In-Class Task: SQL JOINs Practical Scenarios

Objective

Apply SQL JOIN skills to solve real-world business questions in 15 minutes.

Task 1: Missing Assignments (2.5 minutes)

Business Question: "Which employees and which projects are currently unassigned to any department? We need to assign them properly."

Write a query that shows:

- All employees without a department (labeled as "Unassigned Employee")
- All projects without a department (labeled as "Unassigned Project")

Expected columns: `type`, `name`, `details`

- For employees: show their salary in details
- For projects: show their budget in details

Hint: Combine two separate queries with UNION

Task 2: Department Workload Balance (2.5 minutes)

Business Question: "Show me the workload for each department - how many employees do they have versus how many projects?"

Write a query showing all departments with:

- Number of employees
- Number of projects
- A "balance" indicator: if projects > employees, show "Overloaded", otherwise show "Balanced"

Expected columns: `dept_name`, `employee_count`, `project_count`, `balance_status`

Hint: Use LEFT JOINs, COUNT, GROUP BY, and CASE statement

Task 3: Budget vs Salary Analysis (3 minutes)

Business Question: "For departments that have both employees and projects, what's the relationship between what we spend on salaries versus project budgets?"

Write a query showing:

- Department name
- Total employee salaries

- Total project budgets
- Which is higher (salary or budget)

Only include departments that have at least one employee AND at least one project.

Expected columns: `dept_name`, `total_salaries`, `total_budgets`, `higher_cost`

Hint: Use INNER JOINs, SUM, GROUP BY, and CASE for comparison

Task 4: Employee-Project Matching (3 minutes)

Business Question: "I want to see which employees could potentially work on which projects. Show me all employees matched with all projects from their own department."

Write a query showing:

- Employee name
- Department name
- Project name
- Combined resource value (employee salary + project budget)

Only show matches where the employee and project are in the same department.

Expected columns: `emp_name`, `dept_name`, `project_name`, `combined_value`

Sort by: Department name, then employee name

Task 5: Resource Availability Report (3.5 minutes)

Business Question: "Which departments are fully staffed (have both employees and projects) and which need attention (missing either employees or projects or both)?"

Create a comprehensive report showing:

- Department name
- Number of employees
- Number of projects
- Status: "Fully Operational", "Needs Employees", "Needs Projects", or "Empty Department"

Include ALL departments in the results.

Expected columns: `dept_name`, `employee_count`, `project_count`, `status`

Hint: Use LEFT JOINs and nested CASE statements