

# MUDAU TSHILIDZI ROJINA

## Practical exercise (Google Big Query)

### Question 1

The screenshot shows the Google Cloud BigQuery interface. The query editor contains the following SQL code:

```
20 group by all ;
21
22 --1. WHERE Clause
23 --Q1. Filter all transactions that occurred in the year 2023.
24 --Expected output: All columns
25 SELECT *
26 FROM `retails-479214.sales.data`
27 WHERE EXTRACT(YEAR FROM Date) = 2023;
28
29 --3. Filtering & Conditions
```

The query has been completed successfully. The results are displayed in a table with the following columns: Row, Transaction ID, Date, Customer ID, Gender, Age, Product Category, Quantity, Price per Unit, and Total Amount.

Row	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	191	2023-10-18	CUST191	Male	64	Beauty	1	25	2
2	204	2023-09-28	CUST204	Male	39	Beauty	1	25	2
3	230	2023-04-23	CUST230	Male	54	Beauty	1	25	2
4	232	2023-02-06	CUST232	Female	43	Beauty	1	25	2

### Question 2

The screenshot shows the Google Cloud BigQuery interface. The query editor contains the following SQL code:

```
28
29 --2. Filtering & Conditions
30 --Q2. Display all transactions where the Total Amount is more than the average Total Amount of the entire dataset.
31 --Expected output: All columns
32 SELECT *
33 FROM `retails-479214.sales.data`
34 WHERE Total Amount > (SELECT AVG('Total Amount')
35 FROM `retails-479214.sales.data` );
36
37
```

The query has been completed successfully. The results are displayed in a table with the following columns: Row, Transaction ID, Date, Customer ID, Gender, Age, Product Category, Quantity, Price per Unit, and Total Amount.

Row	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	21	2023-01-14	CUST021	Female	50	Beauty	1	500	500
2	28	2023-04-23	CUST028	Female	43	Beauty	1	500	500
3	128	2023-07-05	CUST128	Male	25	Beauty	1	500	500
4	220	2023-03-03	CUST220	Male	64	Beauty	1	500	500

### Question 3

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```
36
37
38 --3. Aggregate Functions
39 --Q3. Calculate the total revenue (sum of Total Amount).
40 --Expected output: Total_Revenue
41
42 SELECT SUM('Total Amount') AS Total_Revenue
43 FROM `retails-479214.sales_data` ;
44
45 --4. DISTINCT
46
```

Query completed

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Row	Total_Revenue
1	456000

Results per page: 50 1 - 1 of 1

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```
43 FROM `retails-479214.sales_data` ;
44
45 --4. DISTINCT
46 --Q4. Display all distinct Product Categories in the dataset.
47 --Expected output: Product_Category
48
49 SELECT DISTINCT 'Product Category'
50 FROM `retails-479214.sales_data` ;
51
52 --5. GROUP BY
53
```

Query completed

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Row	Product Category
1	Beauty
2	Clothing
3	Electronics

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```

51 --5. GROUP BY
52
53 --Q5. For each Product Category, calculate the total quantity sold.
54 --Expected output: Product_Category, Total_Quantity
55 SELECT 'Product Category',
56 SUM(Quantity) AS Total_Quantity
57 FROM `retails-479214.sales_data`
58 GROUP BY 'Product Category';
59
60 -- Q5C PARTIAL

```

Query completed

Using on-demand processing quota

**Query results** Save results Open in

Job information	Results	Visualization	JSON	Execution details	Execution graph
Row	Product Category	Total_Quantity			
1	Beauty	771			
2	Clothing	894			
3	Electronics	849			

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## Question 6

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**Untitled query** Run Download Share Schedule Open in More Save

```

61 --Q6. Create a column called Age_Group that classifies customers as 'Youth' (<30), 'Adult' (30-59), and 'Senior' (60+).
62 --Expected output: Customer_ID, Age, Age_Group
63 SELECT 'Customer ID', Age,
64 CASE
65 WHEN Age < 30 THEN 'Youth'
66 WHEN Age BETWEEN 30 AND 59 THEN 'Adult'
67 ELSE 'Senior'
68 END AS 'Age Group'
69 FROM `retails-479214.sales_data`;
70

```

Query completed

Using on-demand processing quota

**Query results** Save results Open in

Job information	Results	Visualization	JSON	Execution details	Execution graph
Row	Customer ID	Age	Age Group		
1	CUST191	64	Senior		
2	CUST204	39	Adult		
3	CUST230	54	Adult		
4	CUST232	43	Adult		

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```

69 FROM `retails-479214.sales_data`;
70
71 --7. Conditional Aggregation
72 --Q7. For each Gender, count how many high-value transactions occurred (where Total Amount > 500).
73 --Expected output: Gender, High_Value_Transactions
74 SELECT Gender,
75 COUNTIF(`Total Amount` > 500) AS High_Value_Transactions
76 FROM `retails-479214.sales_data`
77 GROUP BY Gender;

```

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Row	Gender	High_Value_Trans...
1	Male	144
2	Female	155

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```

78
79 --8. HAVING Clause
80 --Q8. For each Product Category, show only those categories where the total revenue exceeds 5,000.
81 --Expected output: Product_Category, Total_Revenue
82 SELECT `Product_Category`,
83 SUM(`Total Amount`) AS Total_Revenue
84 FROM `retails-479214.sales_data`
85 GROUP BY `Product_Category`
86 HAVING SUM(`Total Amount`) > 5000;
87

```

Query completed

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Query results Save results Open in

Job information Results Visualization JSON Execution details Execution graph

Row	Customer ID	Age	Total Amount	Spending Level
1	CUST191	64	25	Low
2	CUST230	54	25	Low
3	CUST232	43	25	Low
4	CUST363	64	25	Low

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## Question 9

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Untitled query

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```

92 --- 'Expensive' if Price per Unit > 200
93 --Expected output: Transaction_ID, Price_per_Unit, Unit_Cost_Category
94 SELECT 'Transaction ID', 'Price per Unit',
95 CASE
96 WHEN 'Price per Unit' < 50 THEN 'Cheap'
97 WHEN 'Price per Unit' BETWEEN 50 AND 200 THEN 'Moderate'
98 ELSE 'Expensive'
99 END AS 'Unit Cost Category'
100 FROM 'retails-479214.sales_data';

```

Query completed

Using on-demand processing quota

Query results

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Row	Customer ID	Age	Total Amount	Spending Level
1	CUST1191	64	25	Low
2	CUST230	54	25	Low
3	CUST232	43	25	Low
4	CUST363	64	25	Low

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Untitled query

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```

107 SELECT 'Customer ID',
108 Age,
109 'Total Amount',
110 CASE
111 WHEN 'Total Amount' > 1000 THEN 'High'
112 ELSE 'Low'
113 END AS 'Spending Level'
114 FROM 'retails-479214.sales_data'
115 WHERE Age >= 40;

```

Query completed

Using on-demand processing quota

Query results

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Job information Results Visualization JSON Execution details Execution graph

Row	Customer ID	Age	Total Amount	Spending Level
1	CUST1191	64	25	Low
2	CUST230	54	25	Low
3	CUST232	43	25	Low
4	CUST363	64	25	Low

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