## RDBMS Task 1

## University Task

1. **Find the Total Number of Students in Each Department**

SELECT d.department\_name as department, COUNT(s.student\_id) as Students FROM departments as d LEFT JOIN students as s ON d.department\_id=s.student\_id GROUP BY d.department\_id

1. **List All Courses Taught by a Specific Professor**

SELECT p.first\_name as Name, c.course\_name as course FROM professors p LEFT JOIN courses c ON p.professor\_id=c.professor\_id WHERE p.first\_name = 'Rajesh' AND p.last\_name = 'Sharma';

1. **Find the Average Grade of Students in Each Course.**

**S**ELECT c.course\_name,

AVG(CASE

WHEN e.grade='A+' THEN 10

WHEN e.grade='A' THEN 9

WHEN e.grade='B+' THEN 8

WHEN e.grade='B' THEN 7

WHEN e.grade='C' THEN 6

ELSE 0

end) as Average\_grade

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

GROUP BY c.course\_name

1. **List All Students Who Have Not Enrolled in Any Courses**

SELECT s.first\_name FROM enrollments e JOIN students s ON s.student\_id=e.student\_id WHERE enrollment\_id IS NULL

1. **Find the Number of Courses Offered by Each Department**

SELECT d.department\_name, COUNT(c.course\_id) as Num\_of\_courses FROM departments d LEFT JOIN courses c ON c.department\_id=d.department\_id GROUP BY d.department\_name

1. **List All Students Who Have Taken a Specific Course (e.g., 'Data Structure')**

SELECT DISTINCT s.first\_name, s.last\_name, c.course\_name FROM

students s JOIN courses c ON c.department\_id=s.department\_id WHERE c.course\_name='Data Structures'

1. **Find the Most Popular Course Based on Enrollment Numbers**

SELECT c.course\_name, COUNT(e.student\_id) FROM courses c JOIN enrollments e ON c.course\_id=e.course\_id GROUP BY c.course\_id ORDER BY COUNT(e.student\_id) DESC LIMIT 1

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

FROM students s JOIN enrollments e ON s.student\_id e.student\_id JOIN courses c ON e.course\_id = c.course\_id JOIN departments d ON s.department\_id = d.department\_id GROUP BY d.department\_name;

1. **List All 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;

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

SELECT c.course\_name , MAX(e.grade) as Highest\_grade, MIN(e.grade) as Lowest\_grade FROM courses c JOIN enrollments e ON c.course\_id=e.course\_id WHERE c.course\_name='Machine Learning' GROUP BY c.course\_name