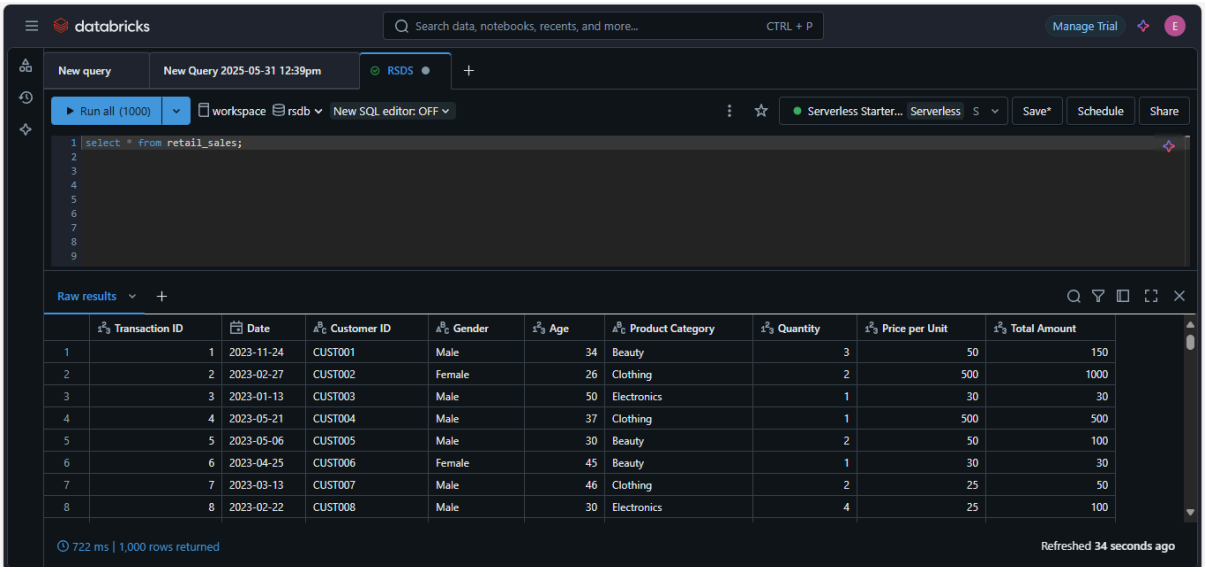
Practical 1: SQL Fundamentals (Databricks-Basic SQL Syntax)

1. SELECT Statement

Q1. Display all columns for all transactions.

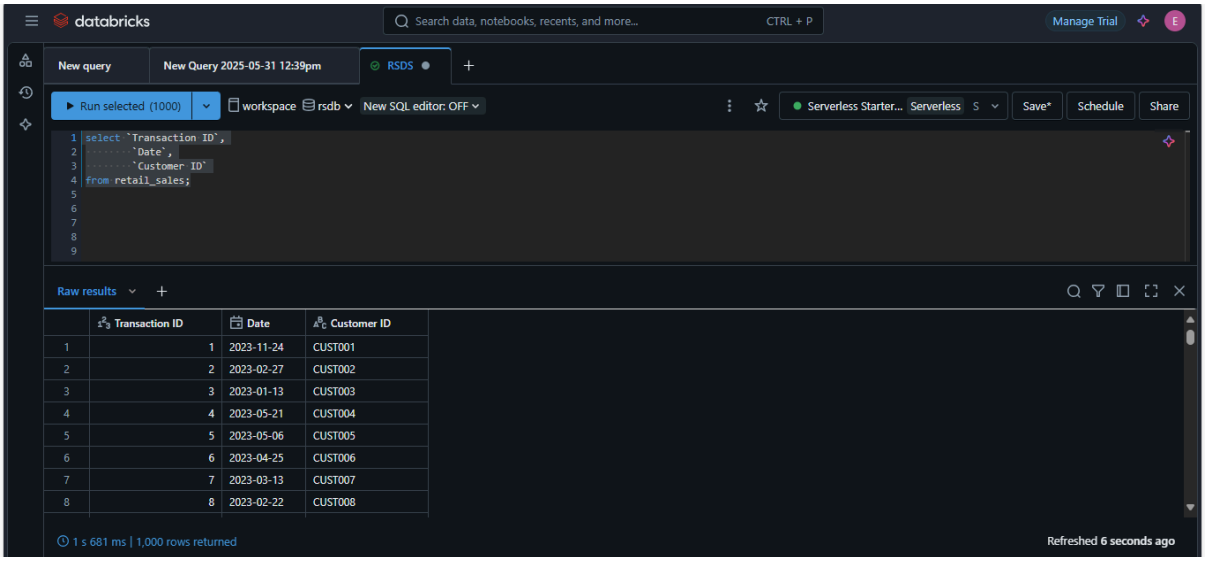
Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	1	2023-11-24	CUST001	Male	34	Beauty	3	50	150
2	2	2023-02-27	CUST002	Female	26	Clothing	2	500	1000
3	3	2023-01-13	CUST003	Male	50	Electronics	1	30	30
4	4	2023-05-21	CUST004	Male	37	Clothing	1	500	500
5	5	2023-05-06	CUST005	Male	30	Beauty	2	50	100
6	6	2023-04-25	CUST006	Female	45	Beauty	1	30	30
7	7	2023-03-13	CUST007	Male	46	Clothing	2	25	50
8	8	2023-02-22	CUST008	Male	30	Electronics	4	25	100

Q2. Display only the Transaction ID, Date, and Customer ID for all records.

Expected output: Transaction ID, Date, Customer ID

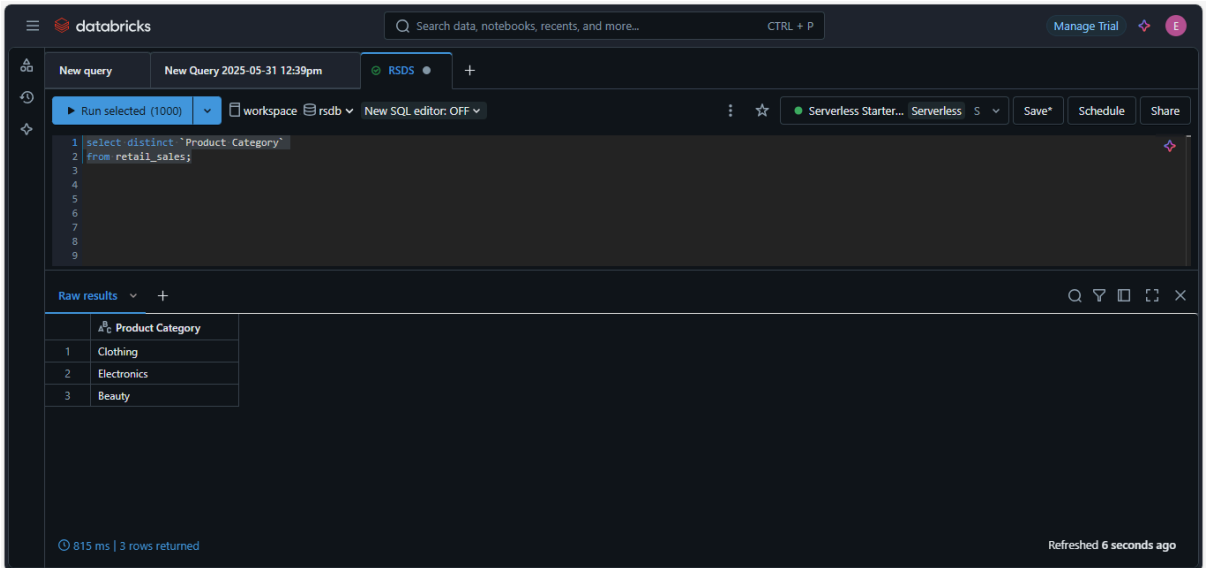


	Transaction ID	Date	Customer ID
1	1	2023-11-24	CUST001
2	2	2023-02-27	CUST002
3	3	2023-01-13	CUST003
4	4	2023-05-21	CUST004
5	5	2023-05-06	CUST005
6	6	2023-04-25	CUST006
7	7	2023-03-13	CUST007
8	8	2023-02-22	CUST008

2. SELECT DISTINCT Statement

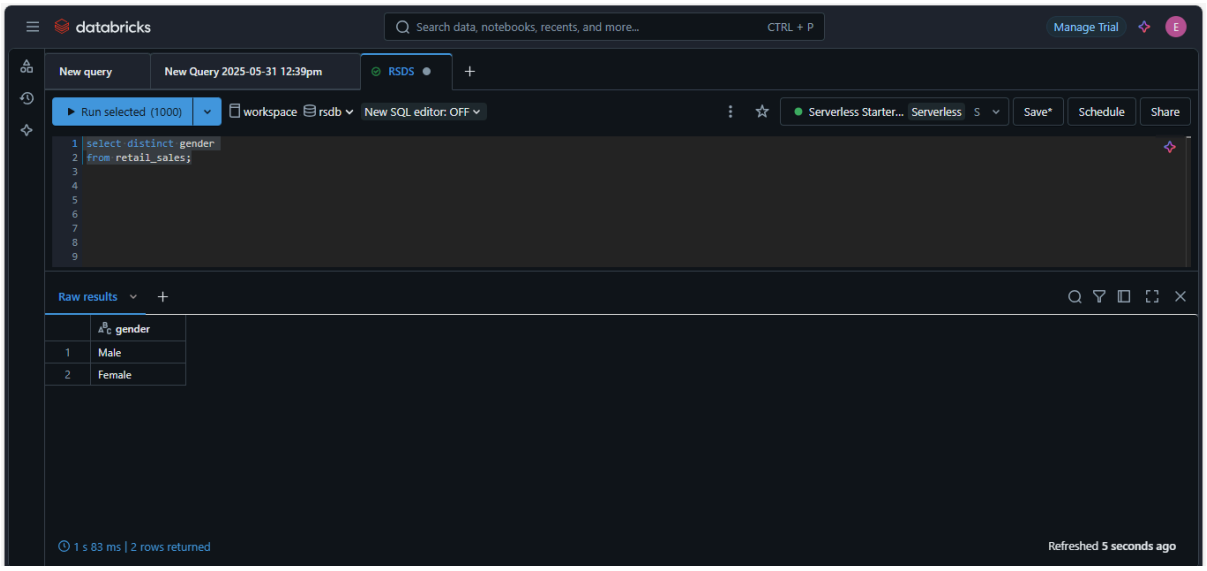
Q3. Display all the distinct product categories in the dataset.

Expected output: Product Category



Q4. Display all the distinct gender values in the dataset.

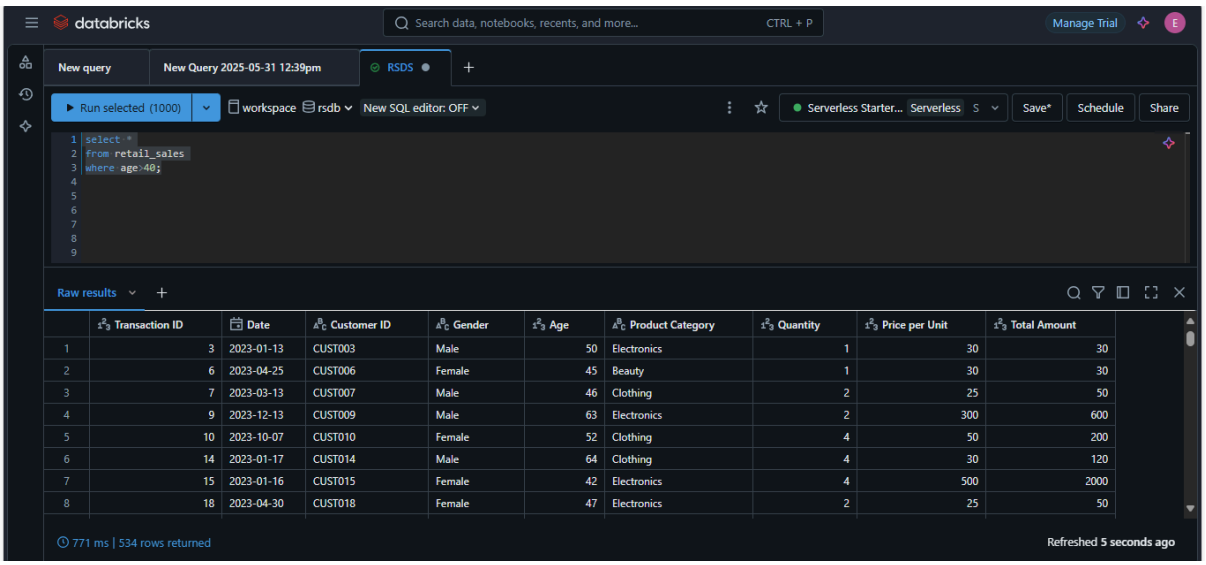
Expected output: Gender



3. WHERE Clause

Q5. Display all transactions where the Age is greater than 40.

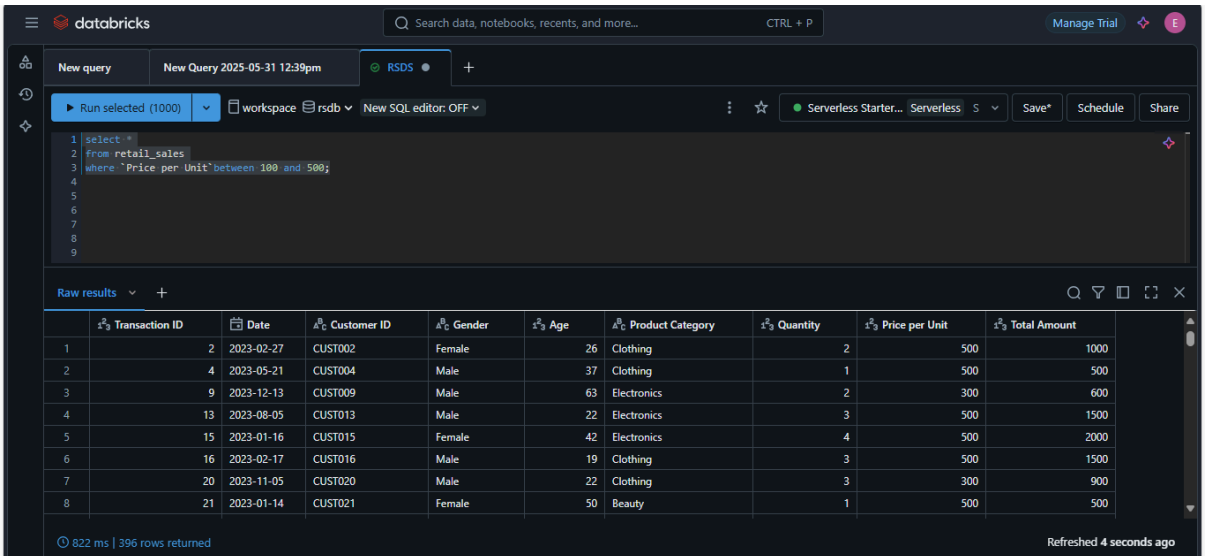
Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	3	2023-01-13	CUST003	Male	50	Electronics	1	30	30
2	6	2023-04-25	CUST006	Female	45	Beauty	1	30	30
3	7	2023-03-13	CUST007	Male	46	Clothing	2	25	50
4	9	2023-12-13	CUST009	Male	63	Electronics	2	300	600
5	10	2023-10-07	CUST010	Female	52	Clothing	4	50	200
6	14	2023-01-17	CUST014	Male	64	Clothing	4	30	120
7	15	2023-01-16	CUST015	Female	42	Electronics	4	500	2000
8	18	2023-04-30	CUST018	Female	47	Electronics	2	25	50

Q6. Display all transactions where the Price per Unit is between 100 and 500.

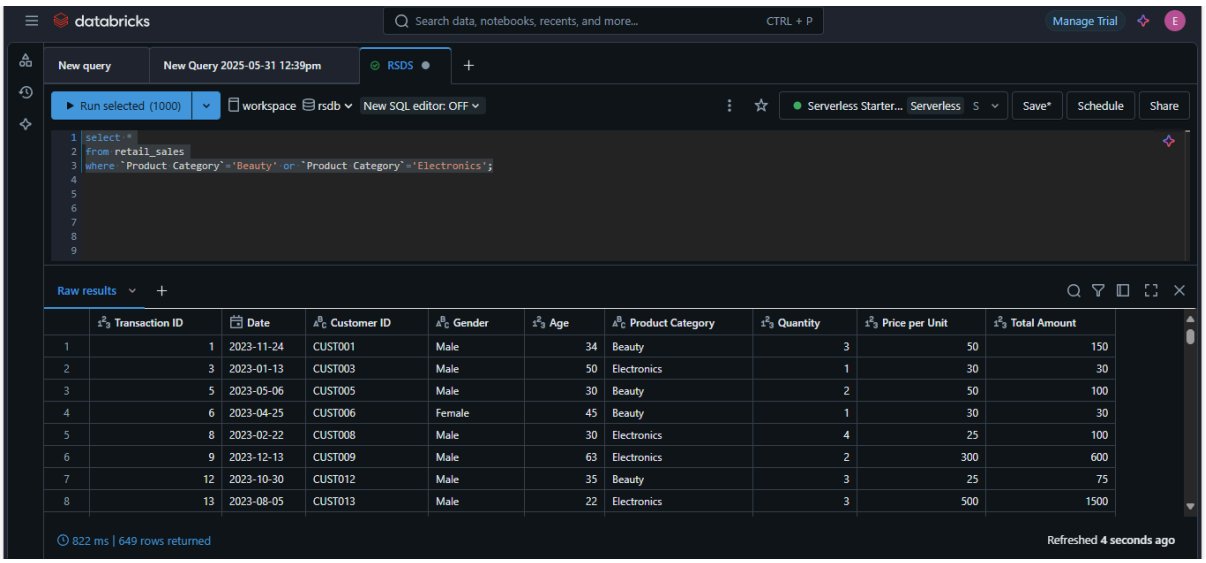
Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	2	2023-02-27	CUST002	Female	26	Clothing	2	500	1000
2	4	2023-05-21	CUST004	Male	37	Clothing	1	500	500
3	9	2023-12-13	CUST009	Male	63	Electronics	2	300	600
4	13	2023-08-05	CUST013	Male	22	Electronics	3	500	1500
5	15	2023-01-16	CUST015	Female	42	Electronics	4	500	2000
6	16	2023-02-17	CUST016	Male	19	Clothing	3	500	1500
7	20	2023-11-05	CUST020	Male	22	Clothing	3	300	900
8	21	2023-01-14	CUST021	Female	50	Beauty	1	500	500

Q7. Display all transactions where the Product Category is either 'Beauty' or 'Electronics'.

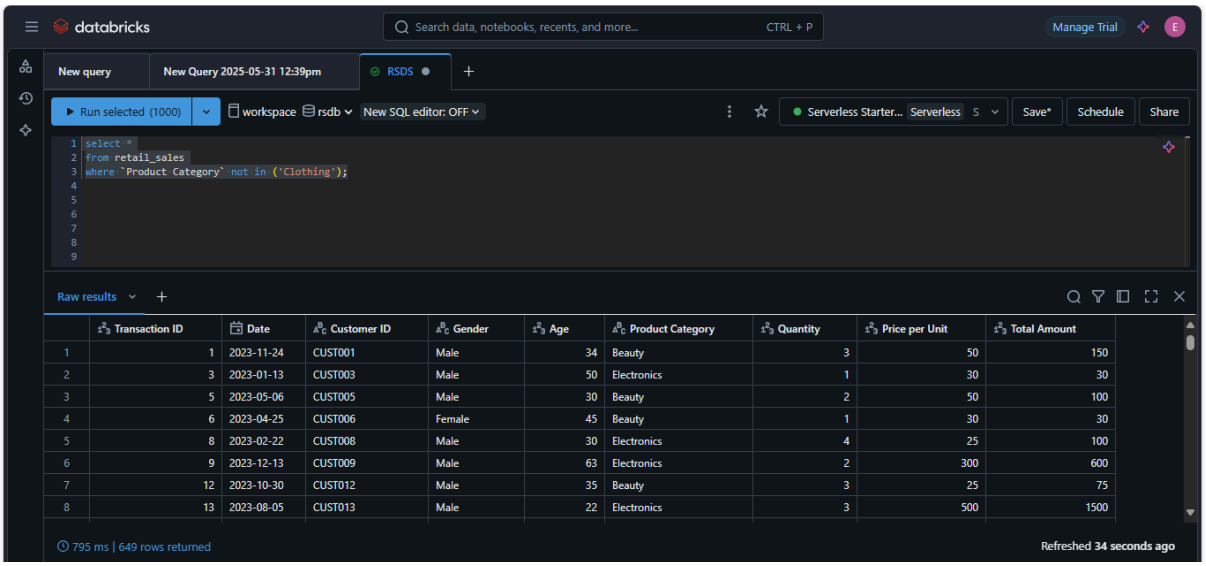
Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	1	2023-11-24	CUST001	Male	34	Beauty	3	50	150
2	3	2023-01-13	CUST003	Male	50	Electronics	1	30	30
3	5	2023-05-06	CUST005	Male	30	Beauty	2	50	100
4	6	2023-04-25	CUST006	Female	45	Beauty	1	30	30
5	8	2023-02-22	CUST008	Male	30	Electronics	4	25	100
6	9	2023-12-13	CUST009	Male	63	Electronics	2	300	600
7	12	2023-10-30	CUST012	Male	35	Beauty	3	25	75
8	13	2023-08-05	CUST013	Male	22	Electronics	3	500	1500

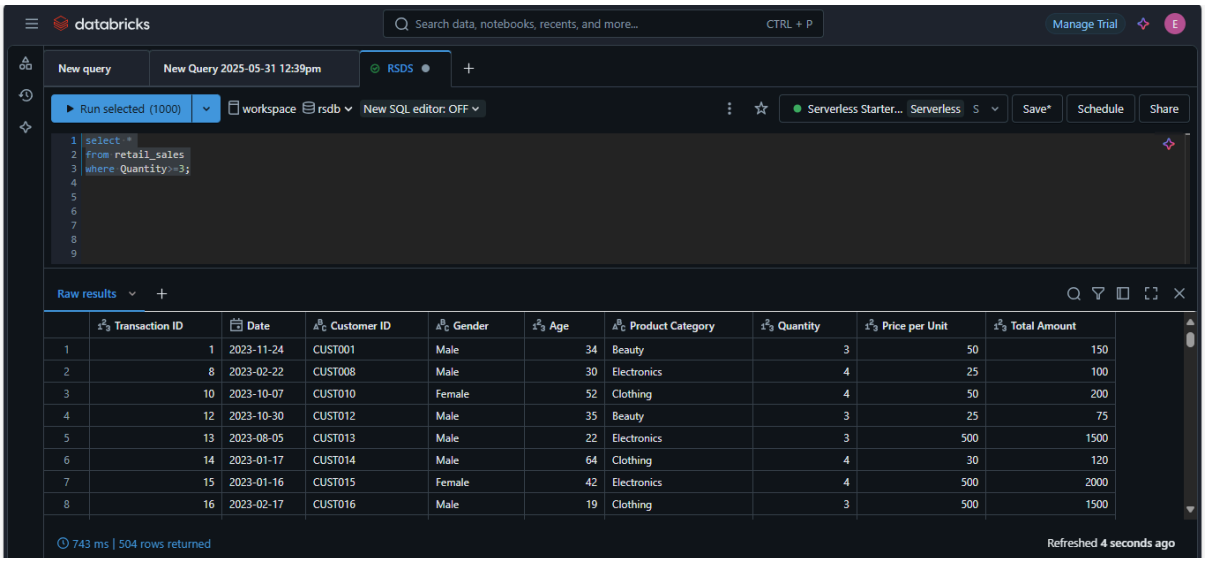
Q8. Display all transactions where the Product Category is not 'Clothing'.

Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	1	2023-11-24	CUST001	Male	34	Beauty	3	50	150
2	3	2023-01-13	CUST003	Male	50	Electronics	1	30	30
3	5	2023-05-06	CUST005	Male	30	Beauty	2	50	100
4	6	2023-04-25	CUST006	Female	45	Beauty	1	30	30
5	8	2023-02-22	CUST008	Male	30	Electronics	4	25	100
6	9	2023-12-13	CUST009	Male	63	Electronics	2	300	600
7	12	2023-10-30	CUST012	Male	35	Beauty	3	25	75
8	13	2023-08-05	CUST013	Male	22	Electronics	3	500	1500

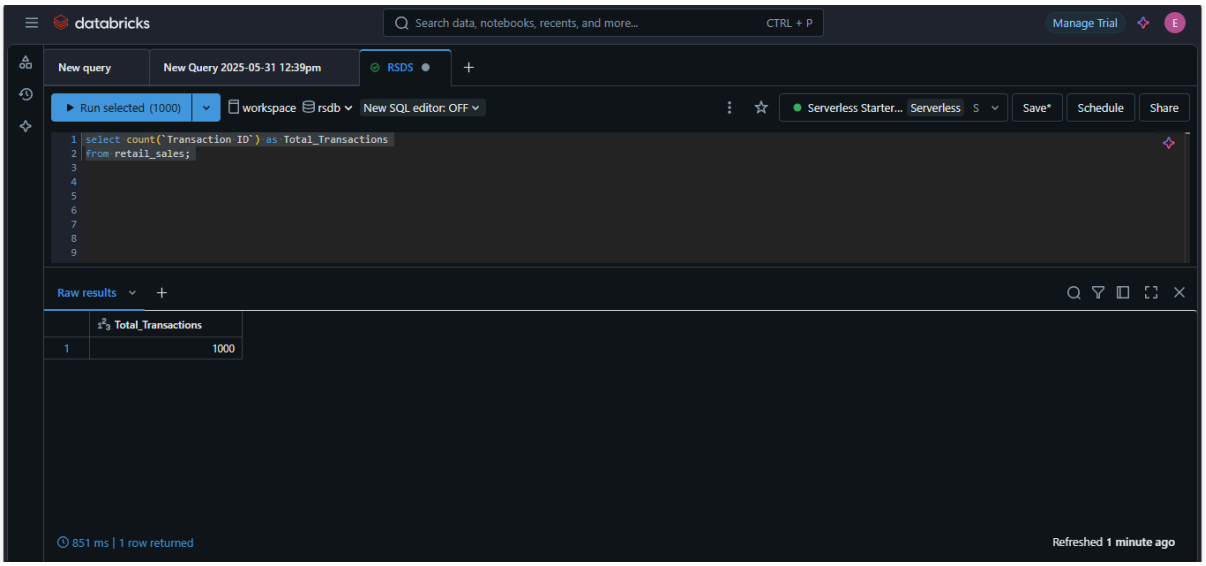
Q9. Display all transactions where the Quantity is greater than or equal to 3.
Expected output: All columns



	Transaction ID	Date	Customer ID	Gender	Age	Product Category	Quantity	Price per Unit	Total Amount
1	1	2023-11-24	CUST001	Male	34	Beauty	3	50	150
2	8	2023-02-22	CUST008	Male	30	Electronics	4	25	100
3	10	2023-10-07	CUST010	Female	52	Clothing	4	50	200
4	12	2023-10-30	CUST012	Male	35	Beauty	3	25	75
5	13	2023-08-05	CUST013	Male	22	Electronics	3	500	1500
6	14	2023-01-17	CUST014	Male	64	Clothing	4	30	120
7	15	2023-01-16	CUST015	Female	42	Electronics	4	500	2000
8	16	2023-02-17	CUST016	Male	19	Clothing	3	500	1500

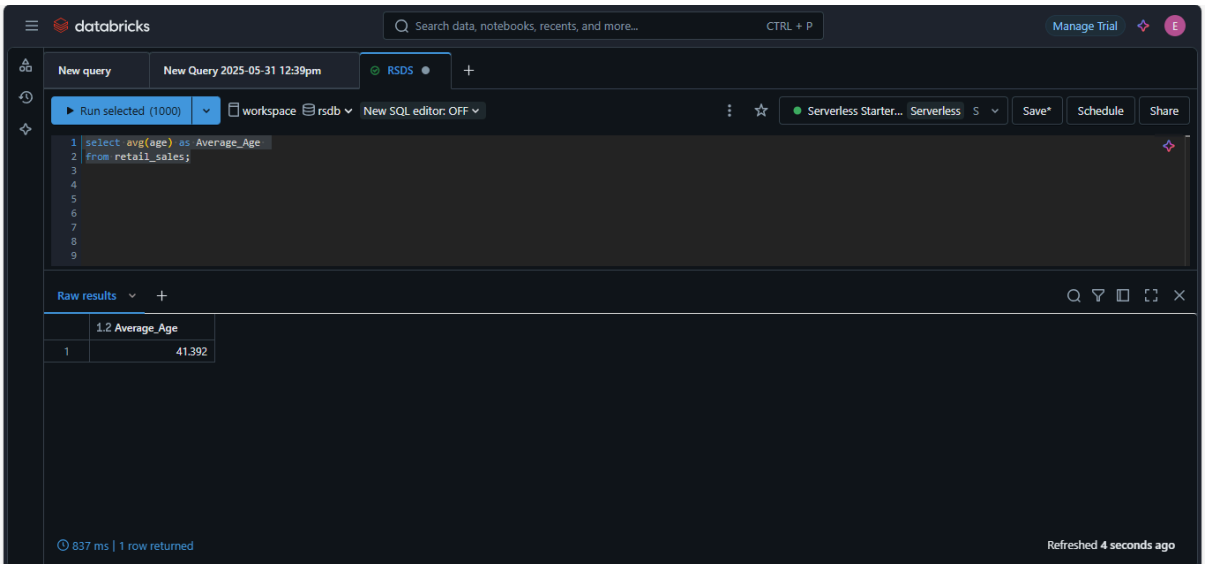
4. Aggregate Functions

Q10. Count the total number of transactions.
Expected output: Total_Transactions

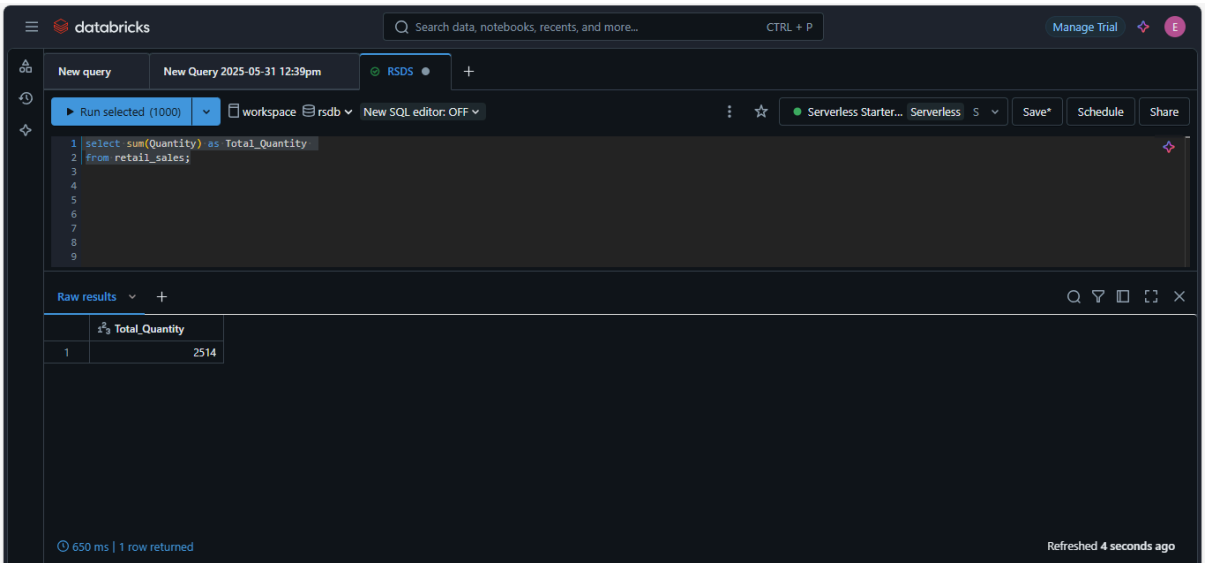


	Total_Transactions
1	1000

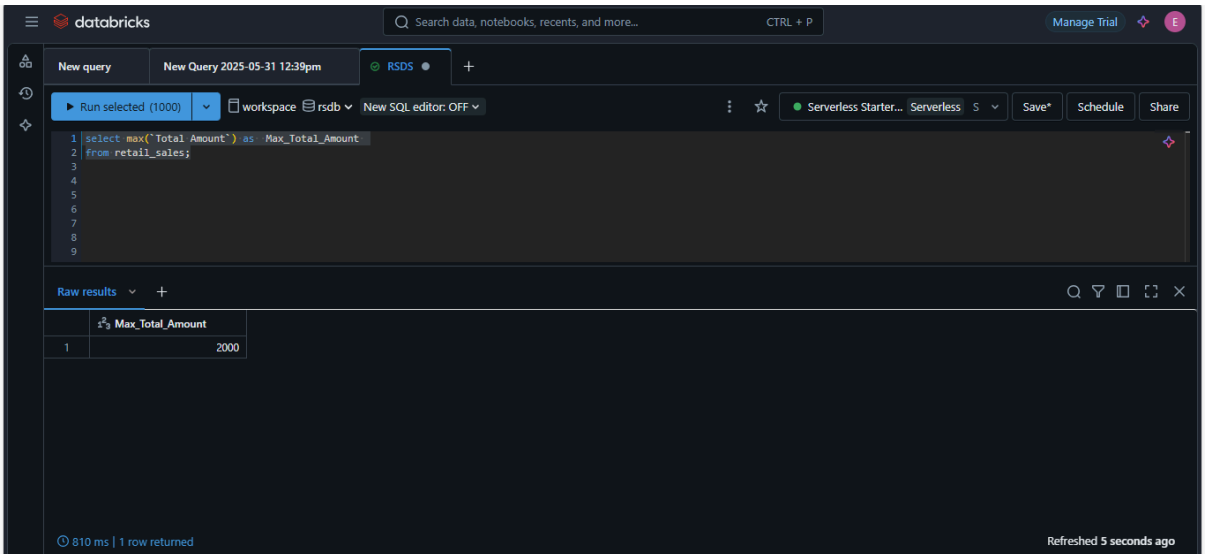
Q11. Find the average Age of customers.
Expected output: Average_Age



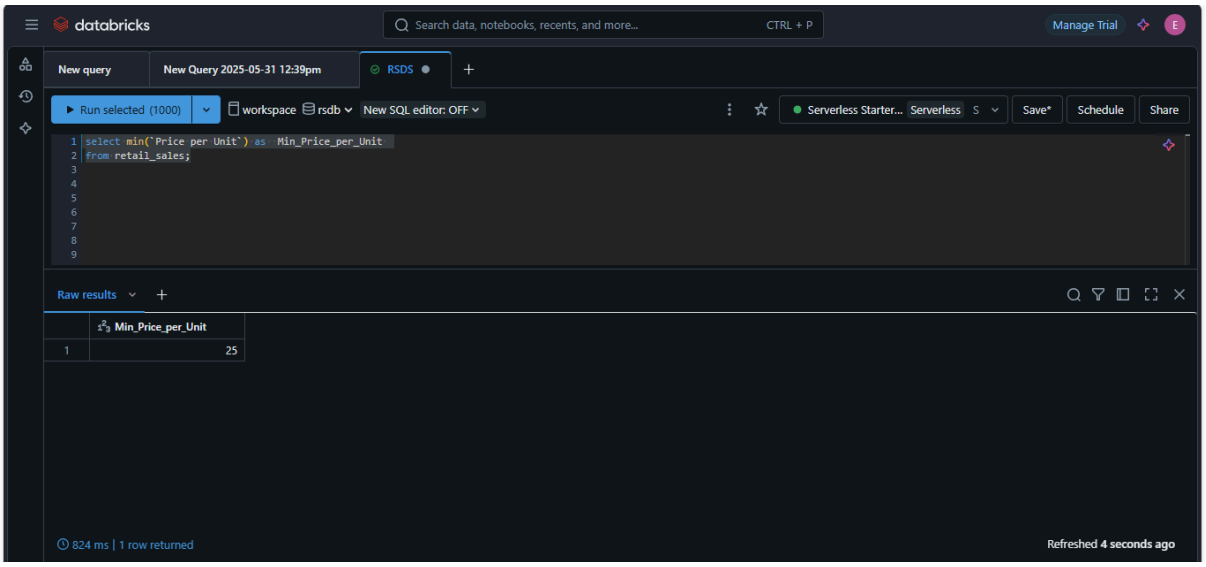
Q12. Find the total quantity of products sold.
Expected output: Total_Quantity



Q13. Find the maximum Total Amount spent in a single transaction.
Expected output: Max_Total_Amount



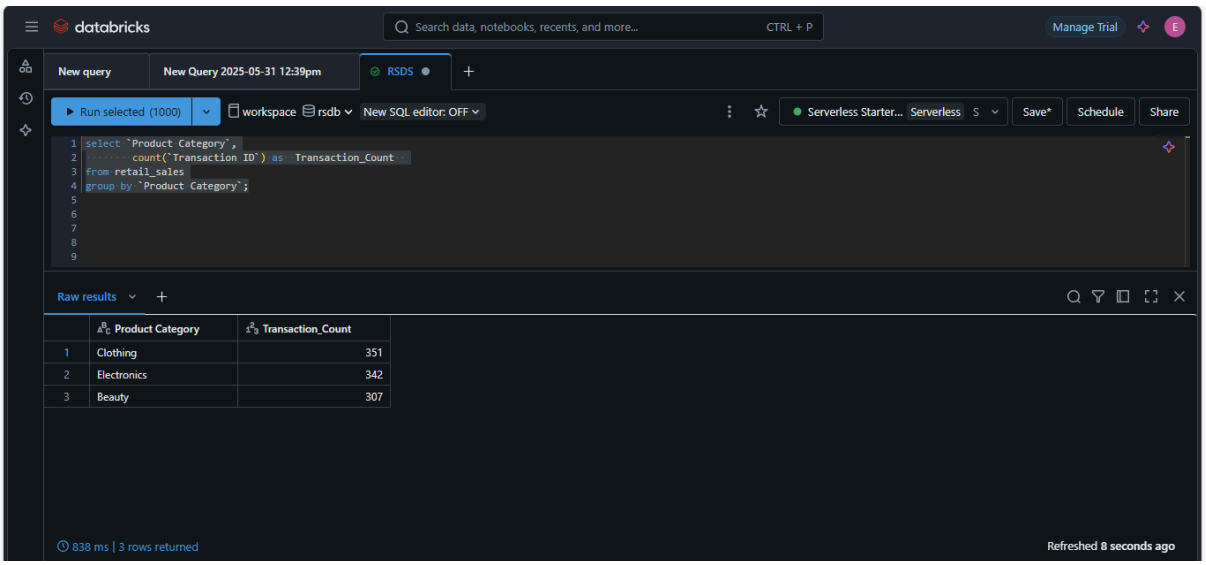
Q14. Find the minimum Price per Unit in the dataset.
Expected output: Min_Price_per_Unit



5. GROUP BY Statement

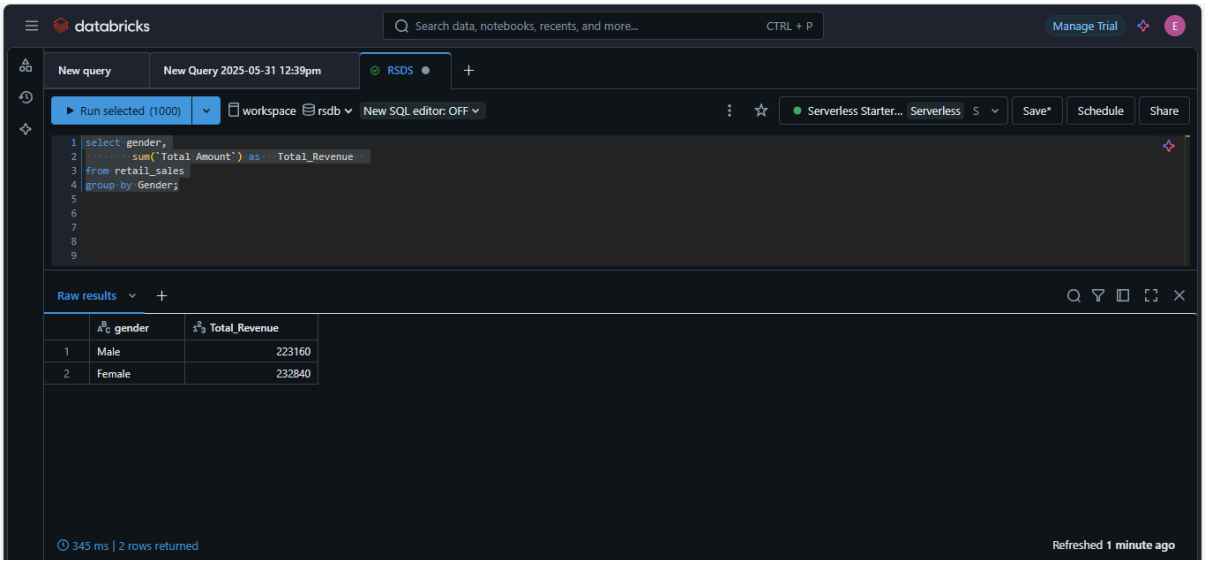
Q15. Find the number of transactions per Product Category.

Expected output: Product Category, Transaction_Count

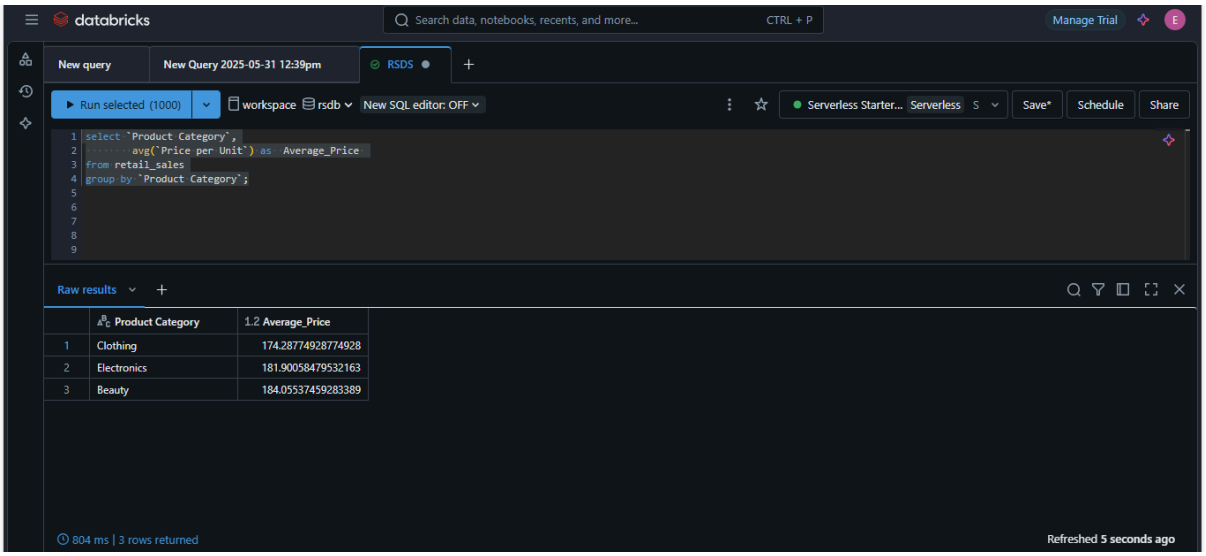


Q16. Find the total revenue (Total Amount) per gender.

Expected output: Gender, Total_Revenue

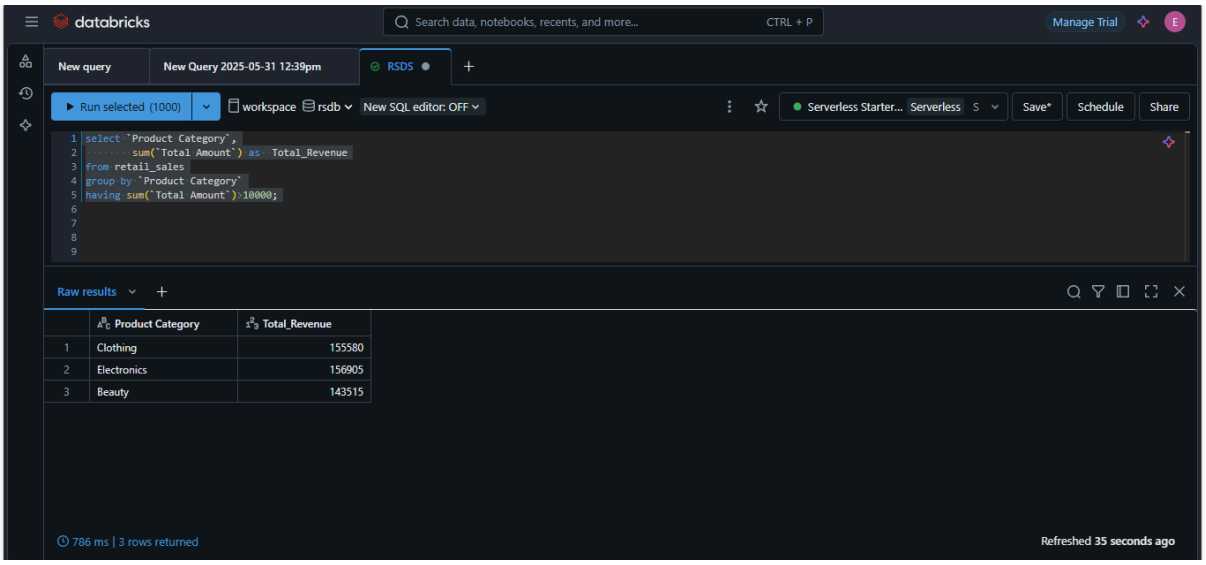


Q17. Find the average Price per Unit per product category.
Expected output: Product Category, Average_Price



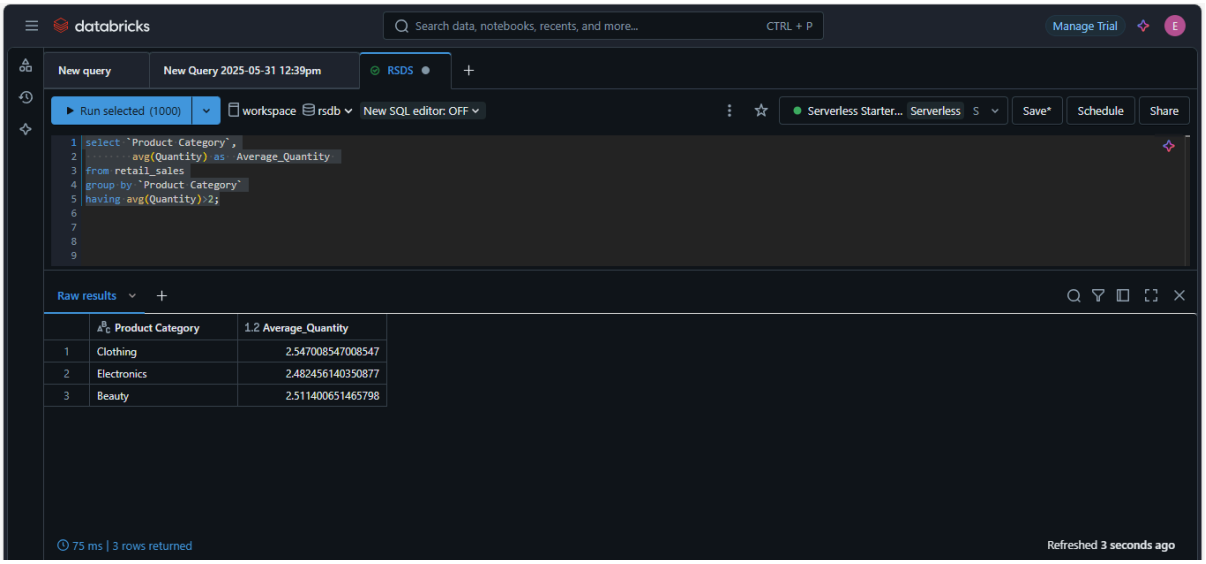
6. HAVING Clause

Q18. Find the total revenue per product category where total revenue is greater than 10,000.
Expected output: Product Category, Total_Revenue



Q19. Find the average quantity per product category where the average is more than 2.

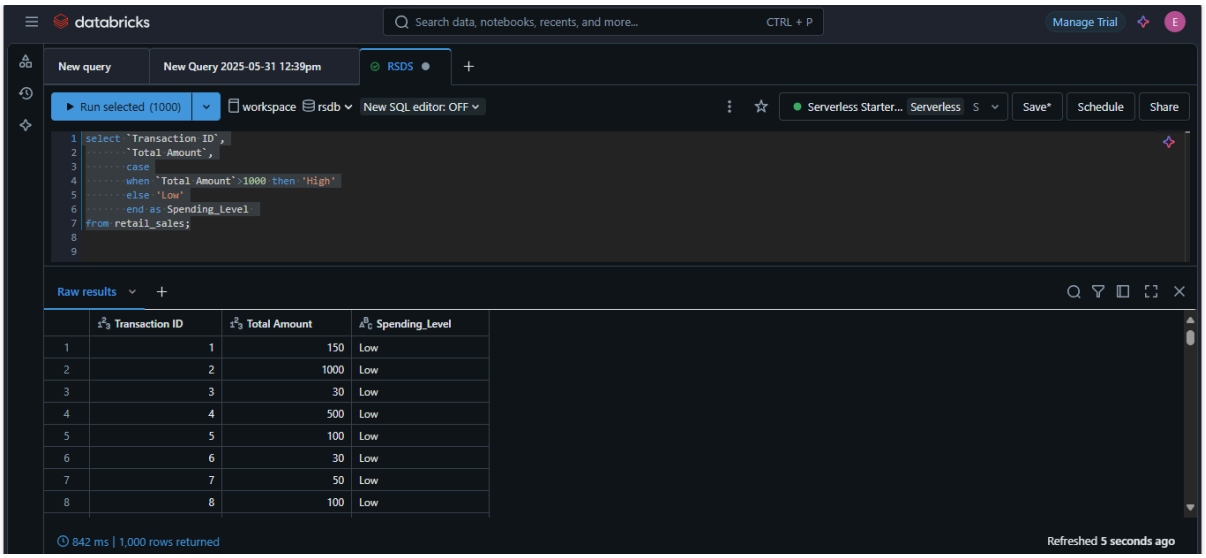
Expected output: Product Category, Average_Quantity



7. CASE Statement

Q20. Display a column called Spending_Level that shows 'High' if Total Amount > 1000, otherwise 'Low'.

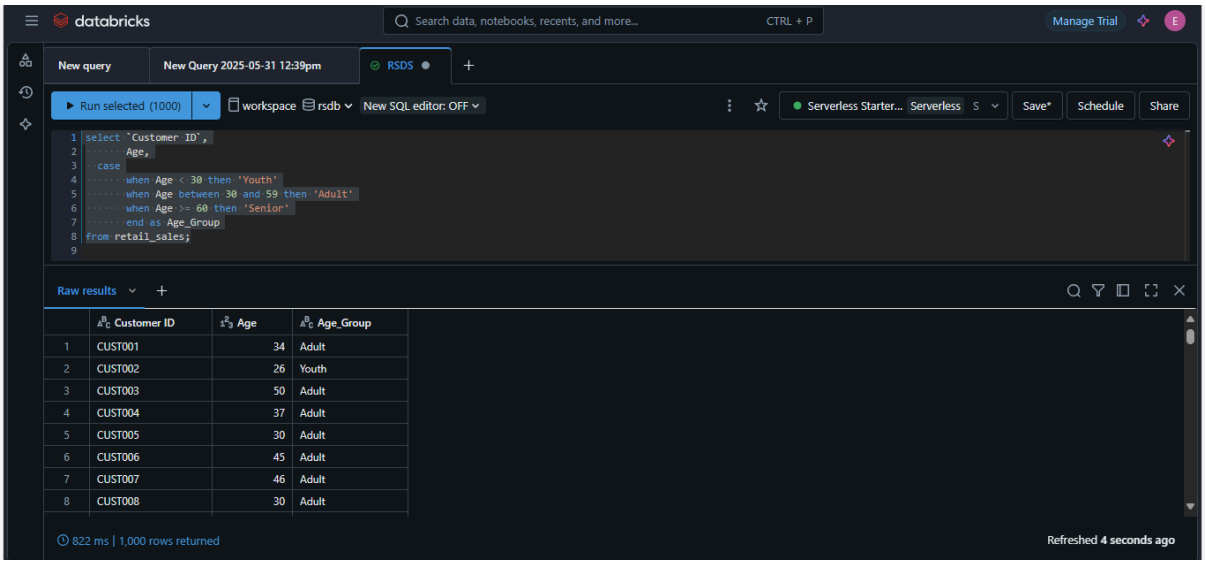
Expected output: Transaction ID, Total Amount, Spending_Level



Q21. Display a new column called Age_Group that labels customers as:

- 'Youth' if Age < 30
- 'Adult' if Age is between 30 and 59
- 'Senior' if Age >= 60

Expected output: Customer ID, Age, Age_Group



	Customer ID	Age	Age_Group
1	CUST001	34	Adult
2	CUST002	26	Youth
3	CUST003	50	Adult
4	CUST004	37	Adult
5	CUST005	30	Adult
6	CUST006	45	Adult
7	CUST007	46	Adult
8	CUST008	30	Adult