**RDBMS Task #1**

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;

1. 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.first\_name = 'Professor' AND p.last\_name = 'Name';

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

SELECT c.course\_name, AVG(CASE WHEN e.grade = 'A' THEN WHEN e.grade = 'B' THE WHENe.grade = 'C' THEN 2 WHEN e.grade = 'D' THEN 1 WHEN e.grade = 'F' THEN 0

ELSE NULL END) AS avg\_grade FROM Enrollments e JOIN Courses c ON e.course\_id = c.course\_id GROUP BY c.course\_name;

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

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

FROM Courses c JOIN Departments d ON c.department\_id = d.department\_id

GROUP BY d.department\_name;

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

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

FROM Courses c JOIN Departments d ON c.department\_id = d.department\_id

GROUP BY d.department\_name;

1. List All 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';

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

SELECT c.course\_name, COUNT(e.student\_id) AS num\_enrollments

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

GROUP BY c.course\_name ORDER BY num\_enrollments DESC

LIMIT 1;

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

SELECT p.first\_name, p.last\_name, COUNT(DISTINCT c.department\_id) AS num\_departments

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

GROUP BY p.professor\_id HAVING num\_departments > 1;

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

SELECT p.first\_name, p.last\_name, COUNT(DISTINCT c.department\_id) AS num\_departments

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

GROUP BY p.professor\_id HAVING num\_departments > 1;

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

SELECT c.course\_name,

MAX(CASE

WHEN e.grade = 'A' THEN 4

WHEN e.grade = 'B' THEN 3

WHEN e.grade = 'C' THEN 2

WHEN e.grade = 'D' THEN 1

WHEN e.grade = 'F' THEN 0

ELSE NULL END) AS highest\_grade,

MIN(CASE

WHEN e.grade = 'A' THEN 4

WHEN e.grade = 'B' THEN 3

WHEN e.grade = 'C' THEN 2

WHEN e.grade = 'D' THEN 1

WHEN e.grade = 'F' THEN 0

ELSE NULL END) AS lowest\_grade

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

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