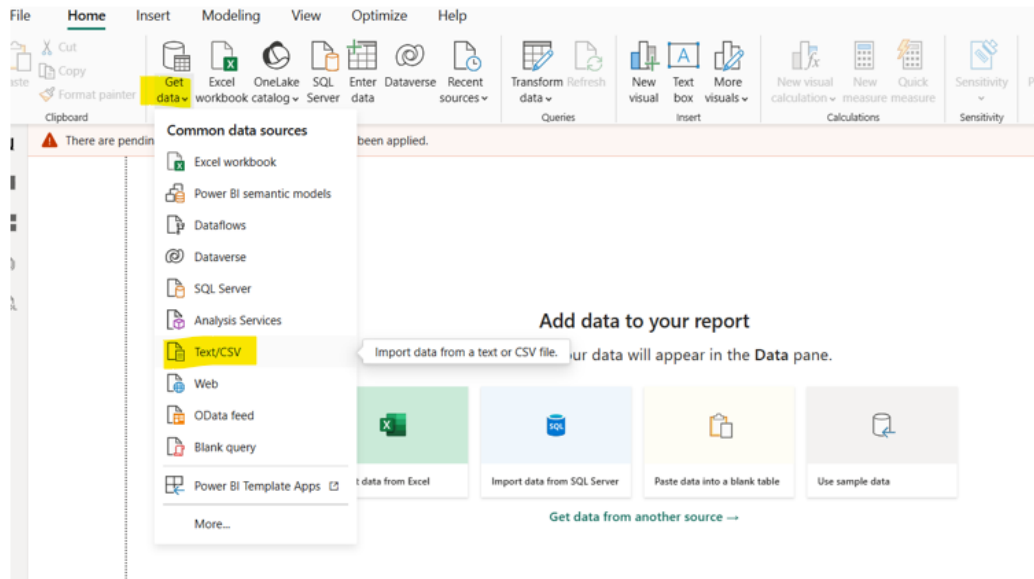


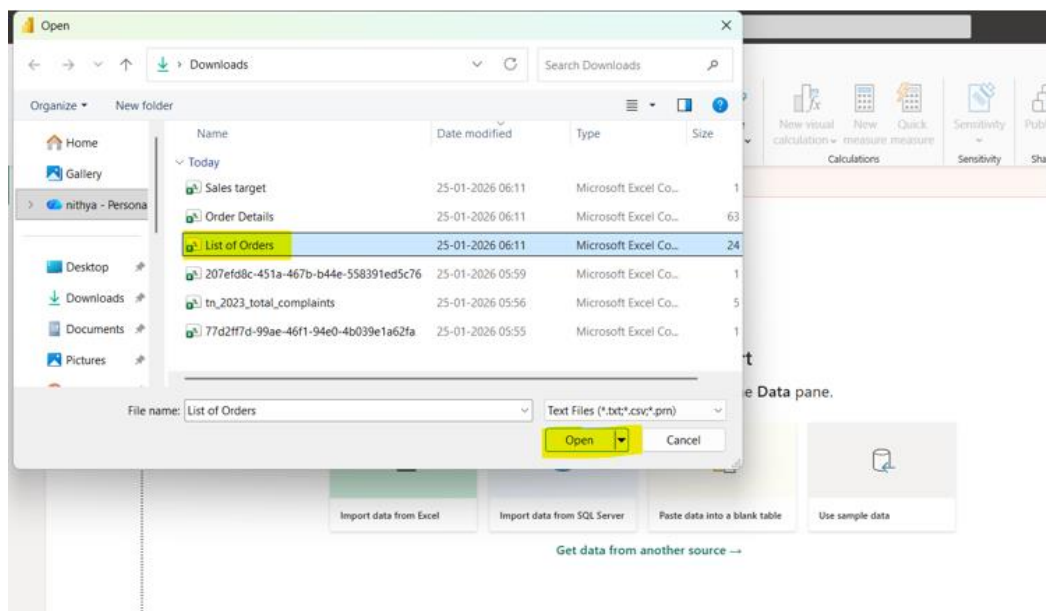
# Power BI Assignment 1 – Data Transformation & Data Modelling

## Import Data

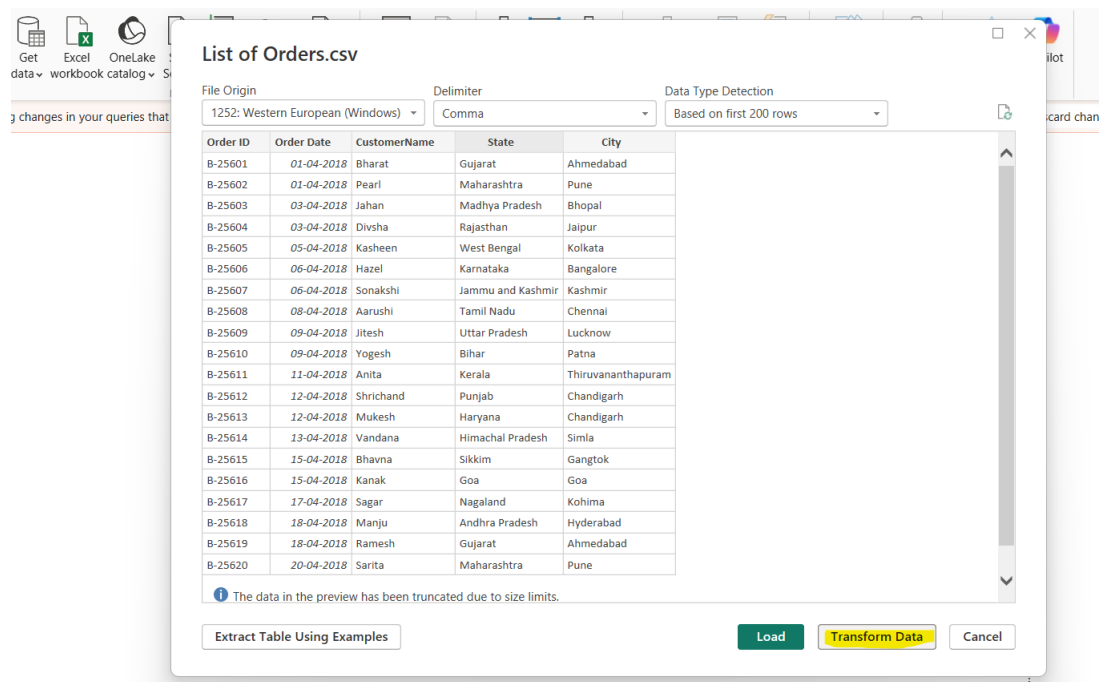
- Import “List of Orders.csv” file into Power BI. In Home tab, click “Get Data” and select “Text/CSV”.



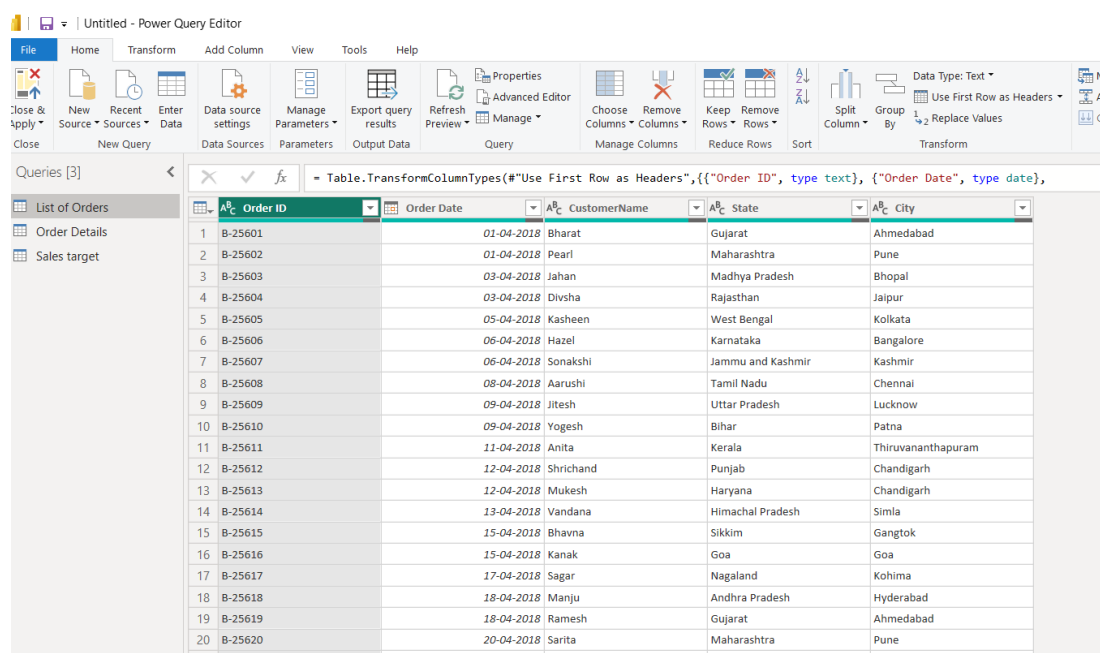
- Select the file and click “open”



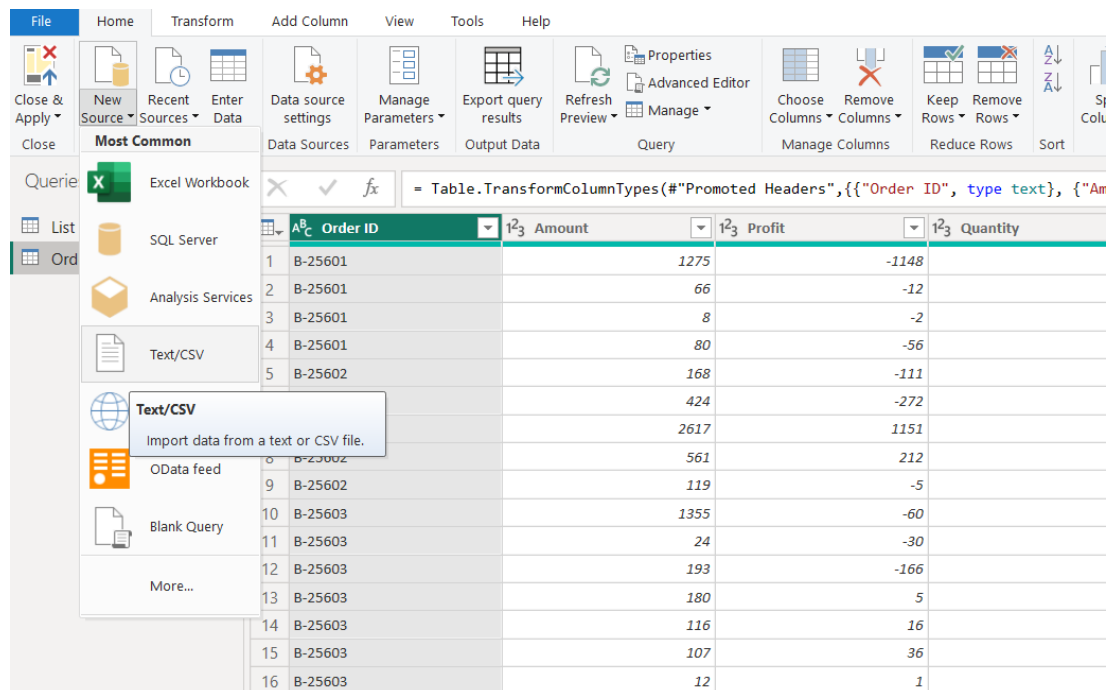
- Open “List of Orders” in Power Query Editor by clicking on ‘Transform’.



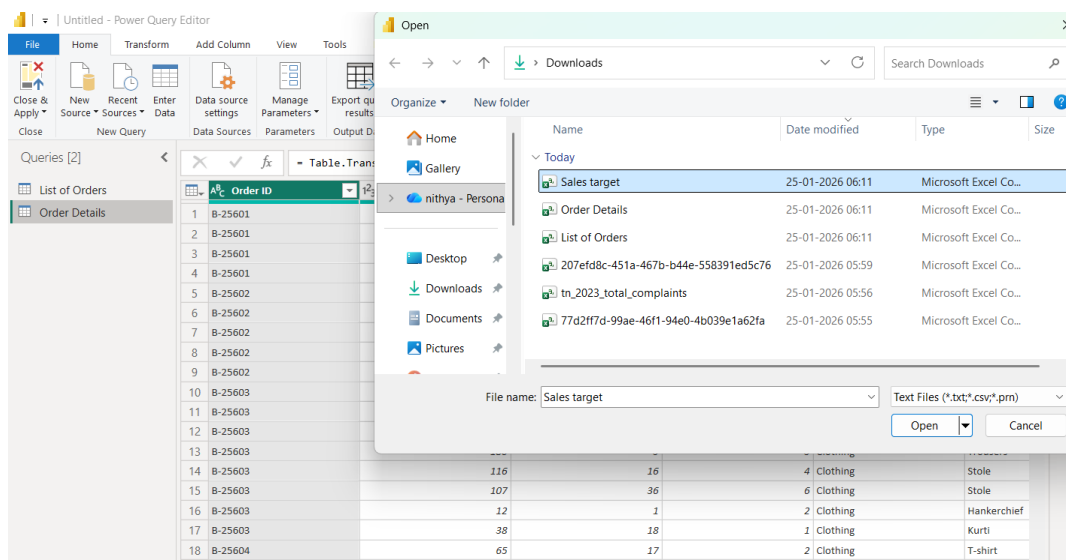
- Table loaded into the Power Query Editor



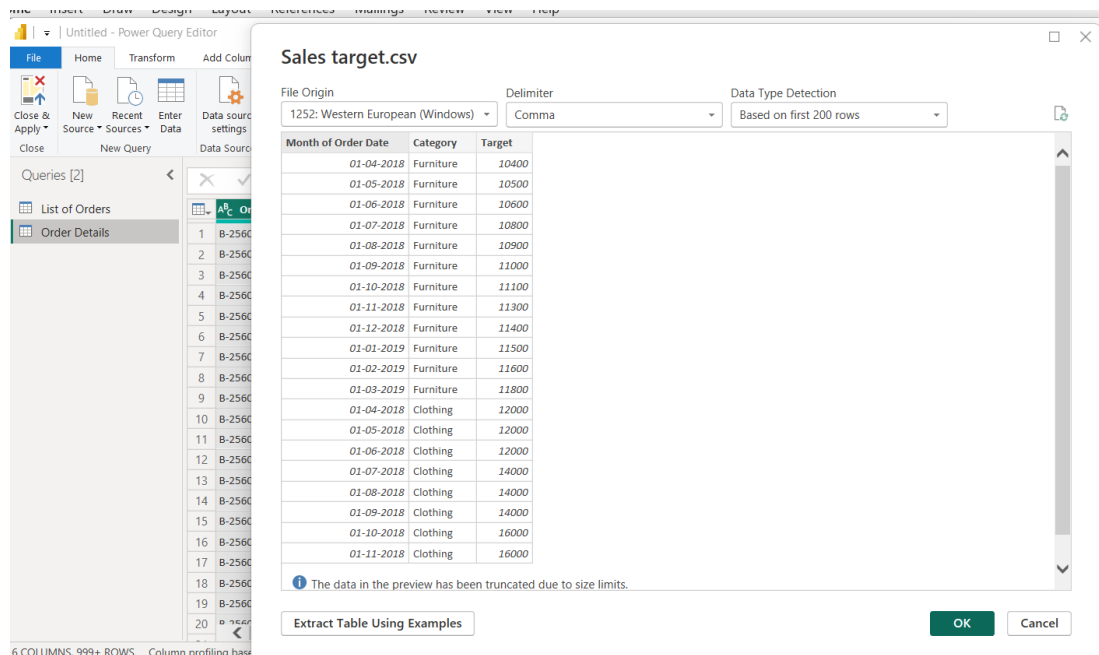
- Import “Order Details.csv” and “Sales target.csv” into Power Query Editor by clicking Home tab, then click “New Source”, select “Text/CSV”



- Select the file and click “open”.



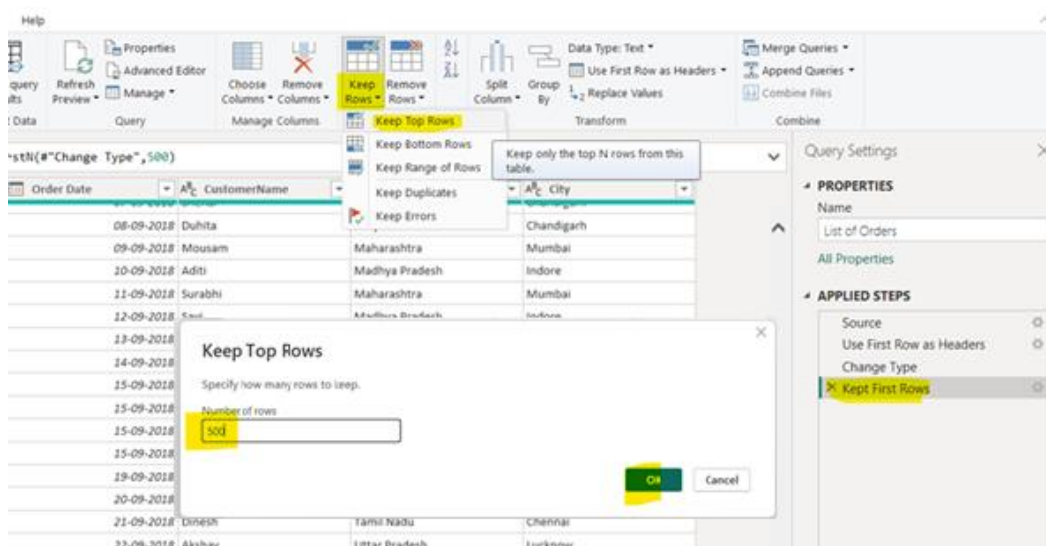
- Open “Sales Target” in Power Query Editor by clicking on ‘OK’.



## Transform Data

### Restricts Row Count:

- "List of Orders" table restricts to only the first 500 rows to remove the null values rows.





## Text Formatting:

- "Customer Name" column Formatted into proper case, ensuring consistent capitalization for each word.

The screenshot shows the Power BI Desktop interface. The 'Format' menu is open, and 'Capitalize Each Word' is selected. The data table shows columns: Order ID, Order Date, and CustomerName. The 'CustomerName' column is highlighted. The 'APPLIED STEPS' pane on the right shows the step 'Capitalized Each Word'.

Order ID	Order Date	CustomerName
1	01-04-2018	Bharat
2	01-04-2018	Pearl
3	03-04-2018	Jahan
4	03-04-2018	Divsha
5	05-04-2018	Kasheen
6	06-04-2018	Hazel
7	06-04-2018	Sonakshi
8	08-04-2018	Aarushi
9	09-04-2018	Jitesh
10	09-04-2018	Yogesh
11	11-04-2018	Anita
12	12-04-2018	Shrichand
13	12-04-2018	Mukesh
14	13-04-2018	Vandana
15	15-04-2018	Bhavna
16	15-04-2018	Kanak
17	17-04-2018	Sagar

## Merge Columns:

- Merged the "State" and "City" columns to create a new column named "Location" in the format 'City, State'.

The screenshot shows the Power BI Desktop interface with the 'Merge Columns' dialog box open. The 'State' and 'City' columns are selected. The 'Separator' is set to 'Comma'. The 'New column name (optional)' is 'Location'. The 'OK' button is highlighted.

Order Date	CustomerName	State	City
01-04-2018	Bharat	Gujarat	Ahmedabad
01-04-2018	Pearl	Maharashtra	Pune
15-04-2018	Kanak	Goa	Goa
17-04-2018	Sagar	Nagaland	Kohima

- New Column "Location" created in the form of "City, State"

= Table.CombineColumns("#Capitalized Each Word",{ "City", "State"},Combiner.CombineTextByDelimiter(",",""))			
Order Date	CustomerName	Location	
01-04-2018	Bharat	Ahmedabad,Gujarat	
01-04-2018	Pearl	Pune,Maharashtra	
03-04-2018	Jahan	Bhopal,Madihya Pradesh	
03-04-2018	Divsha	Jaipur,Rajasthan	
05-04-2018	Kasheen	Kolkata,West Bengal	
06-04-2018	Hazel	Bangalore,Karnataka	
06-04-2018	Sonakshi	Kashmir,Jammu And Kashmir	
08-04-2018	Aarushi	Chennai,Tamil Nadu	
09-04-2018	Jitesh	Lucknow,Uttar Pradesh	
09-04-2018	Yogesh	Patna,Bihar	
11-04-2018	Anita	Thiruvananthapuram,Kerala	
12-04-2018	Shrichand	Chandigarh,Punjab	
12-04-2018	Mukesh	Chandigarh,Haryana	
13-04-2018	Vandana	Simla,Himachal Pradesh	
15-04-2018	Bhavna	Gangtok,Sikkim	
15-04-2018	Kanak	Goa,Goa	
17-04-2018	Sagar	Kohima,Nagaland	
18-04-2018	Manju	Hyderabad,Andhra Pradesh	

## Create Custom Column:

- New custom column created named "Profit Margin" as the percentage of "Profit" divided by "Amount".

Home Transform **Add Column** View Tools Help

Custom Column Invoke Custom Function Duplicate Column

Conditional Column Index Column

Format Merge Columns Extract Parse

Statistics Standard Scientific Information

Trigonometry Rounding

Date Time Duration

From Text From Number From Date & Time

[3] Orders Details target

fx = Table.TransformColumnTypes(#Promoted Headers,{"Order ID": type.text, "Amount": type.number, "Profit": type.number})

### Custom Column

Add a column that is computed from the other columns.

New column name: Profit Margin

Custom column formula: = [Profit]/[Amount]

Available columns: Order ID, Amount, Profit, Quantity, Category, Sub-Category

<< Insert

Learn about Power Query formulas

✓ No syntax errors have been detected.

OK Cancel

75.00	0.00	7	Clothing	Saree
87.00	4.00	2	Clothing	Shirt
50.00	15.00	4	Clothing	Longsleeve

## Create Conditional Column:

- New conditional column created named "Profit Status" based on the values in the "Profit" column. The conditions are as follows: if the profit is less than 0, the label should be "Loss"; if the profit equals 0, the label should be "Break-Even"; and if the profit is greater than 0, the label should be "Profit".

**Add Conditional Column**

Add a conditional column that is computed from the other columns or values.

New column name: **Profit Status**

	Column Name	Operator	Value	Output
If	Profit	is less than	0	Loss
Else If	Profit	equals	0	Break-Even

**Add Clause**

Else: Profit

**OK** **Cancel**

- Created new columns shown as follows,

**Add Column** View Tools Help

Conditional Column Index Column Duplicate Column Merge Columns Extract Parse Statistics Standard Scientific Rounding Information Date Time Duration

From Text From Number From Date & Time

Query Settings

**PROPERTIES**

Name

Order Details

All Properties

**APPLIED STEPS**

Source

Promoted Headers

Changed Type

Added Custom

Changed Type1

**Added Conditional Column**

Changed Type2

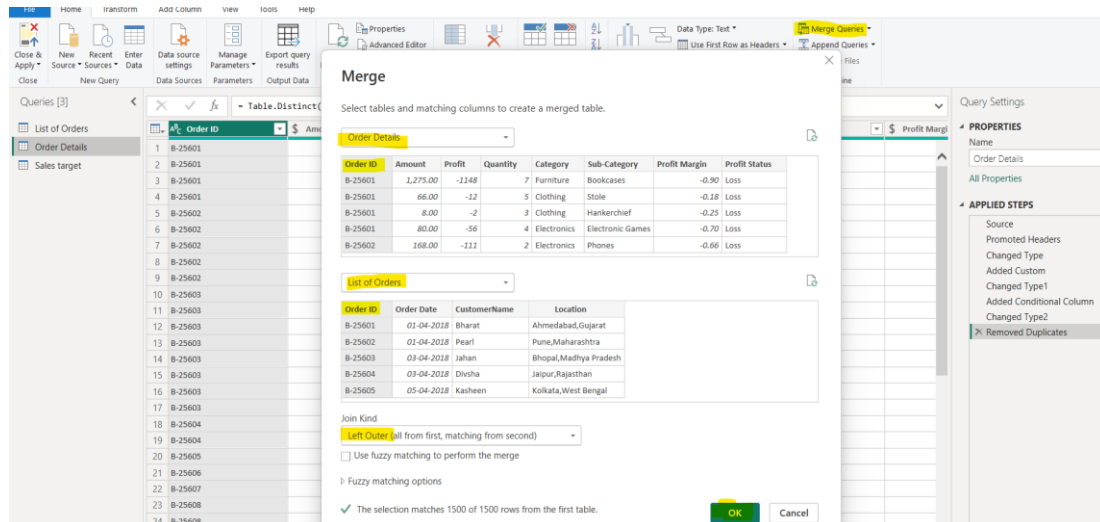
**Profit Status**

	Quantity	Category	Sub-Category	Profit Margin	Profit Status
1	-1,148.00	7 Furniture	Bookcases	-0.90	Loss
2	-12.00	5 Clothing	Stole	-0.18	Loss
3	-2.00	3 Clothing	Hankkerchief	-0.25	Loss
4	-56.00	4 Electronics	Electronic Games	-0.70	Loss
5	-111.00	2 Electronics	Phones	-0.66	Loss
6	-272.00	5 Electronics	Phones	-0.64	Loss
7	1,151.00	4 Electronics	Phones	0.44	Profit
8	212.00	3 Clothing	Saree	0.38	Profit
9	-5.00	8 Clothing	Saree	-0.04	Loss
10	-60.00	5 Clothing	Trousers	-0.04	Loss
11	-30.00	1 Furniture	Chairs	-1.25	Loss
12	-166.00	3 Clothing	Saree	-0.86	Loss



## Merging Data (Joins):

- Merge the "List of Orders" and "Order Details" tables into a new single table named "Orders Data" based on the "Order ID" relationship, by clicking under “Home” tab, click the “Merge Queries” dropdown symbol, select “Merge Queries as New” and select the two table that needs to merge.



- After merging the tables, a new table “Orders Data” created and by expand the table, got the all column from secondary table.

The screenshot shows the Power BI Desktop interface with the 'Orders Data' table expanded. The table has the following columns: Order ID, Order Date, CustomerName, Location, Amount, Profit, and Quantity. The table is expanded, showing all columns from the secondary table. The 'Query Settings' pane on the right shows the 'Properties' tab with 'Name' set to 'Orders Data' and 'Applied Steps' showing 'Expanded List of Orders' and 'Reordered Columns'.

Order ID	Order Date	CustomerName	Location	Amount	Profit	Quantity
1	01-04-2018	Bharat	Ahmedabad,Gujarat	1,275.00	-1148	
2	01-04-2018	Bharat	Ahmedabad,Gujarat	66.00	-12	
3	01-04-2018	Bharat	Ahmedabad,Gujarat	8.00	-2	
4	01-04-2018	Bharat	Ahmedabad,Gujarat	80.00	-56	
5	01-04-2018	Pearl	Pune,Maharashtra	168.00	-111	
6	01-04-2018	Pearl	Pune,Maharashtra	424.00	-272	
7	01-04-2018	Pearl	Pune,Maharashtra	2,617.00	1151	
8	01-04-2018	Pearl	Pune,Maharashtra	561.00	212	
9	01-04-2018	Pearl	Pune,Maharashtra	119.00	-5	
10	03-04-2018	Jahan	Bhopal,Madhya Pradesh	1,355.00	-60	
11	03-04-2018	Jahan	Bhopal,Madhya Pradesh	24.00	-30	
12	03-04-2018	Jahan	Bhopal,Madhya Pradesh	193.00	-166	
13	03-04-2018	Jahan	Bhopal,Madhya Pradesh	180.00	5	
14	03-04-2018	Jahan	Bhopal,Madhya Pradesh	116.00	16	
15	03-04-2018	Jahan	Bhopal,Madhya Pradesh	107.00	36	
16	03-04-2018	Jahan	Bhopal,Madhya Pradesh	12.00	1	
17	03-04-2018	Jahan	Bhopal,Madhya Pradesh	38.00	18	
18	03-04-2018	Divsha	Jaipur,Rajasthan	65.00	17	
19	03-04-2018	Divsha	Jaipur,Rajasthan	157.00	5	
20	05-04-2018	Kasheen	Kolkata,West Bengal	75.00	0	
21	06-04-2018	Hazel	Bangalore,Karnataka	87.00	4	
22	06-04-2018	Sonakshi	Kashmir,Jammu And Kashmir	50.00	15	
23	08-04-2018	Aarushi	Chennai,Tamil Nadu	1,364.00	-1864	
24	08-04-2018	Aarushi	Chennai,Tamil Nadu	476.00	0	

## Handling Missing Data & Duplicate Data:

- There are no missing values found in the data and determine a strategy to address them.
- There are no duplicate rows found.

## Sorting and Filtering Data:

- In the 'Orders Data' table, Sort the orders by Order Date in descending order to analyse recent trends.

The screenshot shows a data table with columns: Order ID, Order Date, CustomerName, Location, Amount, Profit, and Quantity. The table is sorted by Order Date in descending order. The left sidebar shows the 'Sort Descending' option selected for the 'Order Date' column. The right sidebar shows the 'APPLIED STEPS' section with 'Sorted Rows' highlighted.

Order ID	Order Date	CustomerName	Location	Amount	Profit	Quantity
	31-08-2018	Hitika	Indore,Madhya Pradesh	72.00		16
	31-08-2018	Hitika	Indore,Madhya Pradesh	828.00		230
	31-08-2018	Hitika	Indore,Madhya Pradesh	34.00		10
	31-08-2018	Bhishm	Mumbai,Maharashtra	207.00		37
	31-08-2018	Bhishm	Mumbai,Maharashtra	2,366.00		552
	31-08-2018	Bhishm	Mumbai,Maharashtra	9.00		3
	31-08-2018	Bhishm	Mumbai,Maharashtra	835.00		267
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	46.00		14
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	497.00		179
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	409.00		86
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	59.00		15
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	96.00		48
	31-08-2018	Pinky	Kashmir,Jammu And Kashmir	82.00		8
	31-08-2018	Atharv	Kolkata,West Bengal	103.00		46
	31-08-2018	Vini	Bangalore,Karnataka	97.00		12
	31-08-2018	Vini	Bangalore,Karnataka	19.00		8
	31-08-2018	Atharv	Kolkata,West Bengal	88.00		11
	31-08-2018	Vini	Bangalore,Karnataka	39.00		18
	31-08-2018	Atharv	Kolkata,West Bengal	264.00		-26
	31-08-2018	Atharv	Kolkata,West Bengal	451.00		25
	31-08-2018	Vini	Bangalore,Karnataka	185.00		-26
	31-08-2018	Vini	Bangalore,Karnataka	14.00		5
	31-08-2018	Vini	Bangalore,Karnataka	671.00		-309
	31-08-2018	Monisha	Jaipur,Rajasthan	6.00		1

- In the 'Orders Data' table, Filter the orders to focus only on a specific state (e.g., Tamil Nadu) for regional analysis.

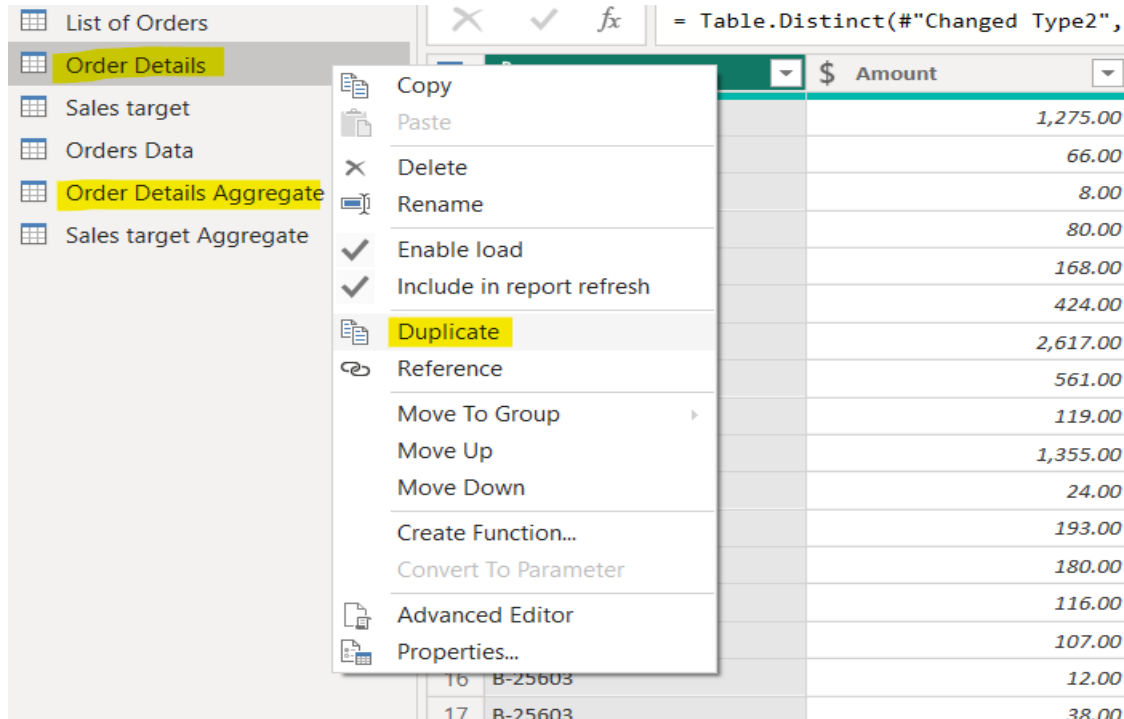
The screenshot shows the same data table, but now filtered by Location to show only orders from Chennai, Tamil Nadu. The left sidebar shows the 'Text Filters' section with 'Chennai,Tamil Nadu' selected. The right sidebar shows the 'APPLIED STEPS' section with 'Filtered Rows' highlighted.

Order ID	Order Date	CustomerName	Location	Amount	Profit	Quantity	Category
	31-08-2018		Chennai,Tamil Nadu	79.00		33	4 Clothing
	31-08-2018		Chennai,Tamil Nadu	169.00		0	3 Electronics
	31-08-2018		Chennai,Tamil Nadu	359.00		-338	5 Furniture
	31-08-2018		Chennai,Tamil Nadu	93.00		-84	3 Clothing
	31-08-2018		Chennai,Tamil Nadu	24.00		11	3 Clothing
	31-08-2018		Chennai,Tamil Nadu	637.00		50	5 Clothing
	31-08-2018		Chennai,Tamil Nadu	61.00		8	4 Clothing
	31-08-2018		Chennai,Tamil Nadu	326.00		107	3 Furniture
	31-08-2018		Chennai,Tamil Nadu	22.00		4	1 Clothing
	31-08-2018		Chennai,Tamil Nadu	206.00		51	4 Clothing
	31-08-2018		Chennai,Tamil Nadu	10.00		-1	1 Clothing
	31-08-2018		Chennai,Tamil Nadu	57.00		24	5 Clothing
	31-08-2018		Chennai,Tamil Nadu	112.00		24	3 Clothing
	31-08-2018		Chennai,Tamil Nadu	12.00		3	1 Clothing
	31-08-2018		Chennai,Tamil Nadu	58.00		0	4 Clothing
	31-08-2018		Chennai,Tamil Nadu	207.00		-153	3 Clothing
	31-08-2018		Chennai,Tamil Nadu	27.00		-6	4 Clothing
	31-08-2018		Chennai,Tamil Nadu	65.00		-16	2 Electronics
	31-08-2018		Chennai,Tamil Nadu	87.00		-83	5 Clothing
	31-08-2018		Chennai,Tamil Nadu	7.00		-2	1 Clothing
	31-08-2018		Chennai,Tamil Nadu	516.00		-392	8 Furniture
	31-08-2018		Chennai,Tamil Nadu	257.00		23	5 Clothing
	31-08-2018		Chennai,Tamil Nadu	856.00		385	6 Electronics
	31-08-2018		Chennai,Tamil Nadu	476.00		0	3 Furniture
	31-08-2018		Chennai,Tamil Nadu	1,364.00		-1864	5 Furniture

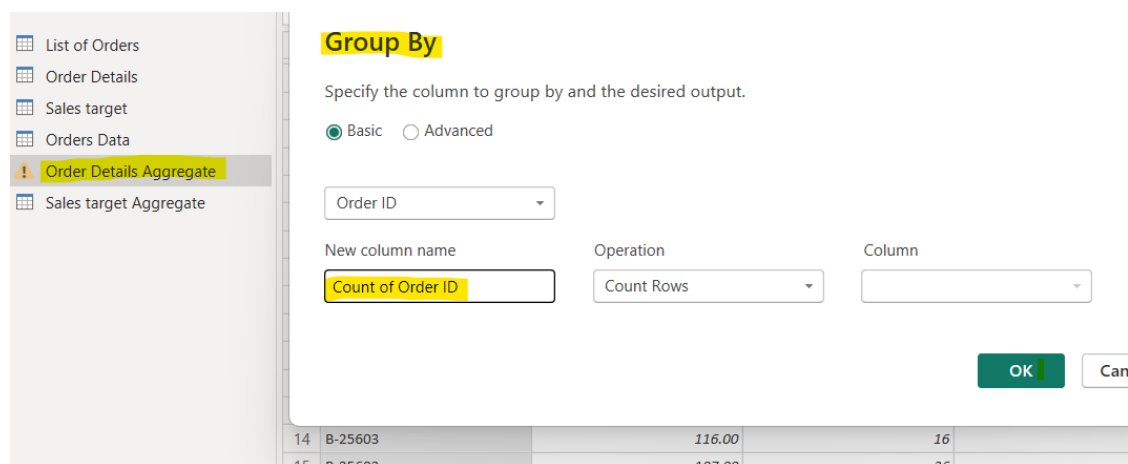
## Grouping and Aggregating Data:

- Duplicate the “Order Details” table and calculate the count of each Order ID, average profit by Category or total amount by Sub-Category.

Order Details table duplicated and named as “Order Details Aggregate”



Group By function to calculate the count of each Order ID



- Grouping by Order ID and calculated the Count of each Order ID.

	A <sub>0</sub> Order ID	1 <sub>3</sub> Count of Order ID
1	B-25601	4
2	B-25602	5
3	B-25603	8
4	B-25604	2
5	B-25605	1
6	B-25606	1
7	B-25607	1
8	B-25608	4
9	B-25609	2
10	B-25610	6
11	B-25611	1
12	B-25612	1
13	B-25613	1
14	B-25614	2
15	B-25615	1
16	B-25616	4
17	B-25617	1
18	B-25618	2
19	B-25619	1
20	B-25620	1
21	B-25621	3
22	B-25622	1

**PROPERTIES**  
Name  
Order Details Aggregate  
All Properties  
**APPLIED STEPS**  
Source  
Promoted Headers  
Changed Type  
Added Custom  
Changed Type1  
Added Conditional Column  
Changed Type2  
Removed Duplicates  
Grouped Rows1  
Grouped Rows  
Renamed Columns

- Grouping by Category and calculated the Average Profit.

	A <sub>0</sub> Category	1 <sub>2</sub> Average Profit
1	Furniture	9.456790123
2	Clothing	11.76290832
3	Electronics	34.07142857

**PROPERTIES**  
Name  
Order Details Aggregate  
All Properties  
**APPLIED STEPS**  
Source  
Promoted Headers  
Changed Type  
Added Custom  
Changed Type1  
Added Conditional Column  
Changed Type2  
Removed Duplicates  
Grouped Rows1  
Grouped Rows  
Renamed Columns

- Grouping by Subcategory and calculated the Total Amount.

	A <sub>0</sub> Sub-Category	1 <sub>2</sub> Total Amount
1	Bookcases	56861
2	Stole	18546
3	Hankerchief	14608
4	Electronic Games	39168
5	Phones	46119
6	Saree	53511
7	Trousers	30039
8	Chairs	34222
9	Kurti	3361
10	T-shirt	7382
11	Shirt	7555
12	Leggings	2106
13	Tables	22614
14	Printers	58252
15	Accessories	21728
16	Furnishings	13484
17	Skirt	1946

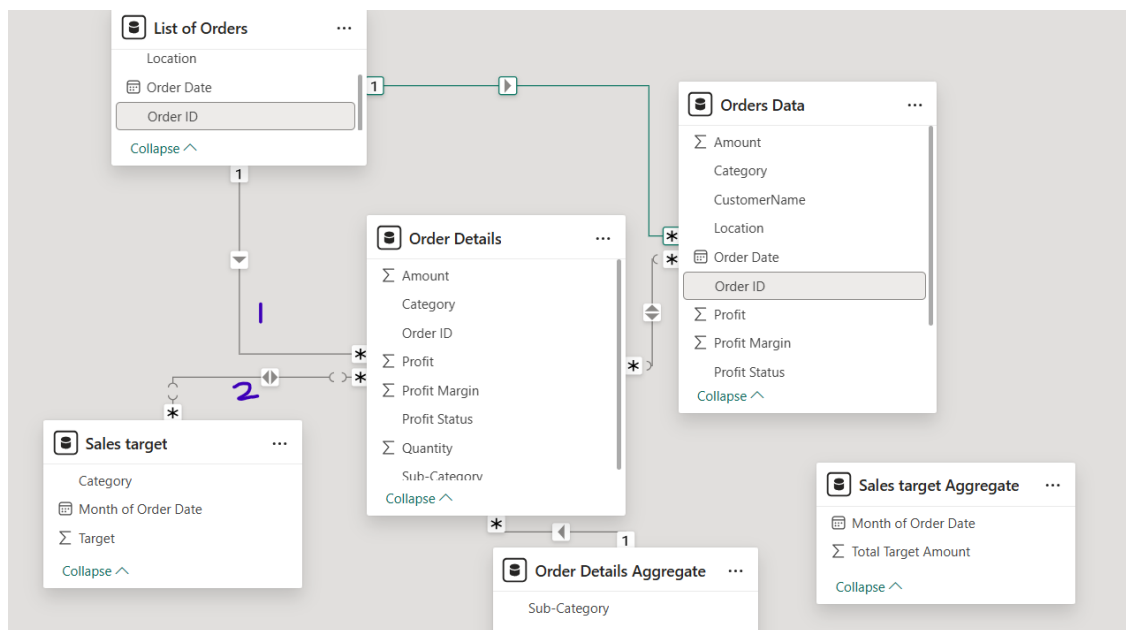
**PROPERTIES**  
Name  
Order Details Aggregate  
All Properties  
**APPLIED STEPS**  
Source  
Promoted Headers  
Changed Type  
Added Custom  
Changed Type1  
Added Conditional Column  
Changed Type2  
Removed Duplicates  
Grouped Rows  
Renamed Columns

- “Sales Target” table duplicated and named as “Sales target Aggregate” and aggregate the total target amount by Month of Order Date.

	Month of Order Date	Total Target Amount
1	01-04-2018	31400
2	01-05-2018	31500
3	01-06-2018	31600
4	01-07-2018	33800
5	01-08-2018	33900
6	01-09-2018	34000
7	01-10-2018	36100
8	01-11-2018	36300
9	01-12-2018	36400
10	01-01-2019	43500
11	01-02-2019	43600
12	01-03-2019	43800

## Data Modelling

- Relationship established between the “List of Orders” and “Order Details” tables using the ‘Order ID’ column.
- Relationship created between the “Order Details” and “Sales Target” tables based on the ‘Category’ column.



- Click "Manage relationships" and ensure this relationship is active.

New relationship

Autodetect

Edit

Delete

Fil

<input type="checkbox"/>	From: table (column) ↑	Relationship	To: table (column)	Status
<input type="checkbox"/>	Order Details (Order ID)		Orders Data (Order ID)	Active
<input type="checkbox"/>	Order Details (Order ID)		List of Orders (Order ID)	Active
<input type="checkbox"/>	Order Details (Sub-Category)		Order Details Aggregate (Sub-...	Active
<input type="checkbox"/>	Orders Data (Order ID)		List of Orders (Order ID)	Active
<input type="checkbox"/>	Sales target (Category)		Order Details (Category)	Active