

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
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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
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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.