Exercise 4: SQL Fundamentals (Using CASE Statements)

BrightLight Data Analytics

Objective:
Practice the use of SQL CASE statements to classify data and add context to query results.

Question 1

Table 1: **students**

student_id	student_name	test_score
1	Alice	85
2	Bob	45
3	Charlie	73
4	David	66
5	Eva	92
6	Frank	58
7	Grace	77
8	Henry	33
9	Ivy	100
10	Jack	0

Write SQL queries using a CASE statement to perform the following tasks:

1. **Classify Students by Performance:**

Write a SQL query that classifies students based on their test_score according to the following conditions:

- **90-100:** "Excellent"
- **75-89:** "Good"
- **50-74:** "Average"
- **Below 50:** "Poor"

Your result should display student_name, test_score, and a new column called performance.

Question 2

Table 1: sales

sale_id	sale_date	customer_id	product_id	quantity	total_amount
1	2025-01-05	101	501	2	95.00
2	2025-01-10	102	502	15	1200.00
3	2025-01-11	103	503	1	350.00
4	2025-01-15	101	504	3	480.00

Questions:

1. Add a sales_category column ("Low", "Medium", "High") based on total_amount.
2. Label each sale as "Bulk Sale" or "Regular Sale" based on quantity.
3. Count how many sales are in each sales_category.
4. Classify each customer_id as "Frequent Buyer" or "Occasional Buyer" based on the number of sales.

Question 3

Table 3: employees

employee_id	first_name	last_name	department	salary	hire_date
201	Thando	Mokoena	HR	28000.00	2024-11-01
202	Zanele	Khumalo	Finance	55000.00	2022-03-15
203	Sipho	Dlamini	IT	72000.00	2020-07-10
204	Lindiwe	Sithole	HR	35000.00	2025-02-20

Questions:

5. Add a salary_bracket column based on salary.
6. Label each employee as "New Hire" or "Experienced" using hire_date.
7. Count employees in each salary_bracket.
8. Calculate the average salary per department and classify it ("Low", "Average", "High").

Question 4

Table 4: products

product_id	product_name	category	price	stock_quantity
301	Office Chair	Furniture	899.99	5
302	Pen Pack	Stationery	45.00	100
303	Monitor 24"	Electronics	1850.00	0
304	Stapler	Stationery	55.00	10

Questions:

9. Add a stock_status column based on stock_quantity.
10. Add a price_category column based on price.
11. Count products in each price_category.
12. Add a reorder_status column based on stock_quantity.

Question 5

Table 5: students

student_id	full_name	course	marks	enrollment_year
401	Lerato Nkosi	Math	78	2023
402	Daniel Mthembu	Physics	62	2022
403	Nthabiseng Molefe	Chemistry	49	2024
404	John Mashaba	Biology	53	2023

Questions:

13. Add a grade column based on marks.
14. Add a student_level column based on enrollment_year.
15. Count how many students are in each grade.
16. Add a scholarship_eligibility column based on marks.

Question 6

Table 6: website_traffic

visit_id	user_id	visit_date	page_visited	session_duration
601	901	2025-03-18	/home	45
602	902	2025-03-18	/products	200
603	901	2025-03-19	/about	360
604	903	2025-03-20	/contact	90

Questions:

17. Add a session_type column based on session_duration.
18. Label users as "Frequent Visitor" or "Occasional Visitor" based on total visit count.
19. Add a day_type column to show if the visit was on a "Weekday" or "Weekend".
20. Count how many visits fall into each session_type.