AS average\_grade FROM Enrollments;

4.List All Students Who Have Not Enrolled in Any Courses

SELECT s.student\_id, s.first\_name,s.last\_name

FROM students s LEFT JOIN enrollments e ON s.student\_id = e.student\_id

WHERE e.student\_id IS NULL;

5.Find the Number of Courses Offered by Each Department

SELECT department\_id, COUNT(\*) AS course\_count

FROM courses GROUP BY department\_id;

6. List All Students Who Have Taken a Specific Course (e.g., 'Database Systems')

select s.first\_name,s.last\_name, c.course\_name

from students s left join courses c on s.department\_id=c.department\_id

where course\_name="Data Structures";

7. Find the Most Popular Course Based on Enrollment Numbers

SELECT course\_id, COUNT(\*) AS enrollment\_count

FROM enrollments GROUP BY course\_id ORDER BY enrollment\_count DESC limit 1;

8. Find the Average Number of Credits Per Student in a Department

SELECT s.department\_id, ROUND(AVG(student\_credits.total\_credits), 2) AS avg\_credits\_per\_student

FROM ( SELECT e.student\_id, SUM(c.credits) AS total\_credits FROM enrollments e JOIN courses c ON e.course\_id = c.course\_id GROUP BY e.student\_id )

student\_credits JOIN students s ON student\_credits.student\_id = s.student\_id GROUP BY s.department\_id;

9. List All Professors Who Teach in More Than One Department

SELECT p.first\_name AS professor\_name, COUNT(DISTINCT c.department\_id) AS department\_count

FROM professors p JOIN courses c ON p.professor\_id = c.professor\_id GROUP BY p.professor\_id, p.first\_name HAVING COUNT(DISTINCT c.department\_id) > 1;

10. Get the Highest and Lowest Grade in a Specific Course (e.g., 'Operating Systems')

SELECT MAX(e.grade) AS highest\_grade, MIN(e.grade) AS lowest\_grade

FROM enrollments e JOIN courses c ON e.course\_id = c.course\_id

WHERE c.course\_name = 'Operating Systems';