**University Task:-**

**1. Total number of students in each department**

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

FROM Departments d

LEFT JOIN Students s ON d.department\_id = s.department\_id

GROUP BY d.department\_name;

**2. All courses taught by a specific professor (e.g., Professor ID = 101)**

SELECT course\_name

FROM Courses

WHERE professor\_id = 101;

**3. Average grade of students in each course**

SELECT c.course\_name, AVG(

CASE grade

WHEN 'A' THEN 4

WHEN 'B' THEN 3

WHEN 'C' THEN 2

WHEN 'D' THEN 1

WHEN 'F' THEN 0

END

) AS average\_grade

FROM Enrollments e

JOIN Courses c ON e.course\_id = c.course\_id

GROUP BY c.course\_name;

**4. Students who have not enrolled in any courses**

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

FROM Students s

WHERE s.student\_id NOT IN (

SELECT DISTINCT student\_id FROM Enrollments

);

**5. Number of courses offered by each department**

SELECT d.department\_name, COUNT(c.course\_id) AS course\_count

FROM Departments d

LEFT JOIN Courses c ON d.department\_id = c.department\_id

GROUP BY d.department\_name;

**6. Students who have taken a specific course (e.g., 'Database Systems')**

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

FROM Students s

JOIN Enrollments e ON s.student\_id = e.student\_id

JOIN Courses c ON e.course\_id = c.course\_id

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

**7. Most popular course based on enrollment count**

SELECT c.course\_name, COUNT(e.enrollment\_id) AS enrollments

FROM Enrollments e

JOIN Courses c ON e.course\_id = c.course\_id

GROUP BY c.course\_name

ORDER BY enrollments DESC

LIMIT 1;

**8. Average number of credits per student in a department**

SELECT d.department\_name, AVG(credit\_sum.total\_credits) AS avg\_credits

FROM (

SELECT s.student\_id, s.department\_id, SUM(c.credits) AS total\_credits

FROM Students s

JOIN Enrollments e ON s.student\_id = e.student\_id

JOIN Courses c ON e.course\_id = c.course\_id

GROUP BY s.student\_id, s.department\_id

) AS credit\_sum

JOIN Departments d ON credit\_sum.department\_id = d.department\_id

GROUP BY d.department\_name;

**9. Professors who teach in more than one department**

SELECT p.first\_name, p.last\_name

FROM Professors p

JOIN Courses c ON p.professor\_id = c.professor\_id

GROUP BY p.professor\_id

HAVING COUNT(DISTINCT c.department\_id) > 1;

**10. Highest and lowest grade in a specific course (e.g., 'Operating Systems')**

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

FROM Enrollments e

JOIN Courses c ON e.course\_id = c.course\_id

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