Retail Sales Performance Analysis using Excel, SQL & Power BI

By

AROCKIA ANCY INFANTA

---

1. Project Overview

This project demonstrates an end-to-end retail sales data analysis process using Microsoft Excel for data creation and cleaning, MySQL for structured querying, and Power BI for interactive visualization.
The objective is to simulate a real-world data analysis workflow as part of self-learning and portfolio building.

---

2. Dataset Details

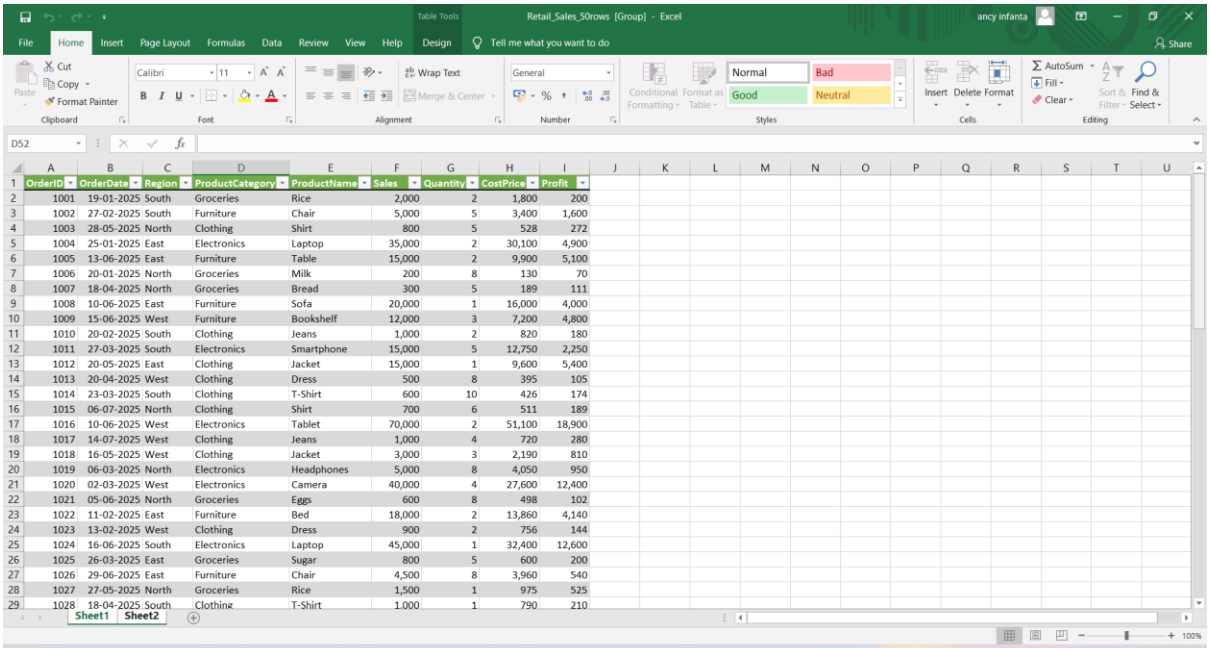
- **Type:** Retail Sales Dataset (self-created)
- **Size:** 50 rows × 9 columns
- **Columns:**
    1. OrderID (Identification number)
    2. OrderDate (Date of sale)
    3. Region (Geographic region)
    4. ProductCategory (Electronics, Furniture, Clothing, Groceries)
    5. ProductName (Individual product)
    6. Sales (Revenue generated)
    7. Quantity (Units sold)
    8. CostPrice (Cost per unit)
    9. Profit (Sales − CostPrice)

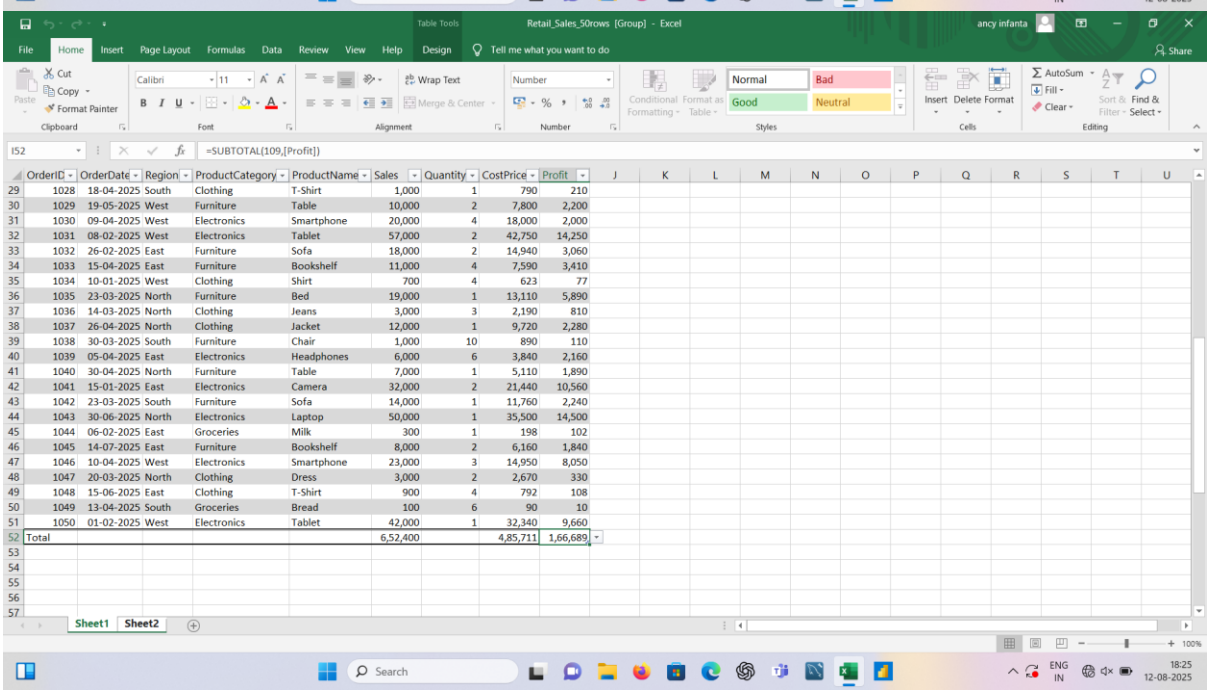
---

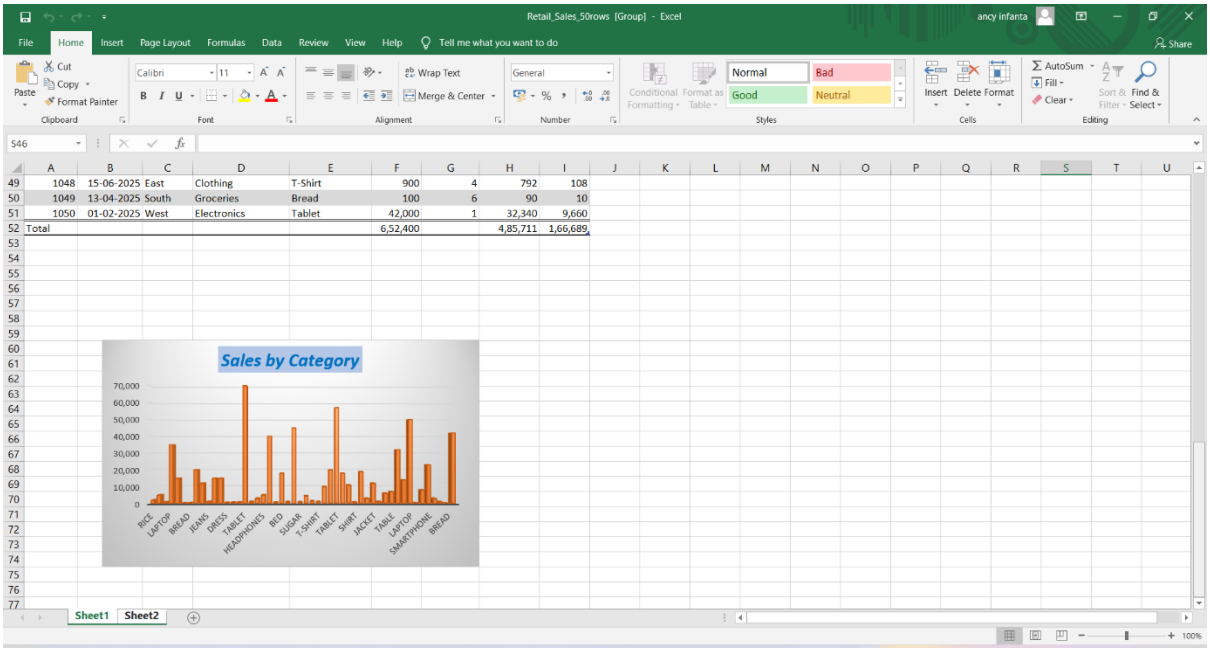
3. Steps Performed

Excel

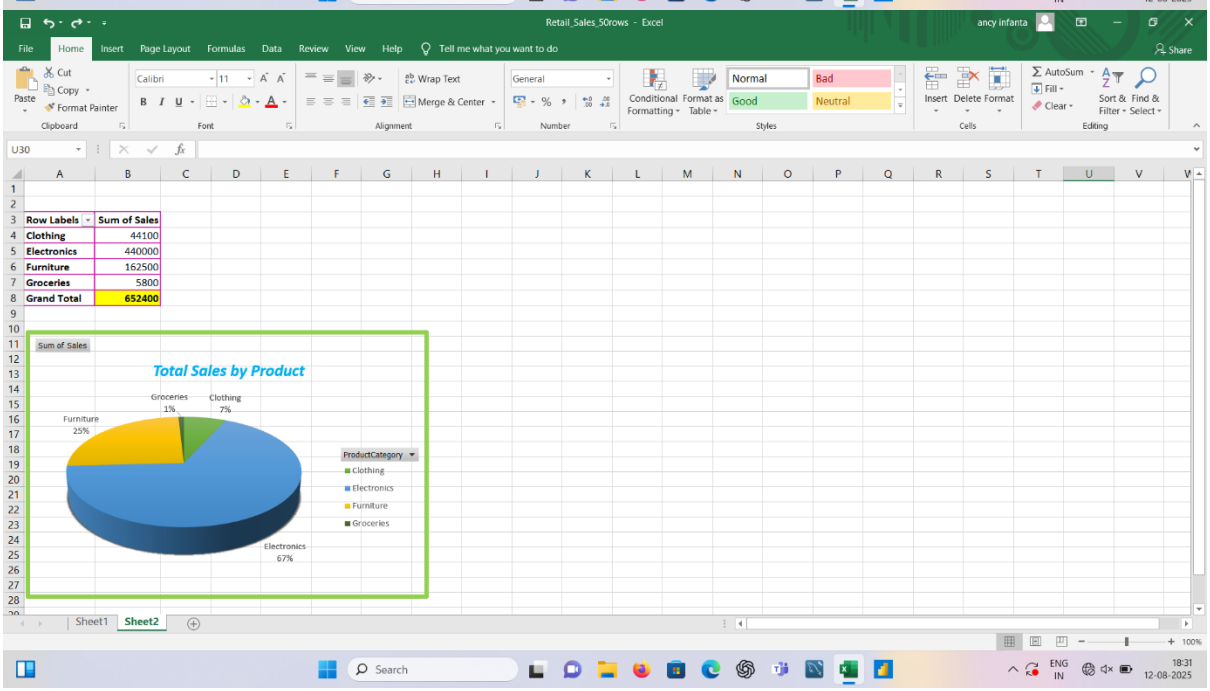
- Created a **50-rows dataset** manually to simulate realistic sales records.
- Applied formulas for calculated fields (e.g., Profit).
- Locked values to avoid changes (**Freeze Random Values**).
- Applied **number formatting** for better readability.
- Converted dataset into **Excel Table** format for easier analysis.
- Added a **Total Row** to calculate sum of Sales, CostPrice, and Profit.
- Created a **Bar Chart** for visual insights.
- Built a **Pivot Table** for aggregated analysis.
- Added a **Pie Chart** from Pivot Table results.


Retail_Sales_50rows [Group] - Excel
ancy infanta
File Home Insert Page Layout Formulas Data Review View Help Design Tell me what you want to do Share
Cut Copy Format Painter Paste Clipboard
Calibri 11 Font
Wrap Text Merge & Center Alignment
General Number
Normal Bad Good Neutral Styles
Conditional Formatting Format as Table
Insert Delete Format Cells
AutoSum Fill Clear Sort & Filter Find & Select Editing
D52
OrderID OrderDate Region ProductCategory ProductName Sales Quantity CostPrice Profit
1001 19-01-2025 South Groceries Rice 2,000 2 1,800 200
1002 27-02-2025 South Furniture Chair 5,000 5 3,400 1,600
1003 28-05-2025 North Clothing Shirt 800 5 528 272
1004 25-01-2025 East Electronics Laptop 35,000 2 30,100 4,900
1005 13-06-2025 East Furniture Table 15,000 2 9,900 5,100
1006 20-01-2025 North Groceries Milk 200 8 130 70
1007 18-04-2025 North Groceries Bread 300 5 189 111
1008 10-06-2025 East Furniture Sofa 20,000 1 16,000 4,000
1009 15-06-2025 West Furniture Bookshelf 12,000 3 7,200 4,800
1010 20-02-2025 South Clothing Jeans 1,000 2 820 180
1011 27-03-2025 South Electronics Smartphone 15,000 5 12,750 2,250
1012 20-05-2025 East Clothing Jacket 15,000 1 9,600 5,400
1013 20-04-2025 West Clothing Dress 500 8 395 105
1014 23-03-2025 South Clothing T-Shirt 600 10 426 174
1015 06-07-2025 North Clothing Shirt 700 6 511 189
1016 10-06-2025 West Electronics Tablet 70,000 2 51,100 18,900
1017 14-07-2025 West Clothing Jeans 1,000 4 720 280
1018 16-05-2025 West Clothing Jacket 3,000 3 2,190 810
1019 06-03-2025 North Electronics Headphones 5,000 8 4,050 950
1020 02-03-2025 West Electronics Camera 40,000 4 27,600 12,400
1021 05-06-2025 North Groceries Eggs 600 8 498 102
1022 11-02-2025 East Furniture Bed 18,000 2 13,860 4,140
1023 13-02-2025 West Clothing Dress 900 2 756 144
1024 16-06-2025 South Electronics Laptop 45,000 1 32,400 12,600
1025 26-03-2025 East Groceries Sugar 800 5 600 200
1026 29-06-2025 East Furniture Chair 4,500 8 3,960 540
1027 27-05-2025 North Groceries Rice 1,500 1 975 525
1028 18-04-2025 South Clothing T-Shirt 1,000 1 790 210
Sheet1 Sheet2
Search
ENG IN
18:24 12-08-2025


Retail_Sales_50rows [Group] - Excel
ancy infanta
File Home Insert Page Layout Formulas Data Review View Help Design Tell me what you want to do Share
Cut Copy Format Painter Paste Clipboard
Calibri 11 Font
Wrap Text Merge & Center Alignment
Number Number
Normal Bad Good Neutral Styles
Conditional Formatting Format as Table
Insert Delete Format Cells
AutoSum Fill Clear Sort & Filter Find & Select Editing
I52
=SUBTOTAL(109,[Profit])
OrderID OrderDate Region ProductCategory ProductName Sales Quantity CostPrice Profit
1028 18-04-2025 South Clothing T-Shirt 1,000 1 790 210
1029 19-05-2025 West Furniture Table 10,000 2 7,800 2,200
1030 09-04-2025 West Electronics Smartphone 20,000 4 18,000 2,000
1031 08-02-2025 West Electronics Tablet 57,000 2 42,750 14,250
1032 26-02-2025 East Furniture Sofa 18,000 2 14,940 3,060
1033 15-04-2025 East Furniture Bookshelf 11,000 4 7,590 3,410
1034 10-01-2025 West Clothing Shirt 700 4 623 77
1035 23-03-2025 North Furniture Bed 19,000 1 13,110 5,890
1036 14-03-2025 North Clothing Jeans 3,000 3 2,190 810
1037 26-04-2025 North Clothing Jacket 12,000 1 9,720 2,280
1038 30-03-2025 South Furniture Chair 1,000 10 890 110
1039 05-04-2025 East Electronics Headphones 6,000 6 3,840 2,160
1040 30-04-2025 North Furniture Table 7,000 1 5,110 1,890
1041 15-01-2025 East Electronics Camera 32,000 2 21,440 10,560
1042 23-03-2025 South Furniture Sofa 14,000 1 11,760 2,240
1043 30-06-2025 North Electronics Laptop 50,000 1 35,500 14,500
1044 06-02-2025 East Groceries Milk 300 1 198 102
1045 14-07-2025 East Furniture Bookshelf 8,000 2 6,160 1,840
1046 10-04-2025 West Electronics Smartphone 23,000 3 14,950 8,050
1047 20-03-2025 North Clothing Dress 3,000 2 2,670 330
1048 15-06-2025 East Clothing T-Shirt 900 4 792 108
1049 13-04-2025 South Groceries Bread 100 6 90 10
1050 01-02-2025 West Electronics Tablet 42,000 1 32,340 9,660
Total 6,52,400 4,85,711 1,66,689
Sheet1 Sheet2
Search
ENG IN
18:25 12-08-2025



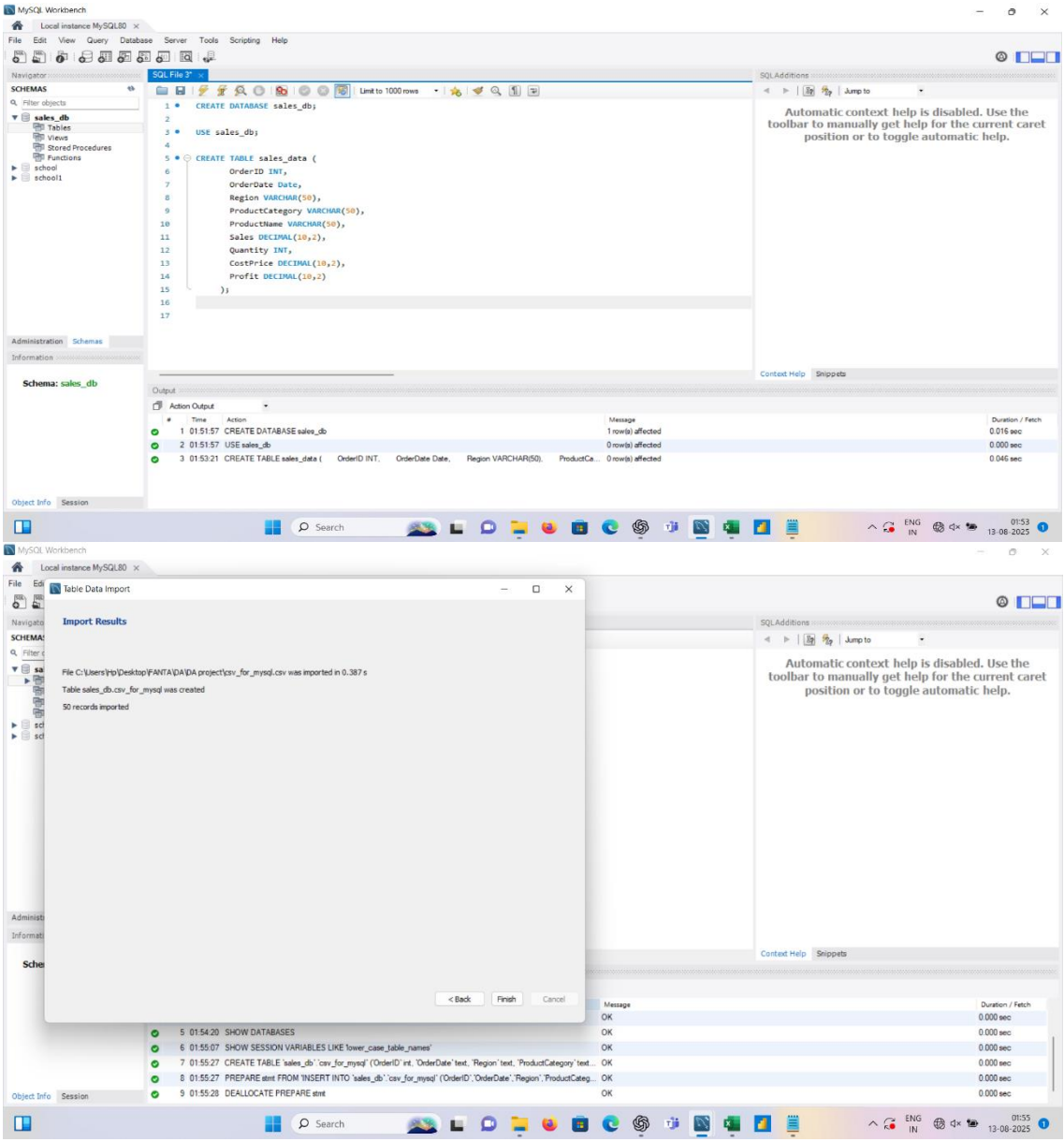
	A	B	C	D	E	F	G	H	I
49	1048	15-06-2025	East	Clothing	T-Shirt	900	4	792	108
50	1049	13-04-2025	South	Groceries	Bread	100	6	90	10
51	1050	01-02-2025	West	Electronics	Tablet	42,000	1	32,340	9,660
52	Total					6,52,400		4,85,711	1,66,689

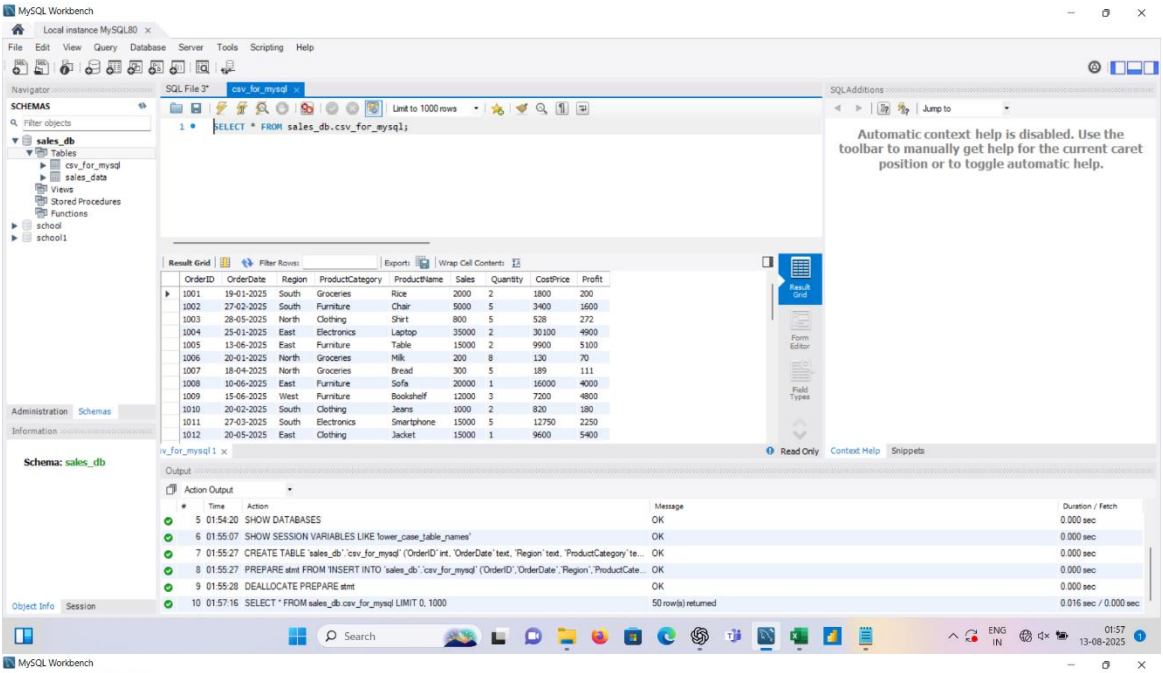


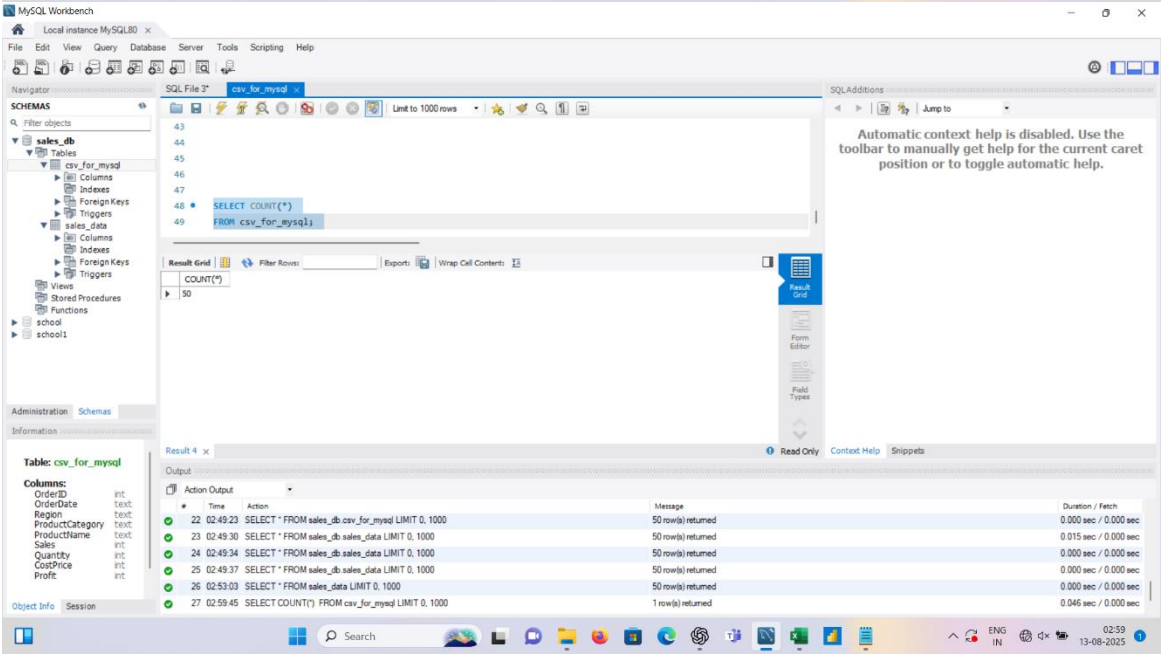
Row Labels	Sum of Sales
Clothing	44100
Electronics	440000
Furniture	162500
Groceries	5800
Grand Total	652400

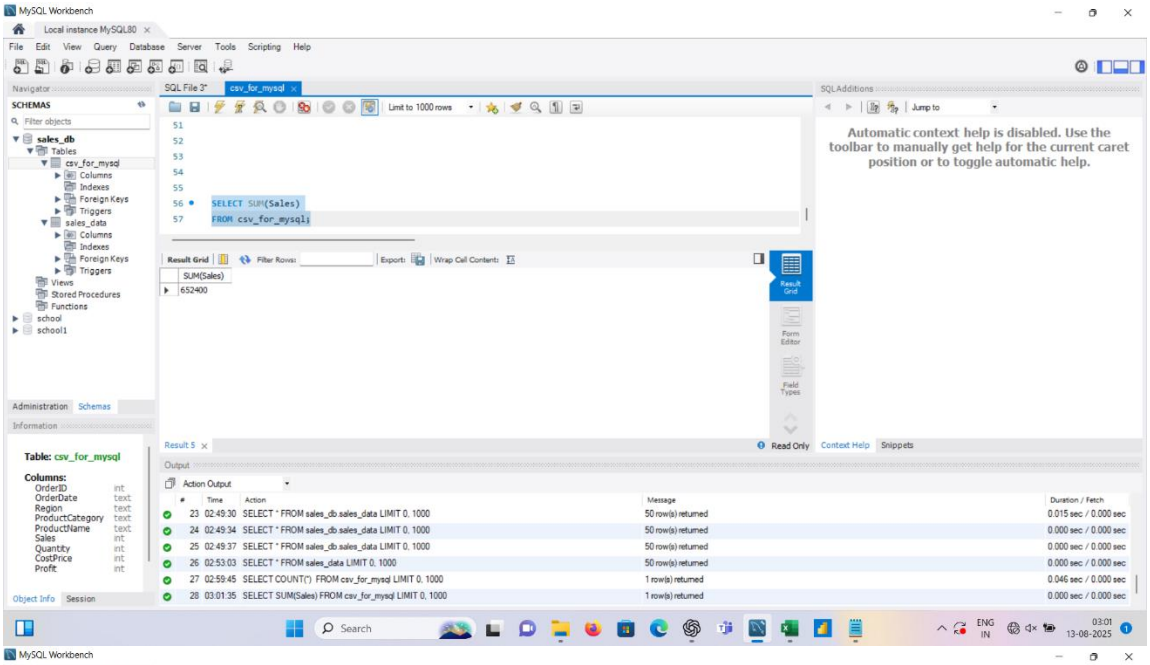
MySQL

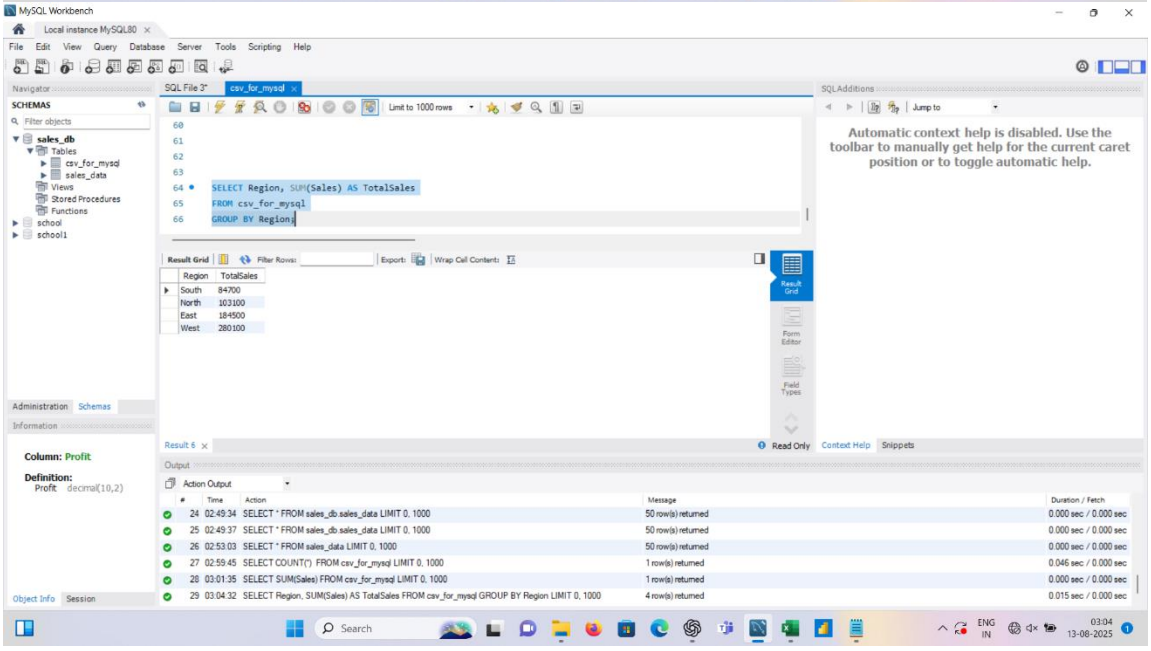
- Created a **database** for retail sales.
- Created a **table** structure with relevant data types.
- Imported the dataset from CSV into MySQL.
- Ran SQL queries for analysis:
    - Total sales by region
    - Most profitable product
    - Total number of records
    - Overall total sales value
    - Sales below a certain threshold

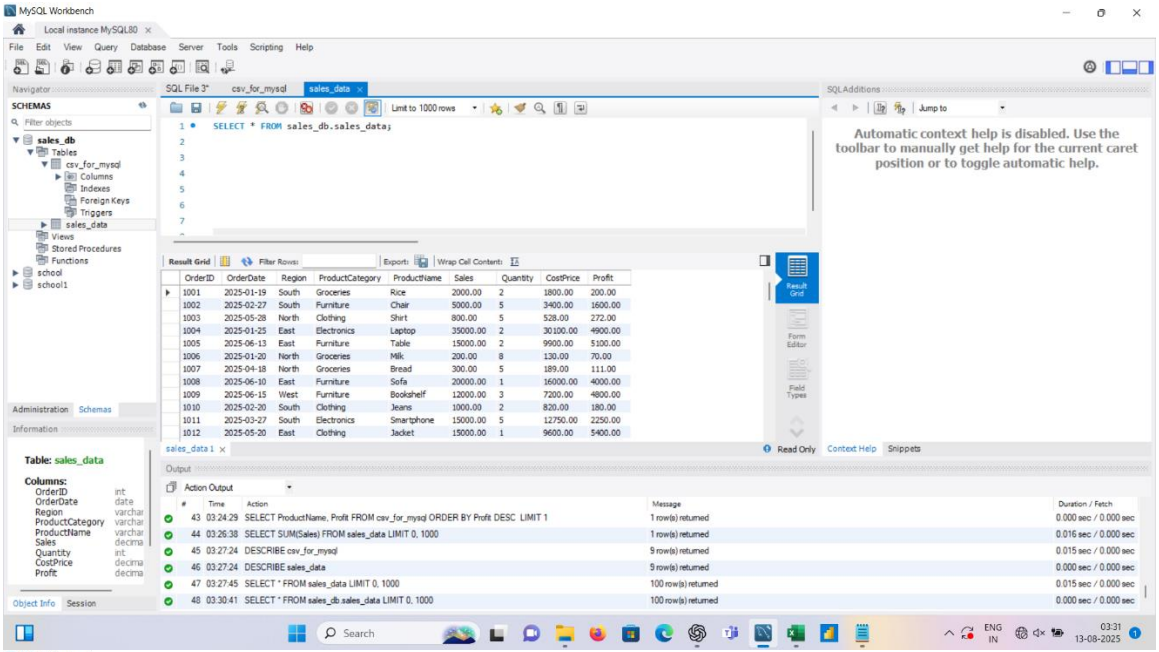


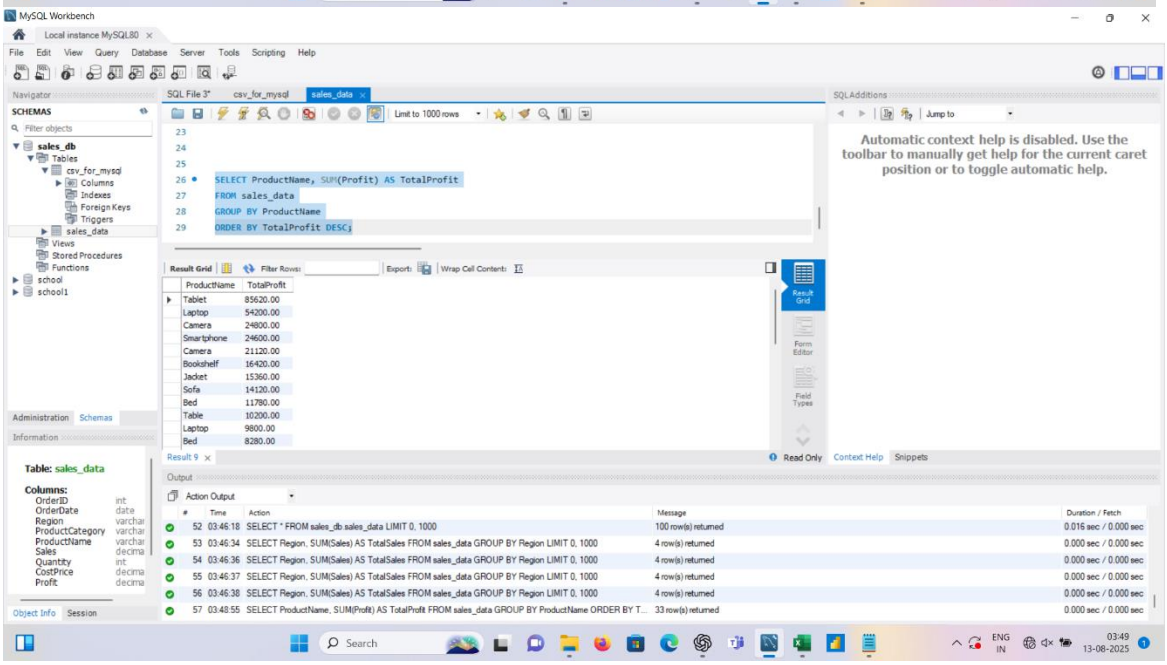

MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
sales_db
Tables
csv_for_mysql
sales_data
Views
Stored Procedures
Functions
school
school1
SQL File 3*
csv_for_mysql
Limit to 1000 rows
1 SELECT * FROM sales_db.csv_for_mysql;
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Result Grid
Filter Rows:
Export:
Wrap Cell Content:
OrderID OrderDate Region ProductCategory ProductName Sales Quantity CostPrice Profit
1001 19-01-2025 South Groceries Rice 2000 2 1800 200
1002 27-02-2025 South Furniture Chair 5000 5 3400 1600
1003 28-05-2025 North Clothing Shirt 800 5 528 272
1004 25-01-2025 East Electronics Laptop 35000 2 30100 4900
1005 13-06-2025 East Furniture Table 15000 2 9900 5100
1006 20-01-2025 North Groceries Milk 200 8 130 70
1007 18-04-2025 North Groceries Bread 300 5 189 111
1008 10-06-2025 East Furniture Sofa 20000 1 16000 4000
1009 15-06-2025 West Furniture Bookshelf 12000 3 7200 4800
1010 20-02-2025 South Clothing Jeans 1000 2 820 180
1011 27-03-2025 South Electronics Smartphone 15000 5 12750 2250
1012 20-05-2025 East Clothing Jacket 15000 1 9600 5400
Result Grid
Form Editor
Field Types
Read Only
Context Help
Snippets
Administration Schemas
Information
Schema: sales_db
Object Info Session
Output
Action Output
Time Action Message Duration / Fetch
5 01:54:20 SHOW DATABASES OK 0.000 sec
6 01:55:07 SHOW SESSION VARIABLES LIKE 'lower_case_table_names' OK 0.000 sec
7 01:55:27 CREATE TABLE `sales_db`.`csv_for_mysql` (`OrderID` int, `OrderDate` text, `Region` text, `ProductCategory` te... OK 0.000 sec
8 01:55:27 PREPARE stmt FROM 'INSERT INTO `sales_db`.`csv_for_mysql` (`OrderID`,`OrderDate`,`Region`,`ProductCate... OK 0.000 sec
9 01:55:28 DEALLOCATE PREPARE stmt OK 0.000 sec
10 01:57:16 SELECT * FROM sales_db.csv_for_mysql LIMIT 0, 1000 50 row(s) returned 0.016 sec / 0.000 sec
Search
ENG IN
01:57 13-08-2025

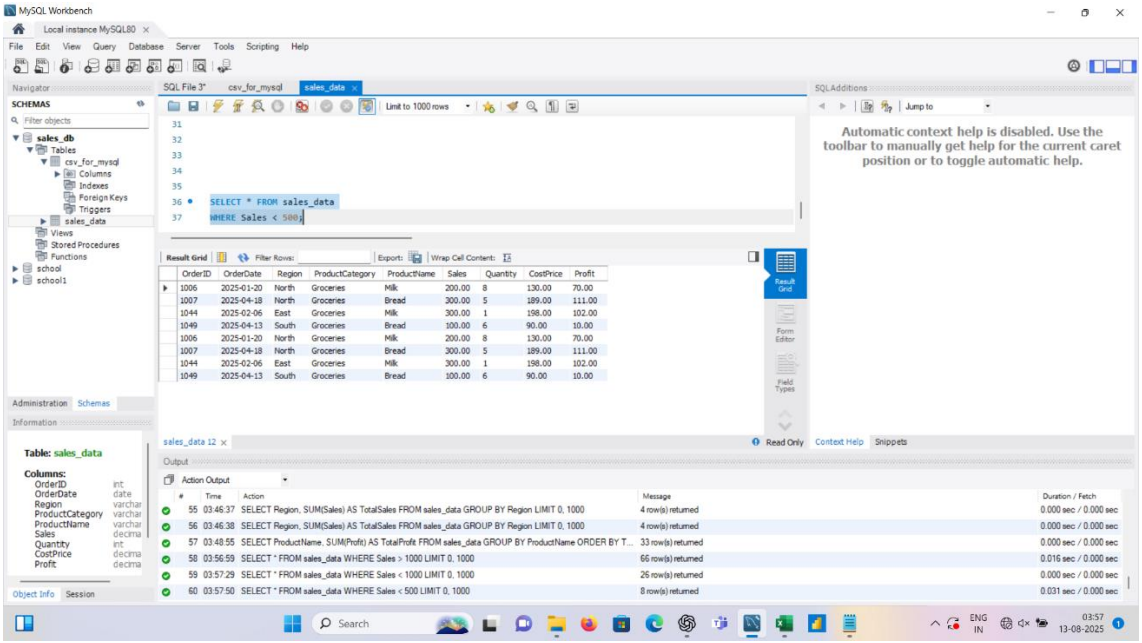

MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
sales_db
Tables
csv_for_mysql
Columns
Indexes
Foreign Keys
Triggers
sales_data
Columns
Indexes
Foreign Keys
Triggers
Views
Stored Procedures
Functions
school
school1
SQL File 3*
csv_for_mysql
Limit to 1000 rows
43
44
45
46
47
48 SELECT COUNT(*)
49 FROM csv_for_mysql;
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Result Grid
Filter Rows:
Export:
Wrap Cell Content:
COUNT(*)
50
Result Grid
Form Editor
Field Types
Read Only
Context Help
Snippets
Administration Schemas
Information
Table: csv_for_mysql
Columns:
OrderID int
OrderDate text
Region text
ProductCategory text
ProductName text
Sales int
Quantity int
CostPrice int
Profit int
Object Info Session
Result 4
Output
Action Output
Time Action Message Duration / Fetch
22 02:49:23 SELECT * FROM sales_db.csv_for_mysql LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
23 02:49:30 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.015 sec / 0.000 sec
24 02:49:34 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
25 02:49:37 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
26 02:53:03 SELECT * FROM sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
27 02:59:45 SELECT COUNT(*) FROM csv_for_mysql LIMIT 0, 1000 1 row(s) returned 0.046 sec / 0.000 sec
Search
ENG IN
02:59 13-08-2025


MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
sales_db
Tables
csv_for_mysql
Columns
Indexes
Foreign Keys
Triggers
sales_data
Columns
Indexes
Foreign Keys
Triggers
Views
Stored Procedures
Functions
school
school1
Administration Schemas
Information
Table: csv_for_mysql
Columns:
OrderID int
OrderDate text
Region text
ProductCategory text
ProductName text
Sales int
Quantity int
CostPrice int
Profit int
Object Info Session
SQL File 3* csv_for_mysql
Limit to 1000 rows
51
52
53
54
55
56 SELECT SUM(Sales)
57 FROM csv_for_mysql;
Result Grid Filter Rows: Export: Wrap Cell Content:
SUM(Sales)
652400
Result 5
Read Only
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Context Help Snippets
Output
Action Output
Time Action Message Duration / Fetch
23 02:49:30 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.015 sec / 0.000 sec
24 02:49:34 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
25 02:49:37 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
26 02:53:03 SELECT * FROM sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
27 02:59:45 SELECT COUNT(*) FROM csv_for_mysql LIMIT 0, 1000 1 row(s) returned 0.046 sec / 0.000 sec
28 03:01:35 SELECT SUM(Sales) FROM csv_for_mysql LIMIT 0, 1000 1 row(s) returned 0.000 sec / 0.000 sec
Search
ENG IN
03:01 13-08-2025


MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
sales_db
Tables
csv_for_mysql
sales_data
Views
Stored Procedures
Functions
school
school1
Administration Schemas
Information
Column: Profit
Definition:
Profit decimal(10,2)
Object Info Session
SQL File 3* csv_for_mysql
Limit to 1000 rows
60
61
62
63
64 SELECT Region, SUM(Sales) AS TotalSales
65 FROM csv_for_mysql
66 GROUP BY Region;
Result Grid Filter Rows: Export: Wrap Cell Content:
Region TotalSales
South 84700
North 103100
East 184500
West 280100
Result 6
Read Only
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Context Help Snippets
Output
Action Output
Time Action Message Duration / Fetch
24 02:49:34 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
25 02:49:37 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
26 02:53:03 SELECT * FROM sales_data LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
27 02:59:45 SELECT COUNT(*) FROM csv_for_mysql LIMIT 0, 1000 1 row(s) returned 0.046 sec / 0.000 sec
28 03:01:35 SELECT SUM(Sales) FROM csv_for_mysql LIMIT 0, 1000 1 row(s) returned 0.000 sec / 0.000 sec
29 03:04:32 SELECT Region, SUM(Sales) AS TotalSales FROM csv_for_mysql GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.015 sec / 0.000 sec
Search
ENG IN
03:04 13-08-2025

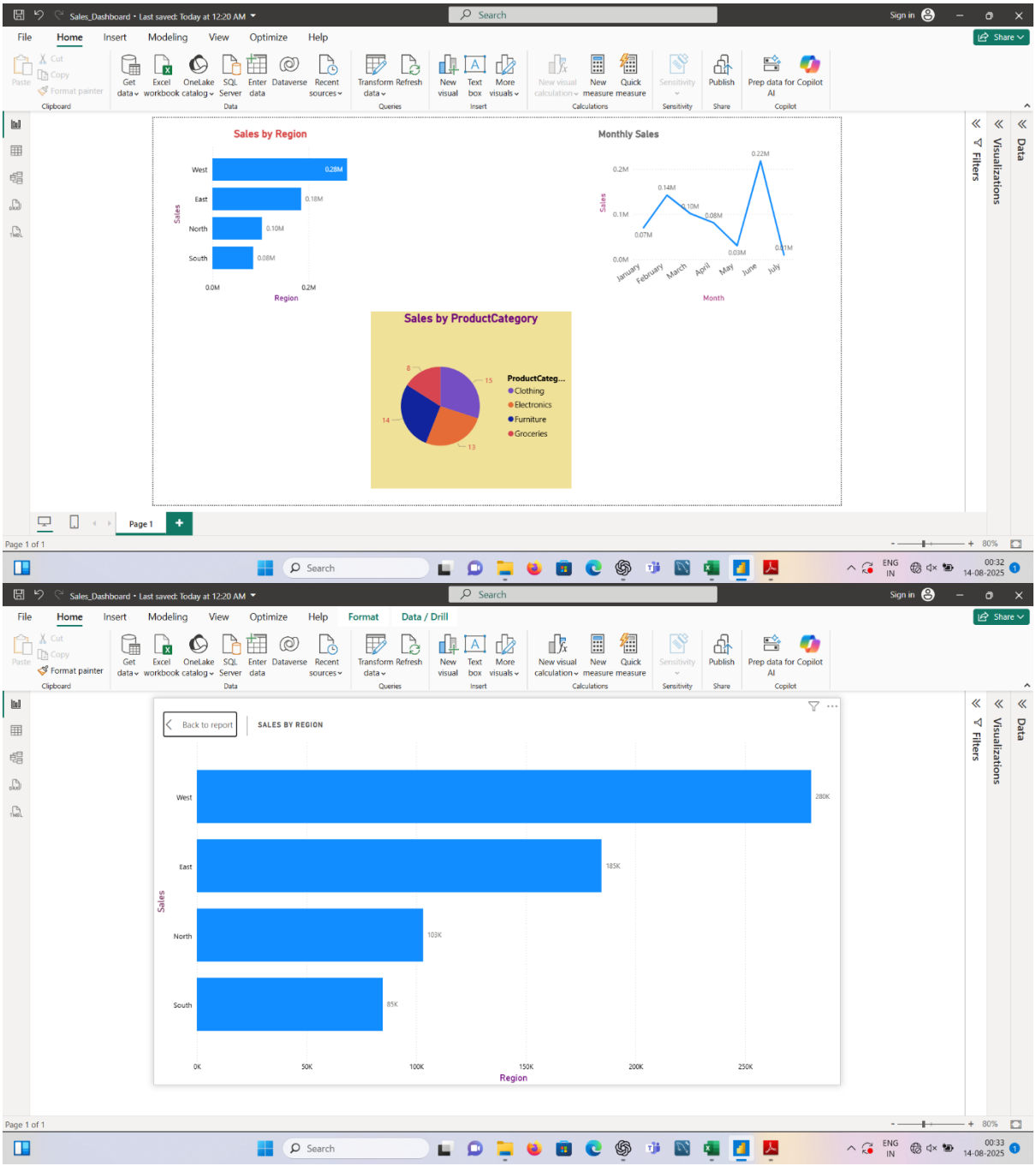

MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
SQL File 3* csv_for_mysql sales_data
SELECT * FROM sales_db.sales_data;
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Table: sales_data
Columns:
OrderID int
OrderDate date
Region varchar
ProductCategory varchar
ProductName varchar
Sales decima
Quantity int
CostPrice decima
Profit decima
Action Output
43 03:24:29 SELECT ProductName, Profit FROM csv_for_mysql ORDER BY Profit DESC LIMIT 1 1 row(s) returned 0.000 sec / 0.000 sec
44 03:26:38 SELECT SUM(Sales) FROM sales_data LIMIT 0, 1000 1 row(s) returned 0.016 sec / 0.000 sec
45 03:27:24 DESCRIBE csv_for_mysql 9 row(s) returned 0.015 sec / 0.000 sec
46 03:27:24 DESCRIBE sales_data 9 row(s) returned 0.000 sec / 0.000 sec
47 03:27:45 SELECT * FROM sales_data LIMIT 0, 1000 100 row(s) returned 0.015 sec / 0.000 sec
48 03:30:41 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 100 row(s) returned 0.000 sec / 0.000 sec

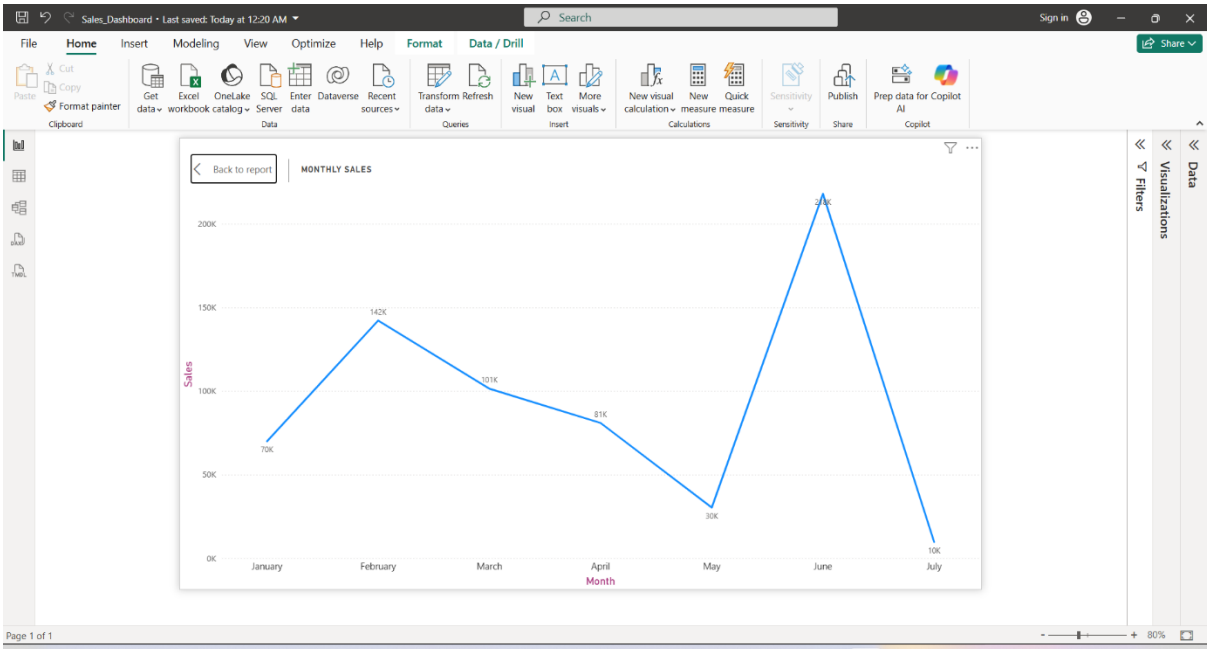

MySQL Workbench
Local instance MySQL80
SELECT ProductName, SUM(Profit) AS TotalProfit
FROM sales_data
GROUP BY ProductName
ORDER BY TotalProfit DESC;
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Table: sales_data
Columns:
OrderID int
OrderDate date
Region varchar
ProductCategory varchar
ProductName varchar
Sales decima
Quantity int
CostPrice decima
Profit decima
Action Output
52 03:46:18 SELECT * FROM sales_db.sales_data LIMIT 0, 1000 100 row(s) returned 0.016 sec / 0.000 sec
53 03:46:34 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
54 03:46:36 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
55 03:46:37 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
56 03:46:38 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
57 03:48:55 SELECT ProductName, SUM(Profit) AS TotalProfit FROM sales_data GROUP BY ProductName ORDER BY T... 33 row(s) returned 0.000 sec / 0.000 sec

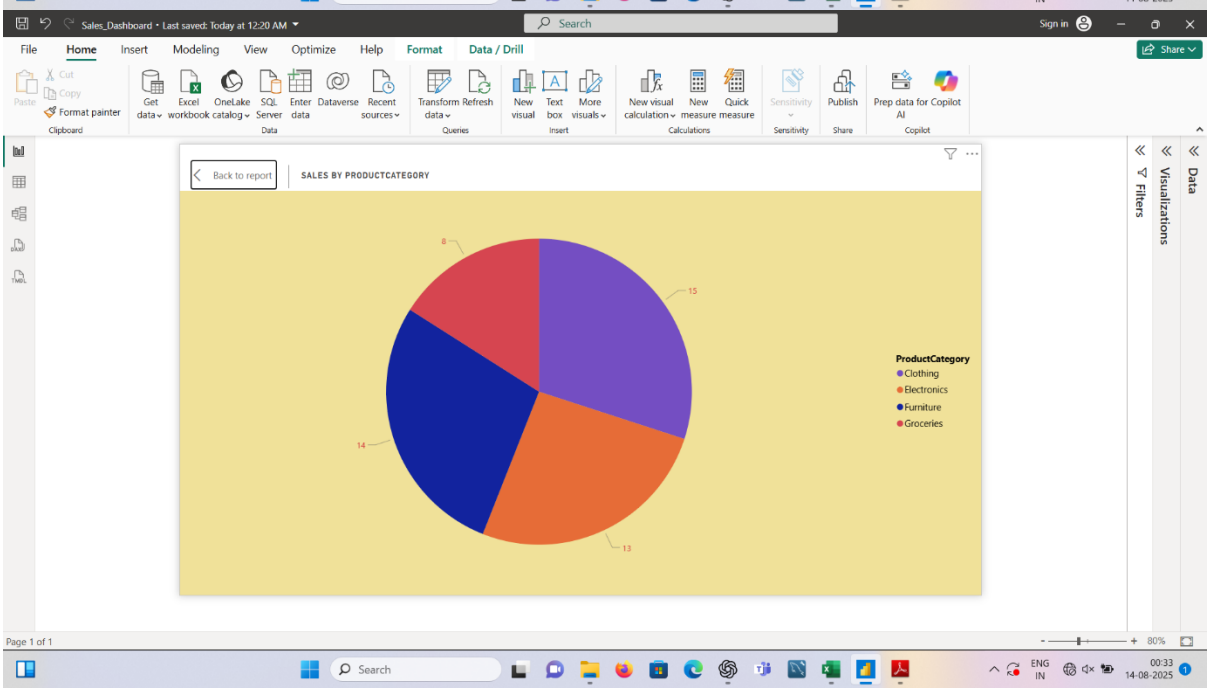

MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
sales_db
Tables
csv_for_mysql
Columns
Indexes
Foreign Keys
Triggers
sales_data
Views
Stored Procedures
Functions
school
school1
Administration Schemas
Information
Table: sales_data
Columns:
OrderID int
OrderDate date
Region varchar
ProductCategory varchar
ProductName varchar
Sales decima
Quantity int
CostPrice decima
Profit decima
Object Info Session
SQL File 3* csv_for_mysql sales_data
Limit to 1000 rows
31
32
33
34
35
36 SELECT * FROM sales_data
37 WHERE Sales < 500;
Result Grid Filter Rows: Export: Wrap Cell Content:
OrderID OrderDate Region ProductCategory ProductName Sales Quantity CostPrice Profit
1006 2025-01-20 North Groceries Milk 200.00 8 130.00 70.00
1007 2025-04-18 North Groceries Bread 300.00 5 189.00 111.00
1044 2025-02-06 East Groceries Milk 300.00 1 198.00 102.00
1049 2025-04-13 South Groceries Bread 100.00 6 90.00 10.00
1006 2025-01-20 North Groceries Milk 200.00 8 130.00 70.00
1007 2025-04-18 North Groceries Bread 300.00 5 189.00 111.00
1044 2025-02-06 East Groceries Milk 300.00 1 198.00 102.00
1049 2025-04-13 South Groceries Bread 100.00 6 90.00 10.00
Result Grid
Form Editor
Field Types
Read Only
sales_data 12
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Context Help Snippets
Output
Action Output
Time Action Message Duration / Fetch
55 03:46:37 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
56 03:46:38 SELECT Region, SUM(Sales) AS TotalSales FROM sales_data GROUP BY Region LIMIT 0, 1000 4 row(s) returned 0.000 sec / 0.000 sec
57 03:48:55 SELECT ProductName, SUM(Profit) AS TotalProfit FROM sales_data GROUP BY ProductName ORDER BY T... 33 row(s) returned 0.000 sec / 0.000 sec
58 03:56:59 SELECT * FROM sales_data WHERE Sales > 1000 LIMIT 0, 1000 66 row(s) returned 0.016 sec / 0.000 sec
59 03:57:29 SELECT * FROM sales_data WHERE Sales < 1000 LIMIT 0, 1000 26 row(s) returned 0.000 sec / 0.000 sec
60 03:57:50 SELECT * FROM sales_data WHERE Sales < 500 LIMIT 0, 1000 8 row(s) returned 0.031 sec / 0.000 sec
Search
ENG IN
03:57 13-08-2025

Power BI

- Imported the CSV dataset into Power BI.
- Built the following visuals:
    - **Bar Chart:** Sales by region
    - **Pie Chart:** Sales by product category (after duplicate cleanup)
    - **Line Chart:** Monthly sales trend
- Applied formatting for colors, titles, and labels to enhance readability.







---

4. Tools Used

- **Microsoft Excel** (Data creation, cleaning, initial charts)
- **MySQL** (Data storage, querying)
- **Power BI** (Data visualization dashboard)

---

5. Key Insights

- Region-wise sales distribution identified top-performing regions.
- Most profitable product category determined.
- Sales trend visualization revealed monthly fluctuations.
- Profitability and low-sales thresholds analyzed using SQL filters.

---

6. Conclusion

This project demonstrates the complete workflow of a retail sales performance analysis using three major tools. The process included **data creation, cleaning, transformation, storage, querying, and visualization**, closely simulating a real-world analytics pipeline.

Note: This project was independently developed during my self-learning journey to practice Excel, SQL, and Power BI skills.