BrightLight Data Analytics — SQL JOIN Exercises

Instructions

- For each question, study the table structures and write SQL queries using `LEFT JOIN`, `INNER JOIN`, or `FULL OUTER JOIN`.
- Some questions require additional logic like `CASE`, `WHERE`, `ORDER BY`, or aggregate functions like `SUM`, `COUNT`.
- Draw the final output table.
- Submit your handwritten answers to **rofhiwa@brightlighttutorials.co.za**

Basic Join Practice (Joins Only)

Question 1 — INNER JOIN

Objective: Join `students` and `grades` to display only students who have grades.

Table: `students`

student_id	student_name
1	Alice
2	Bob
3	Charlie

Table: `grades`

student_id	grade
2	B
3	A
4	C

Expected Output:

- `student_id`
- `student_name`
- `grade`

Question 2 — LEFT JOIN

Objective: Display all employees and the departments they belong to. Include employees with no department.

Table: `employees`

emp_id	emp_name
1	John
2	Lisa
3	Mike

Table: `departments`

emp_id	dept_name
2	HR
4	IT

Expected Output:

- `emp_id`
- `emp_name`
- `dept_name`

Question 3 — FULL OUTER JOIN

Objective: Display a complete list of products and their quantities sold. Include products with no sales and sales for unknown products.

Table: `products`

product_id	product_name
1	Laptop
2	Mouse
3	Keyboard

Table: `sales`

product_id	quantity
2	50
4	30

Expected Output:

- `product_id`
- `product_name`

- `quantity`

Advanced Join Practice (Logic + Filtering + Aggregates)

Question 4 — LEFT JOIN + CASE

Objective: Display all orders and indicate whether the customer is “New” or “Returning”.

Table: **`orders`**

order_id	customer_id	amount
1	101	500
2	102	300
3	105	0

Table: **`customers`**

customer_id	customer_name
101	Paul
102	Sarah
104	Emma

Expected Output:

- `order_id`
- `customer_id`
- `amount`
- `customer_name`
- `customer_type` *(New Customer / Returning Customer)*

Question 5 — LEFT JOIN + GROUP BY + SUM

Objective: Show total sales per region and include regions with no sales.

Table: **`sales`**

sale_id	region_id	amount
1	1	2000
2	2	3500

3	4	1000

Table: `regions`

region_id	region_name
1	North
2	South
3	East

Expected Output:

- `region_id`
- `region_name`
- `total_sales`

Question 6 — LEFT JOIN + CASE

Objective: Classify students based on attendance.

Table: `students`

student_id	name
1	Alice
2	Bob
3	Charlie

Table: `attendance`

student_id	days_present
1	18
2	5
4	20

Expected Output:

- `student_id`
- `name`
- `days_present`
- `attendance_status` *(Excellent / Needs Improvement / Poor Attendance)*

Question 7 — INNER JOIN + COUNT + GROUP BY

Objective: Show number of tasks per project. Only include projects that have tasks.

Table: `projects`

project_id	name
1	AI Chatbot
2	Website
3	Data Report

Table: `tasks`

task_id	project_id	status
10	1	Complete
11	1	Pending
12	2	Complete

Expected Output:

- `project_id`
- `name`
- `task_count`

Question 8 — FULL OUTER JOIN + CASE + WHERE

Objective: Classify customers based on whether they returned anything and filter by high order total.

Table: `orders`

order_id	cust_id	order_total
1	11	120
2	12	250
3	13	180

Table: `returns`

return_id	cust_id	return_total
101	11	20
102	14	100

Expected Output:

- `cust_id`
- `order_total`
- `return_total`

- `return_status` *(Returned / No Return)*

Filter to include only customers with `order_total > 100`.

Question 9 — LEFT JOIN + COUNT + ORDER BY

Objective: Count how many times each user logged in.

Table: `users`

user_id	name
1	Nelson
2	Gloria
3	Steve

Table: `logins`

user_id	login_date
2	2024-06-01
2	2024-06-02
3	2024-06-03

Expected Output:

- `user_id`
- `name`
- `login_count`

Order by `login_count DESC`.

Question 10 — LEFT JOIN + CASE + ORDER BY

Objective: Show all teachers and the subjects they teach. If no subject, label appropriately.

Table: `teachers`

teacher_id	teacher_name
1	Mr. Hlongwane
2	Ms. Ndaba
3	Mr. Dlamini

Table: `subjects`

subject_id	teacher_id	subject_name
1	1	Math
2	1	Science
3	4	History

Expected Output:

- `teacher_id`
- `teacher_name`
- `subject_name` (or "No Subject Assigned")

Order by `teacher_name ASC`.