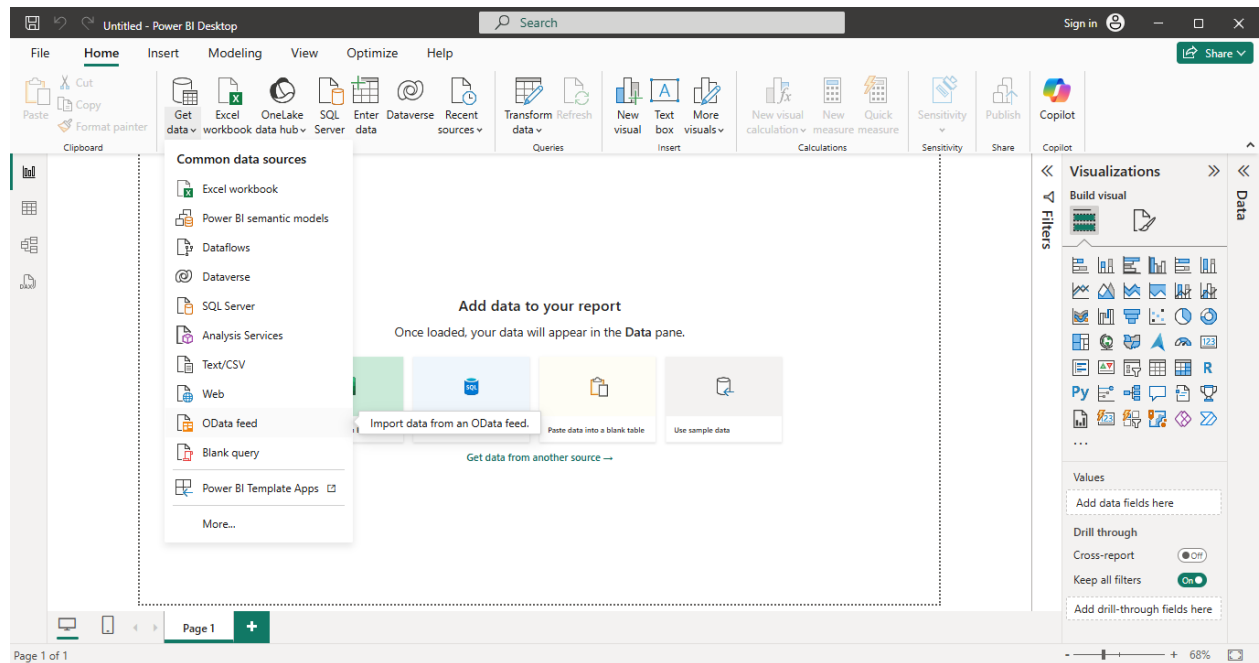


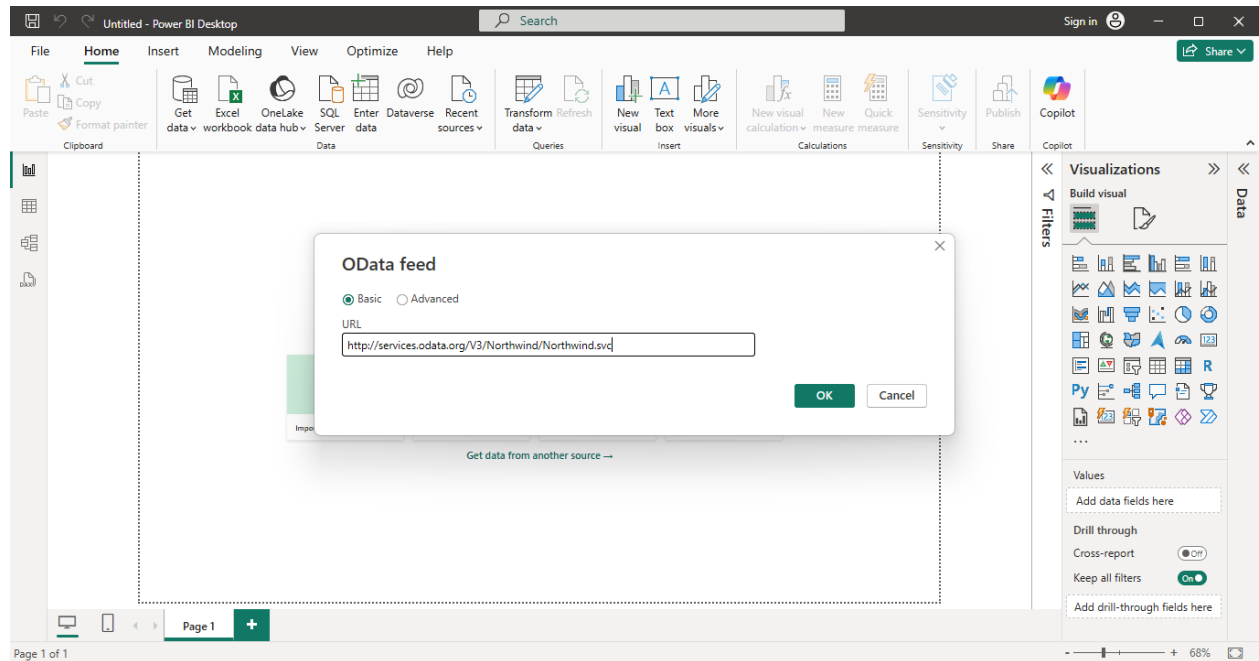
Practical 1

Aim: Import the legacy data from different sources such as (Excel, SqlServer, Oracle etc.) and load in the target system.

- 1) Launch Power BI Desktop.
- 2) From the Home ribbon, select 'Get Data'. Select 'OData feed'.



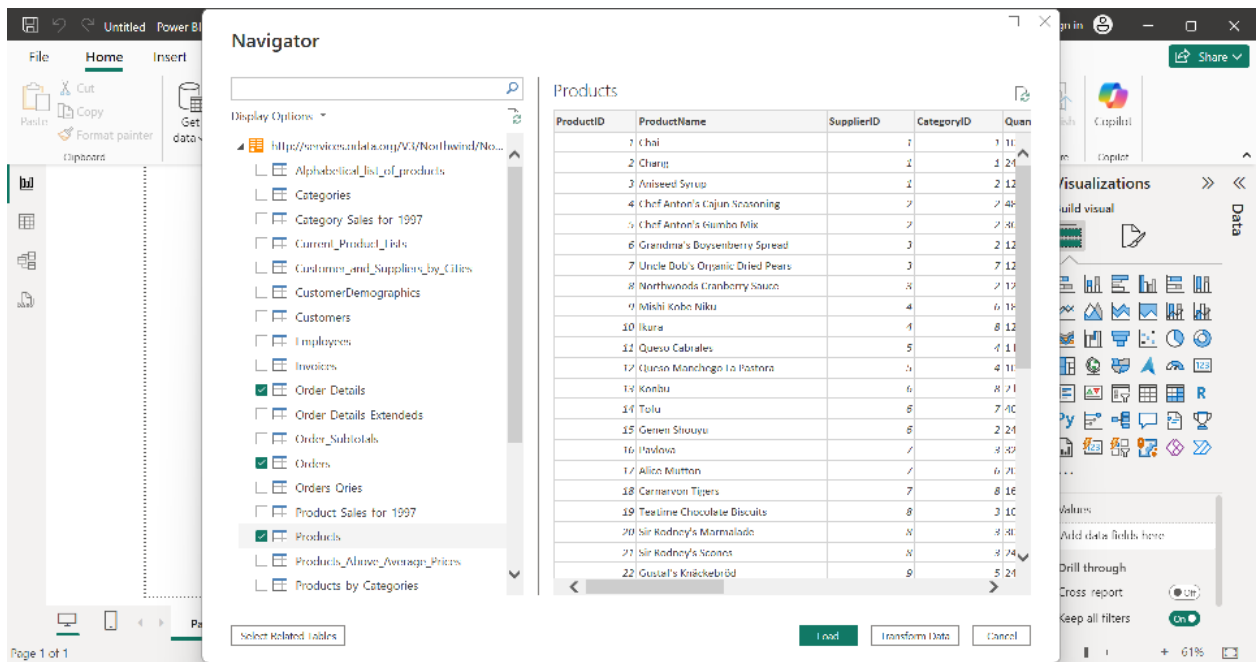
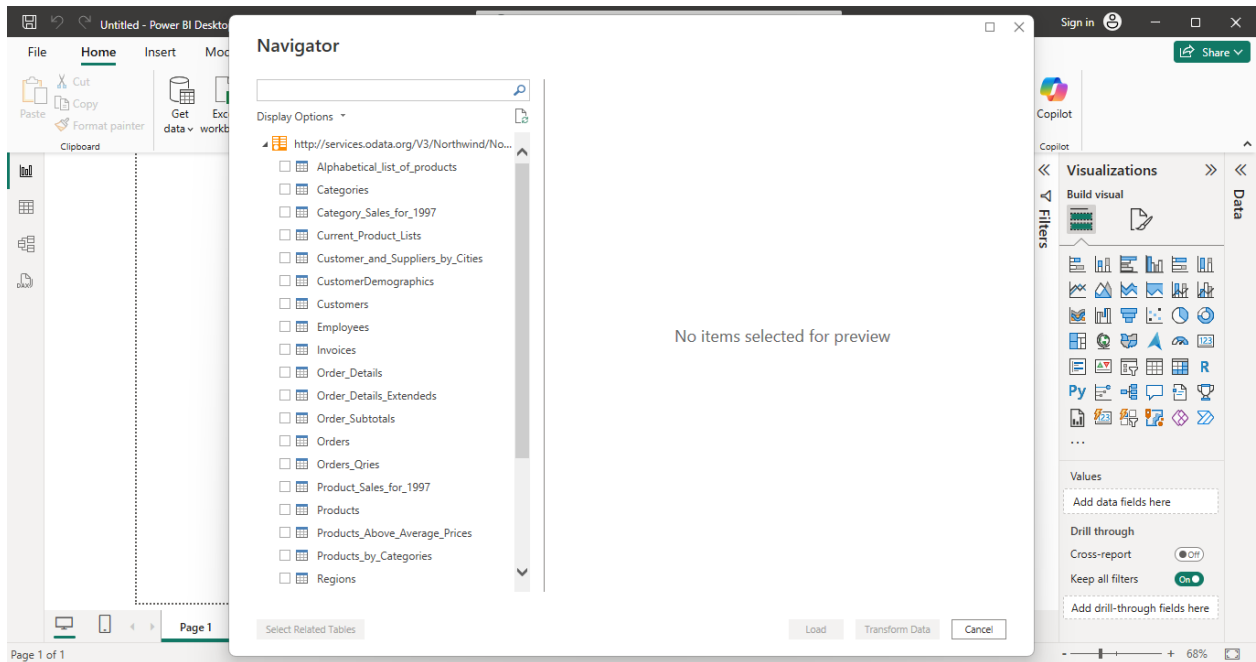
- 3) In the OData Feed Dialog box, paste the URL for the Northwind OData feed. Select OK.



- 4) In the Navigator pane, select Order_Details, Orders and Products tables. Click 'Transform Data'.

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Practical 2

Aim: Perform the Extraction Transformation and Loading (ETL) process to construct the database in the Sqlserver / Power BI.

ETL PROCESS IN POWER BI

- 1) Remove all columns except ProductID, ProductName, UnitsInStock and QuantityPerUnit.

The screenshot displays the Microsoft Power Query Editor. The main window shows a table with columns: ProductID, ProductName, QuantityPerUnit, UnitsInStock, and several others. The 'Remove Columns' step is applied, removing columns like SupplierID, CategoryID, UnitPrice, UnitsOnOrder, and ReorderLevel. The 'Query Settings' pane on the right shows the 'Properties' and 'Applied Steps' sections. The 'Applied Steps' section lists 'Source', 'Navigation', and 'Removed Columns'. The status bar at the bottom indicates '4 COLUMNS, 77 ROWS'.

ProductID	ProductName	QuantityPerUnit	UnitsInStock
1	Chai	10 boxes x 20 bags	39
2	Chang	24 - 12 oz bottles	17
3	Aniseed Syrup	12 - 550 ml bottles	13
4	Chef Anton's Cajun Seasoning	48 - 6 oz jars	53
5	Chef Anton's Gumbo Mix	36 boxes	0
6	Grandma's Boysenberry Spread	12 - 8 oz jars	120
7	Uncle Bob's Organic Dried Pears	12 - 1 lb pkgs.	15
8	Northwoods Cranberry Sauce	12 - 12 oz jars	6
9	Mishi Kobe Niku	18 - 500 g pkgs.	29
10	Ikura	12 - 200 ml jars	31
11	Queso Cabrales	1 kg pkg.	22
12	Queso Manchego La Pastora	10 - 500 g pkgs.	86
13	Konbu	2 kg box	24
14	Tofu	40 - 100 g pkgs.	35
15	Genen Shouyu	24 - 250 ml bottles	39
16	Pavlova	32 - 500 g boxes	29
17	Alice Mutton	20 - 1 kg tins	0
18	Carnarvon Tigers	16 kg pkg.	42
19	Teatime Chocolate Biscuits	10 boxes x 12 pieces	25
20	Sir Rodney's Marmalade	30 gift boxes	40
21	Sir Rodney's Scones	24 pkgs. x 4 pieces	3
22	Gustaf's Knäckebröd	24 - 500 g pkgs.	104
23	Tunnbröd	12 - 250 g pkgs.	61

- 2) Change the data type of UnitsInStock column to Whole Number. Right click on UnitsInStock column, go to Change Type, click Whole Number.

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The screenshot shows the Microsoft Power Query Editor interface. The main table has columns: ProductID, ProductName, QuantityPerUnit, and UnitsInStock. A context menu is open over the UnitsInStock column, showing options like 'Remove', 'Duplicate Column', 'Change Type', etc. The 'Change Type' option is selected, and a submenu is open showing various data types like 'Decimal Number', 'Fixed decimal number', 'Whole Number', etc. The 'Whole Number' option is highlighted.

3) Expand the Order_Details table that is related to the Orders table, to combine the ProductID, UnitPrice and Quantity columns from Order_Details into the Orders table.

The screenshot shows the Microsoft Power Query Editor interface. The 'Expand' dialog box is open, showing the 'Expand' radio button selected. Under 'Select All Columns', the columns ProductID, UnitPrice, and Quantity are checked. The 'Use original column name as prefix' checkbox is also checked. The dialog box is titled 'Expand' and has 'OK' and 'Cancel' buttons.

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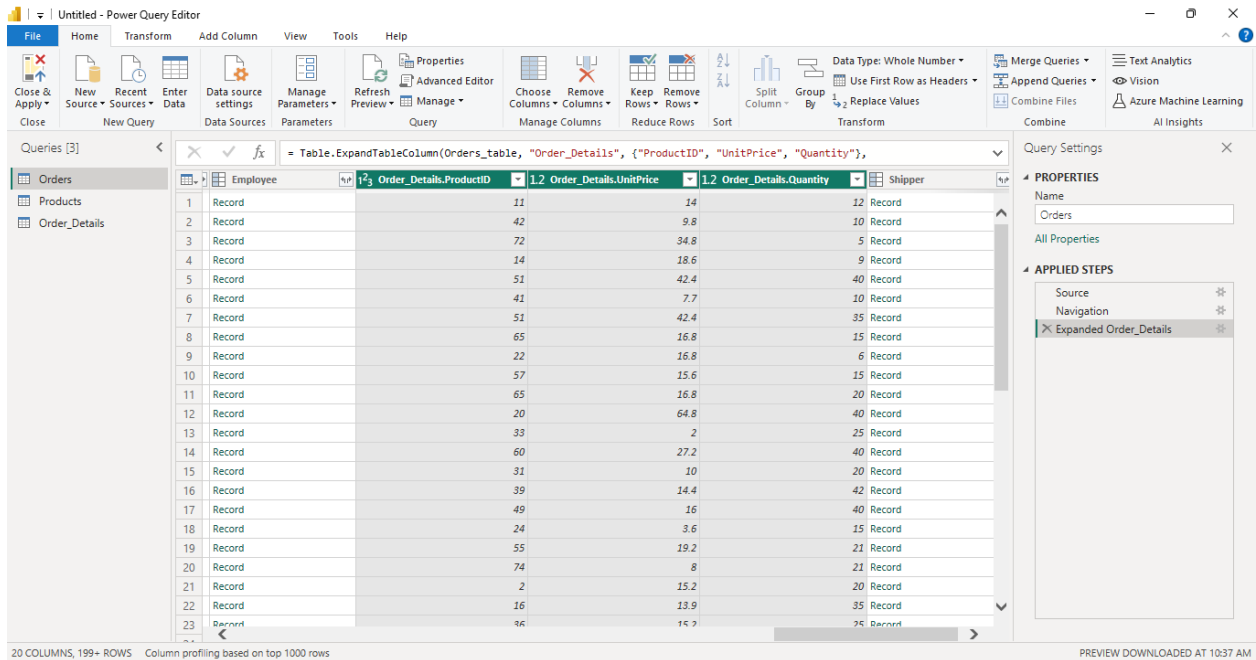
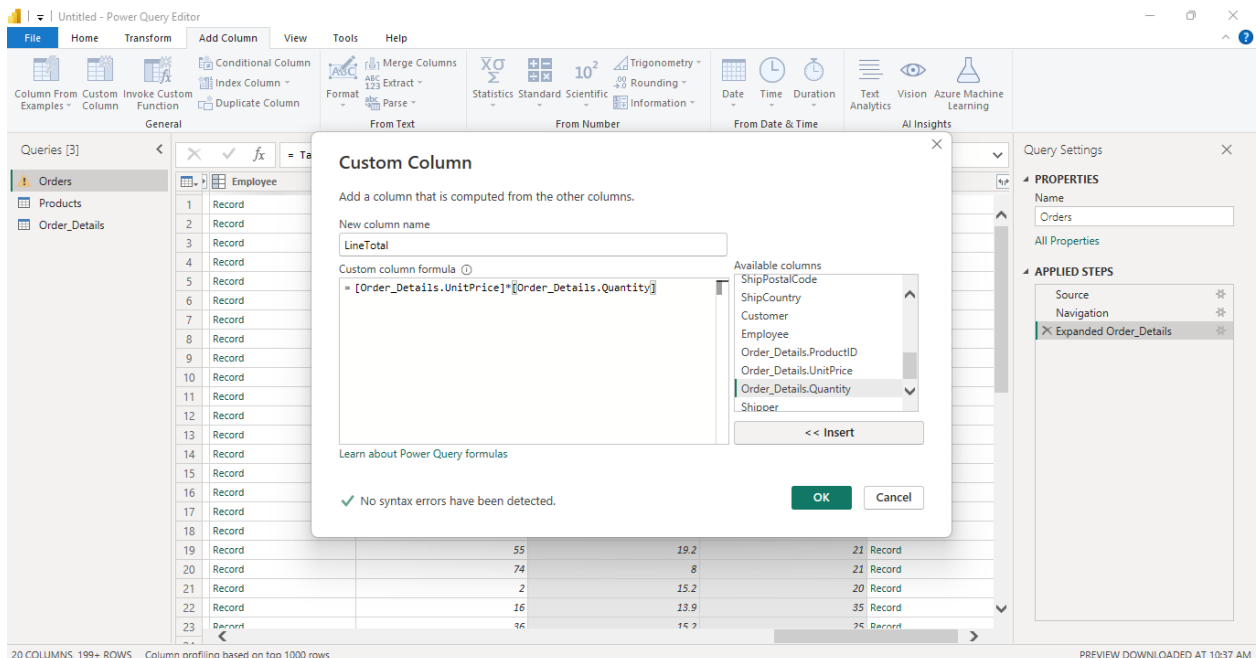


Table: ExpandTableColumn(Orders_table, "Order_Details", {"ProductID", "UnitPrice", "Quantity"},

Employee	Order_Details.ProductID	Order_Details.UnitPrice	Order_Details.Quantity	Shipper
Record	11	14	12	Record
Record	42	9.8	10	Record
Record	72	34.8	5	Record
Record	14	18.6	9	Record
Record	51	42.4	40	Record
Record	41	7.7	10	Record
Record	51	42.4	35	Record
Record	65	16.8	15	Record
Record	22	16.8	6	Record
Record	57	15.6	15	Record
Record	65	16.8	20	Record
Record	20	64.8	40	Record
Record	33	2	25	Record
Record	60	27.2	40	Record
Record	31	10	20	Record
Record	39	14.4	42	Record
Record	49	16	40	Record
Record	24	3.6	15	Record
Record	55	19.2	21	Record
Record	74	8	21	Record
Record	2	15.2	20	Record
Record	16	13.9	35	Record
Record	36	14.2	24	Record

4) Go to Add Column ribbon, select Custom Column. Calculate the Line Total for each Order_Details row.



Custom Column

Add a column that is computed from the other columns.

New column name: LineTotal

Custom column formula: $[Order_Details.UnitPrice] * [Order_Details.Quantity]$

Available columns: ShipPostalCode, ShipCountry, Customer, Employee, Order_Details.ProductID, Order_Details.UnitPrice, Order_Details.Quantity, Shipper.

Learn about Power Query formulas

No syntax errors have been detected.

OK Cancel

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- 5) Drag the Line Total column to the left of ShipCountry. Rename Line Total as Total. Remove the Order_Details. prefix from Order_Details.ProductID, Order_Details.UnitPrice, Order_Details.Quantity columns by double-clicking on each column header.

Table with 5 columns: ProductID, UnitPrice, Quantity, Shipper, LineTotal. The data is organized into 23 rows. The formula bar shows a custom column formula: `Table.RenameColumns(#\"Added Custom\",{{\"Order_Details.ProductID\", \"ProductID\"}, {\"Order_Details.UnitPrice\", \"UnitPrice\"}, {\"Order_Details.Quantity\", \"Quantity\"}})`. The right pane shows the 'Renamed Columns' step in the Applied Steps list.

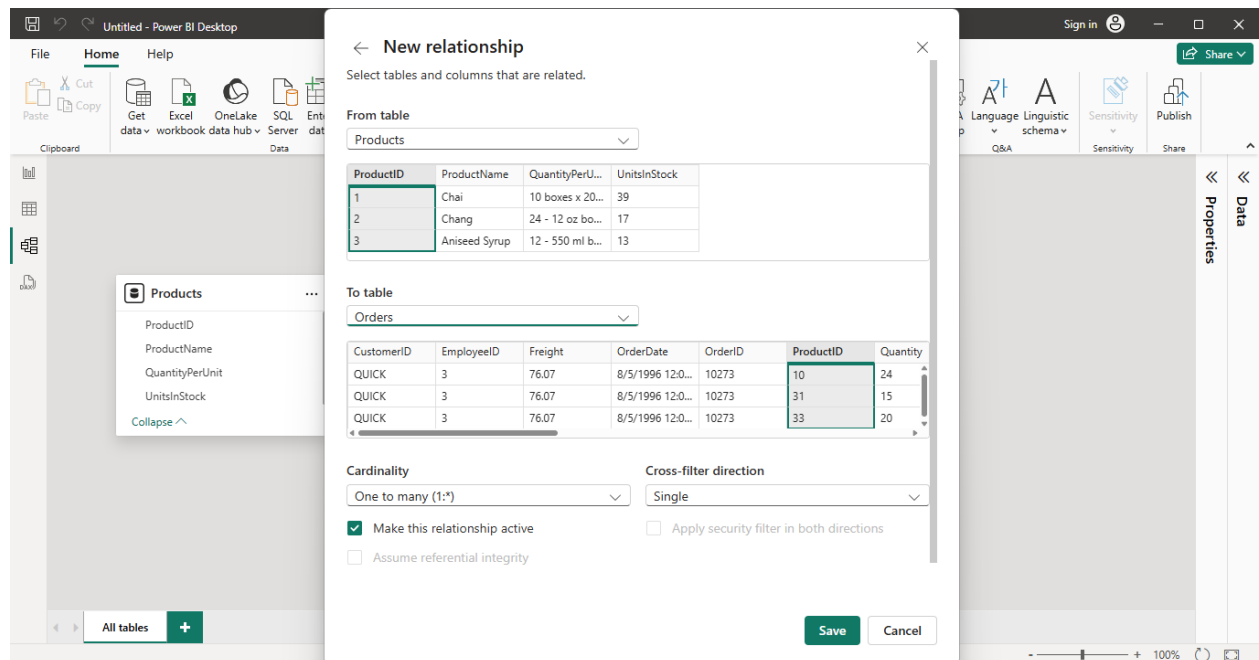
Table with 6 columns: ShipPostalCode, Total, ShipCountry, Customer, Employee, Product. The data is organized into 23 rows. The formula bar shows a custom column formula: `Table.RenameColumns(#\"Reordered Columns\",{{\"LineTotal\", \"Total\"}})`. The right pane shows the 'Renamed Columns1' step in the Applied Steps list.

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6) From the Home ribbon, select Close & Load.

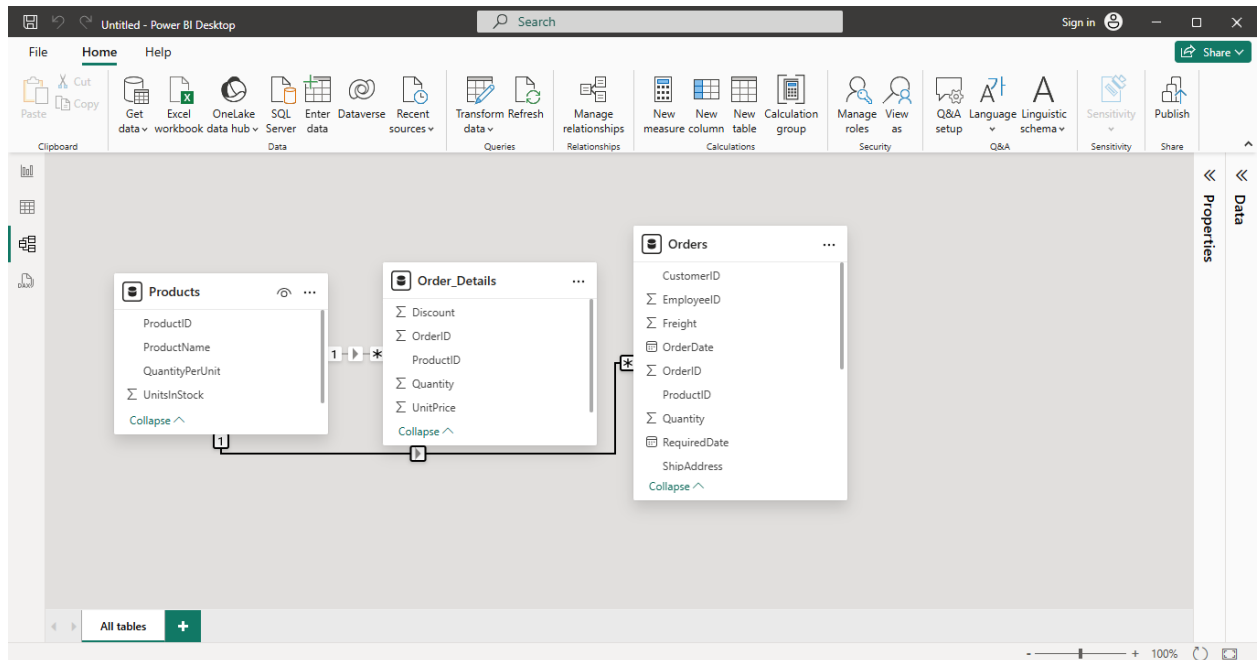
7) Once the data is loaded, you can view the tables in Relationship View. Select the Manage Relationship button from Home ribbon. Click on the New button.



8) Select Products and Orders Table and click Save.

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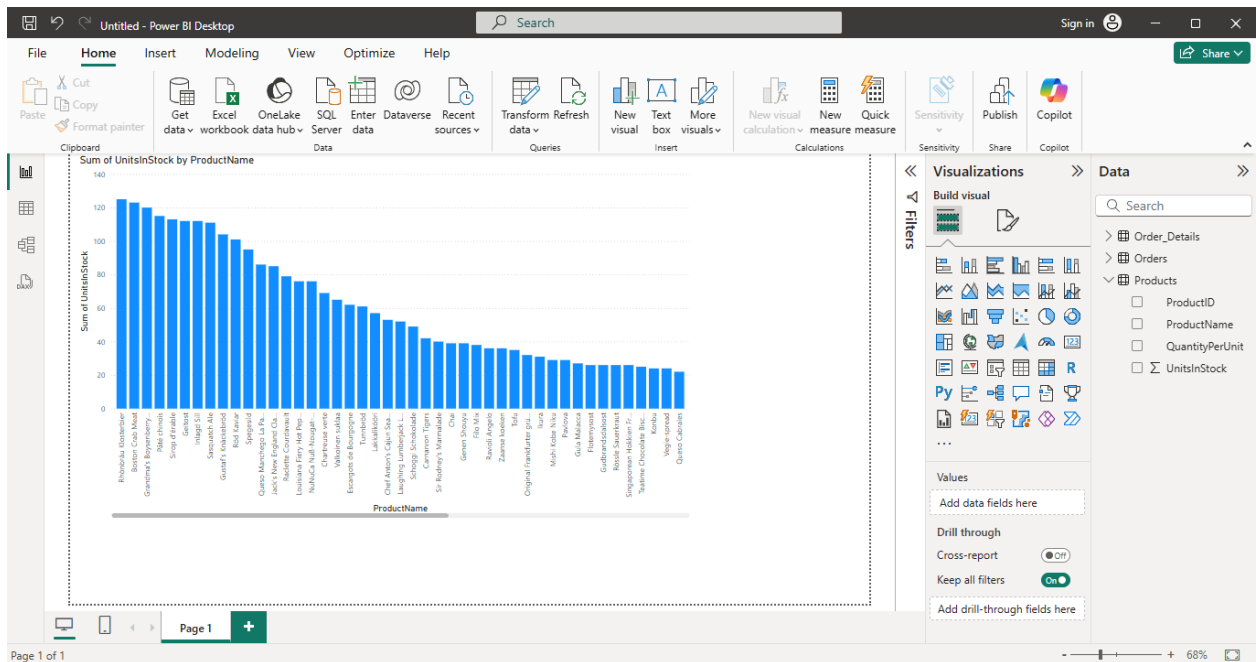
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Practical 3

Aim: Data Visualization from ETL Process

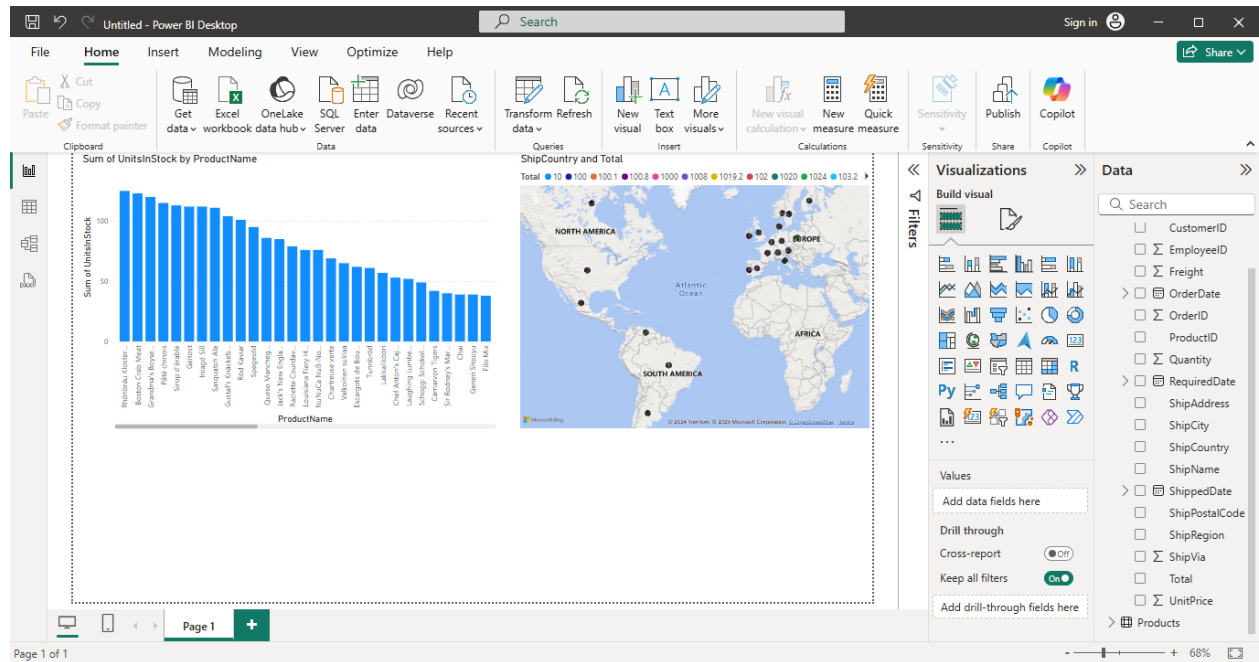
- 1) Create a Clustered Column Chart showing Units in Stock by Product and Total Sales by Year.



- 2) Insert a map visualization. Drag ShipCountry to the Location field and Total to Legend field.

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3) Add Q&A, search 'total freight over time'.

