

# MUDAU TSHILIDZI ROJINA

## Practical exercise (Google Big Query)

### Question 1

The screenshot shows the Google BigQuery interface. The query in the editor is:

```
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 --2. Conditions & Conditions
```

The results table shows four rows of transaction data:

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 BigQuery interface. The query in the editor is:

```
28 -----
29 --1. 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 results table shows four rows of transaction data:

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

Google Cloud Retails

Sandbox Set up billing to upgrade to the full BigQuery experience. [Learn more](#)

Untitled query Run Download Share Schedule Open in More Save

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Untitled query Run Download Share Schedule Open in More Save

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

Query completed

Using on-demand processing quota

Query results

Job information Results Visualization JSON Execution details Execution graph

Row	Total_Revenue
1	456000

Results per page: 50 1 – 1 of 1 | < < > > |

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

## Question 4

Google Cloud Retails

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Untitled query Run Download Share Schedule Open in More Save

43 FROM `retails-479214.sales\_data`;  
44  
45 --4. DISTINCT  
46 --Q4. Display all distinct Product Categories in the dataset.  
47 --Q4. Expected output: Product\_Category  
48  
49 SELECT DISTINCT 'Product Category'  
50 FROM `retails-479214.sales\_data`;  
51  
52 --4. DISTINCT

Query completed

Using on-demand processing quota

Query results

Job information Results Visualization JSON Execution details Execution graph

Row	Product Category
1	Beauty
2	Clothing
3	Electronics

Results per page: 50 1 – 3 of 3 | < < > > |

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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 --Q4. Expected output: Product_Category
48
49 SELECT DISTINCT 'Product Category'
50 FROM `retails-479214.sales_data`;
51
52 --4. DISTINCT
```

## Question 5

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```

S1 -----
S2 --5. GROUP BY
S3 --Q5. For each Product Category, calculate the total quantity sold.
S4 --Expected output: Product_Category, Total_Quantity
S5 SELECT 'Product Category',
S6 SUM(Quantity) AS Total_Quantity
S7 FROM `retails-479214.sales.data`
S8 GROUP BY Product Category ;
S9 -----
S10 --Q6. Create a column called
S11 --Q6. Create a column called Age_Group that classifies customers as 'Youth' (<30), 'Adult' (30-59), and 'Senior' (60+).
S12 --Expected output: Customer_ID, Age, Age_Group
S13 SELECT Customer_ID , Age,
S14 CASE
S15 WHEN Age < 30 THEN 'Youth'
S16 WHEN Age BETWEEN 30 AND 59 THEN 'Adult'
S17 ELSE 'Senior'
S18 END AS 'Age Group'
S19 FROM `retails-479214.sales.data` ;
S20 -----

```

Query completed

Using on-demand processing quota

Query results

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

Results per page: 50 1 – 3 of 3 | < < > >|

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## Question 6

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Dismiss Upgrade

Explorer + Add data Untitled query Run Download Share Schedule Open in More Save

```

S1 -----
S2 --Q6. Create a column called Age_Group that classifies customers as 'Youth' (<30), 'Adult' (30-59), and 'Senior' (60+).
S3 --Expected output: Customer_ID, Age, Age_Group
S4 SELECT Customer_ID , Age,
S5 CASE
S6 WHEN Age < 30 THEN 'Youth'
S7 WHEN Age BETWEEN 30 AND 59 THEN 'Adult'
S8 ELSE 'Senior'
S9 END AS 'Age Group'
S10 FROM `retails-479214.sales.data` ;
S11 -----

```

Query completed

Using on-demand processing quota

Query results

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				

Results per page: 50 1 – 50 of 1000 | < < > >|

Type here to search

## Question 7

Google Cloud Retails

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Untitled query

```

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;
78 -----

```

Query completed

Using on-demand processing quota

Query results

Job information	Results	Visualization	JSON	Execution details	Execution graph
Row	Gender	High_Value_Trans...			
1	Male	144			
2	Female	155			

Results per page: 50 1 - 2 of 2 | < < > > |

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## Question 8

Google Cloud Retails

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Untitled query

```

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

Using on-demand processing quota

Query results

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	

Results per page: 50 1 - 50 of 558 | < < > > |

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## Question 9

Google Cloud Retails

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Explorer + Add data

Untitled query Run Download Share Schedule Open in More Save

```
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

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

Results per page: 50 1 – 50 of 558

Type here to search

18°C ENG INTL 19:29 2025/11/24

This screenshot shows the Google Cloud BigQuery interface. The left sidebar is the navigation menu for the 'Retails' project. The main area displays an 'Untitled query' with the following SQL code:

```
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`;
```

The query has been completed successfully, and the results are displayed in a table titled 'Query results'. The table contains four rows of data:

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

The interface includes a search bar at the top, a taskbar with various icons at the bottom, and a system tray showing the date and time.

## Question 10

Google Cloud Retails

Sandbox Set up billing to upgrade to the full BigQuery experience. [Learn more](#)

Dismiss Upgrade

Explorer + Add data

Untitled query Run Download Share Schedule Open in More Save

```
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

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

Results per page: 50 1 – 50 of 558

Type here to search

18°C ENG INTL 19:28 2025/11/24

This screenshot shows the Google Cloud BigQuery interface. The left sidebar is the navigation menu for the 'Retails' project. The main area displays an 'Untitled query' with the following SQL code:

```
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;
```

The query has been completed successfully, and the results are displayed in a table titled 'Query results'. The table contains four rows of data:

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

The interface includes a search bar at the top, a taskbar with various icons at the bottom, and a system tray showing the date and time.