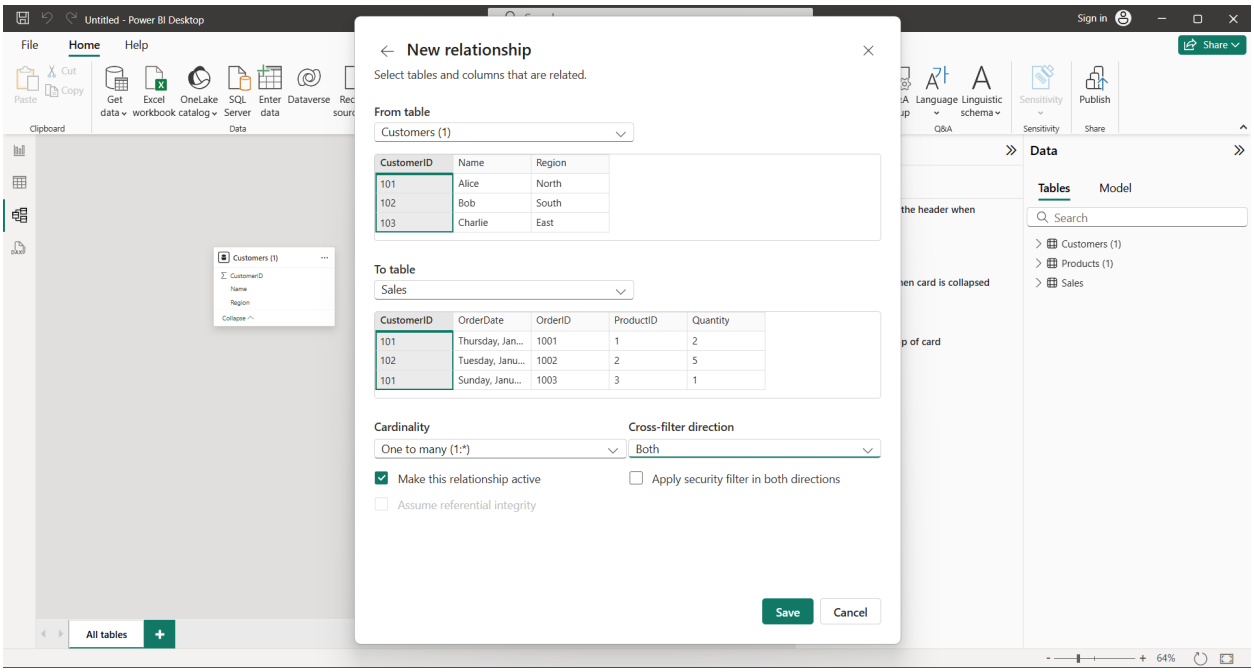
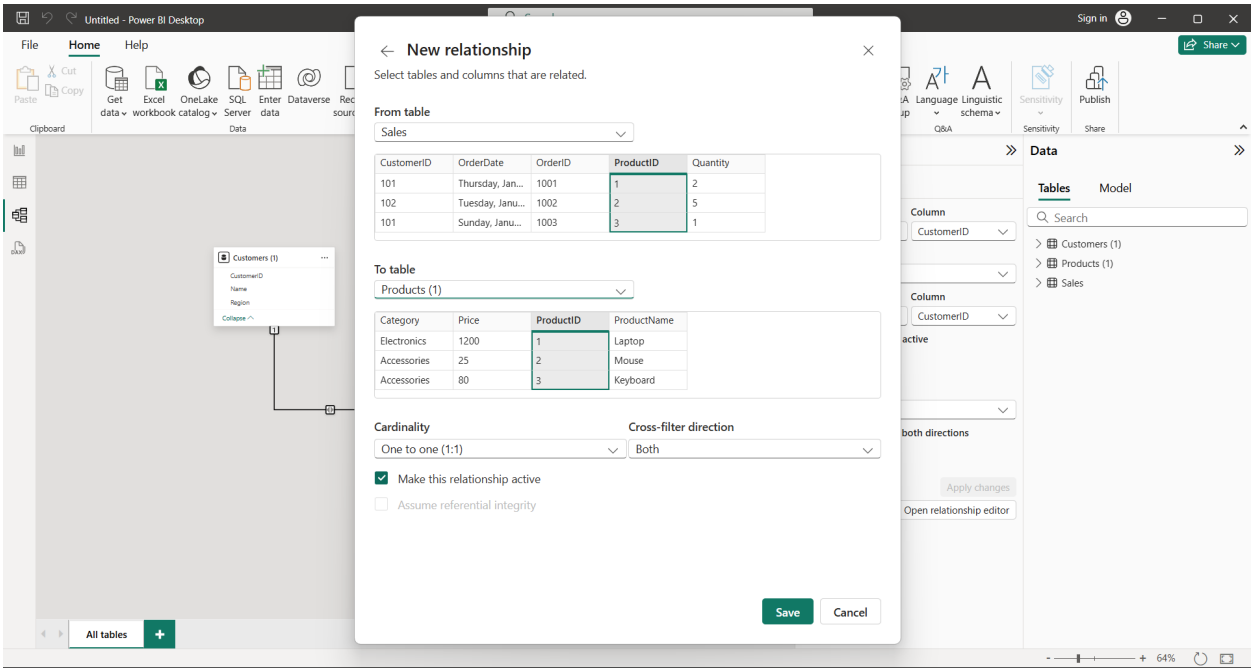
1. What is a primary key in a table?

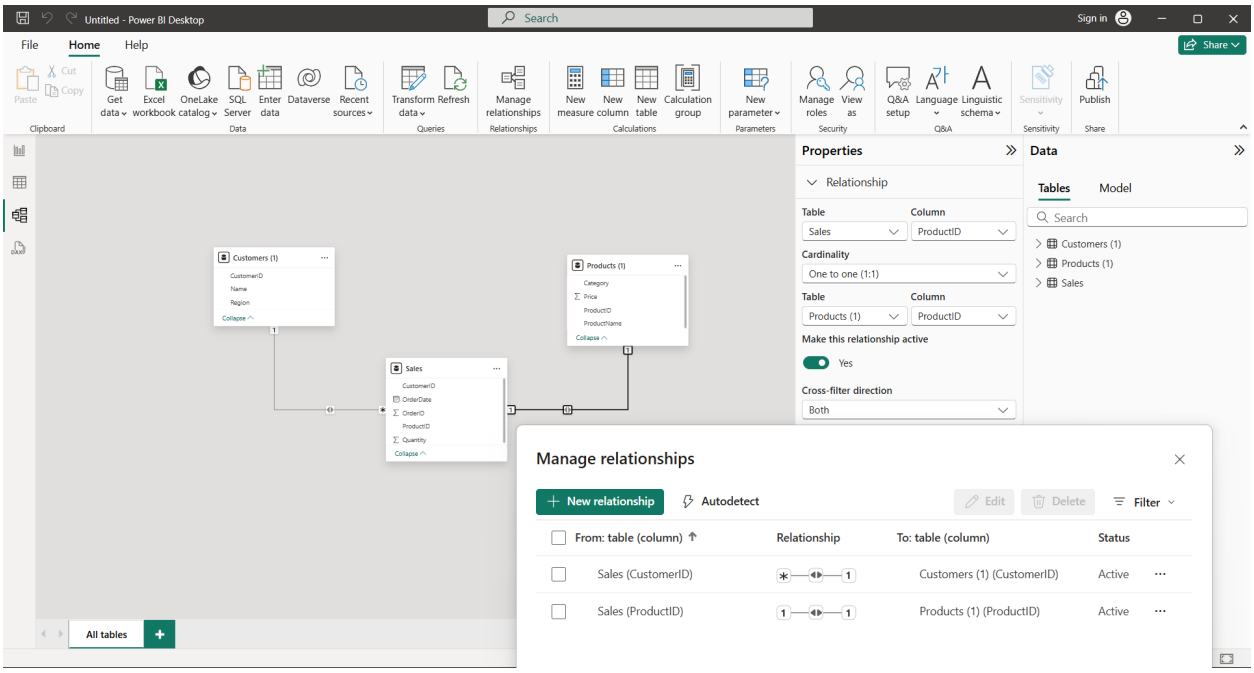
   A column that has **unique** and **non-null** values for each row — used to **uniquely identify** rows in a table and to create **relationships** between tablesName the two types of table relationships in Power BI.

2. Name the two types of table relationships in Power BI.
   One to many, many to many, many to one

3. How do you create a relationship between two tables in Power BI?


Untitled - Power BI Desktop
New relationship
Select tables and columns that are related.
From table
Customers (1)
CustomerID | Name | Region
101 | Alice | North
102 | Bob | South
103 | Charlie | East
To table
Sales
CustomerID | OrderDate | OrderID | ProductID | Quantity
101 | Thursday, Jan... | 1001 | 1 | 2
102 | Tuesday, Janu... | 1002 | 2 | 5
101 | Sunday, Janu... | 1003 | 3 | 1
Cardinality
One to many (1:*)
Cross-filter direction
Both
Make this relationship active
Apply security filter in both directions
Assume referential integrity
Save
Cancel
Data
Tables
Model
Search
Customers (1)
Products (1)
Sales
All tables


Untitled - Power BI Desktop
New relationship
Select tables and columns that are related.
From table
Sales
CustomerID | OrderDate | OrderID | ProductID | Quantity
101 | Thursday, Jan... | 1001 | 1 | 2
102 | Tuesday, Janu... | 1002 | 2 | 5
101 | Sunday, Janu... | 1003 | 3 | 1
To table
Products (1)
Category | Price | ProductID | ProductName
Electronics | 1200 | 1 | Laptop
Accessories | 25 | 2 | Mouse
Accessories | 80 | 3 | Keyboard
Cardinality
One to one (1:1)
Cross-filter direction
Both
Make this relationship active
Assume referential integrity
Save
Cancel
Data
Tables
Model
Search
Customers (1)
Products (1)
Sales
All tables



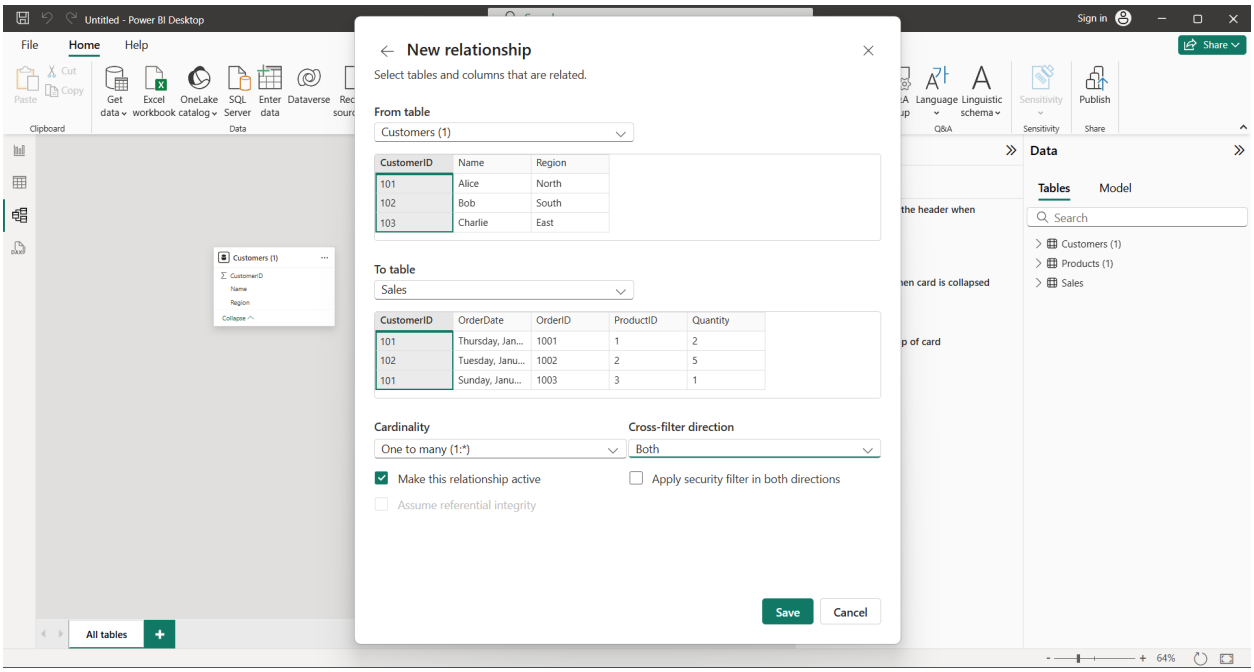
4. What is a "star schema"?

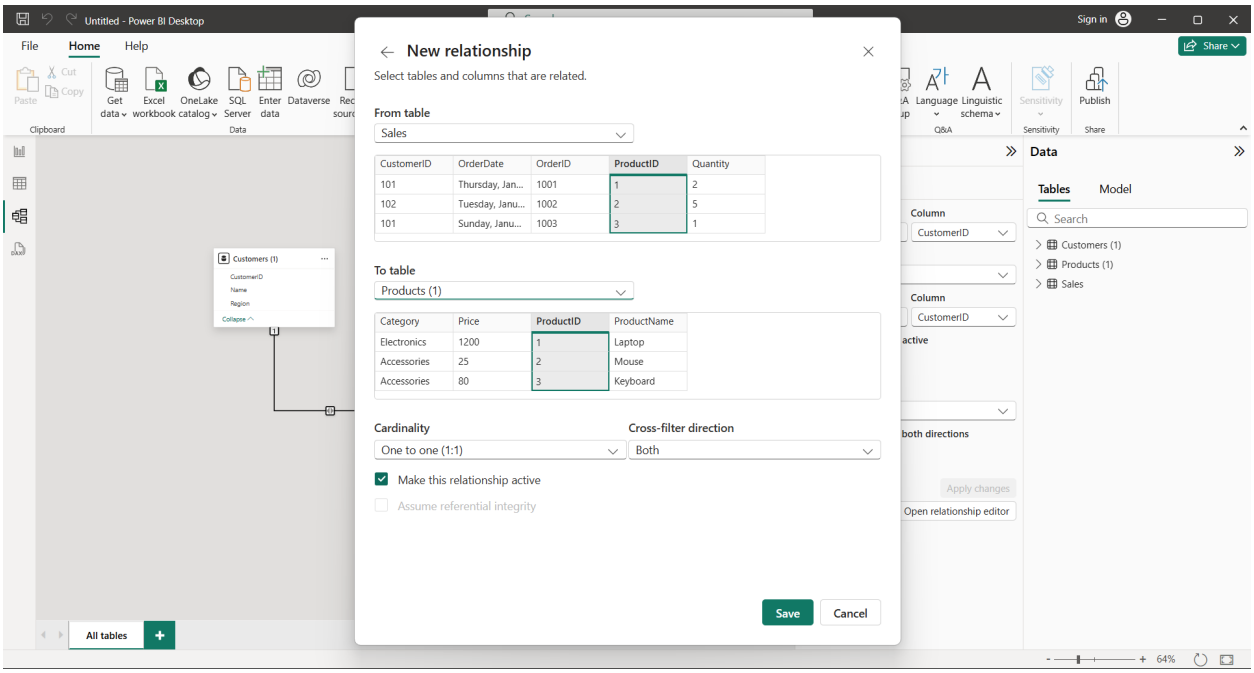
   In Power BI, a star schema is a data modeling technique that organizes data into a central fact table surrounded by dimension tables, resembling a star shape. This design enhances query performance by simplifying the relationships between tables.

5. Which table is typically the fact table in a sales dataset?

   Sales table, because it includes two referenced columnnames

6. Link Sales.csv to Customers.csv using CustomerID (one-to-many).

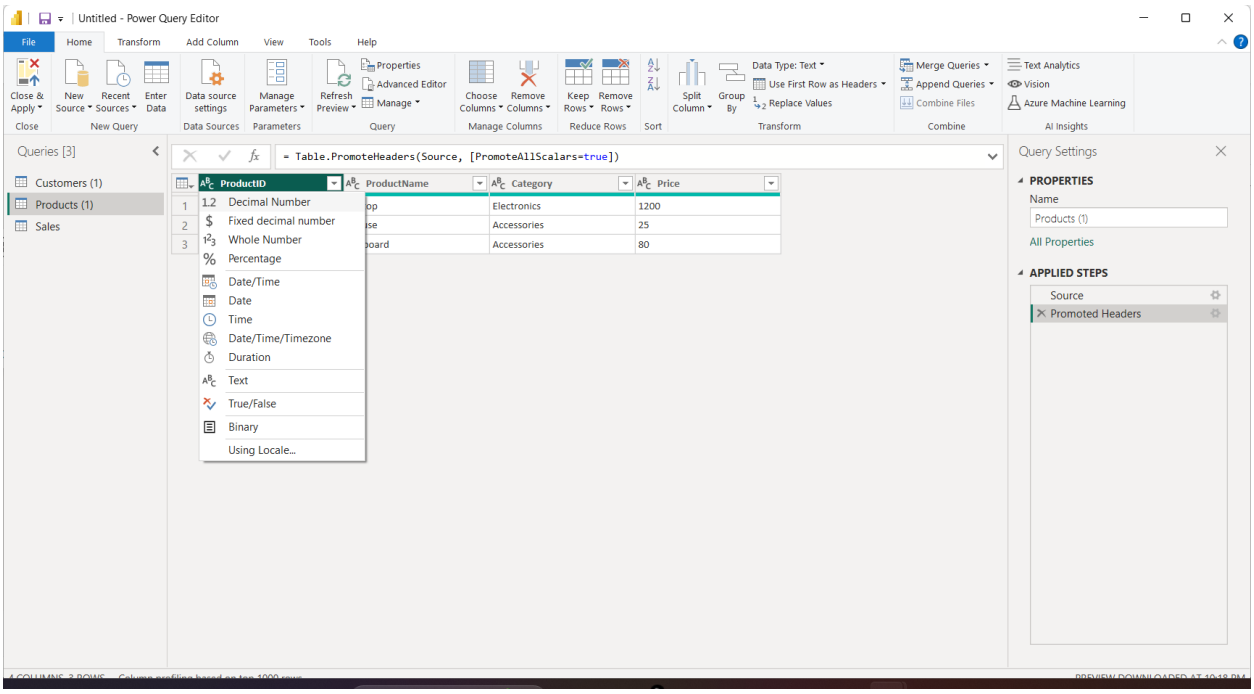




7. Why is ProductID in Sales.csv a foreign key?

   ProductID in Sales.csv is a foreign key because it refers to the unique ProductID in the Products table.

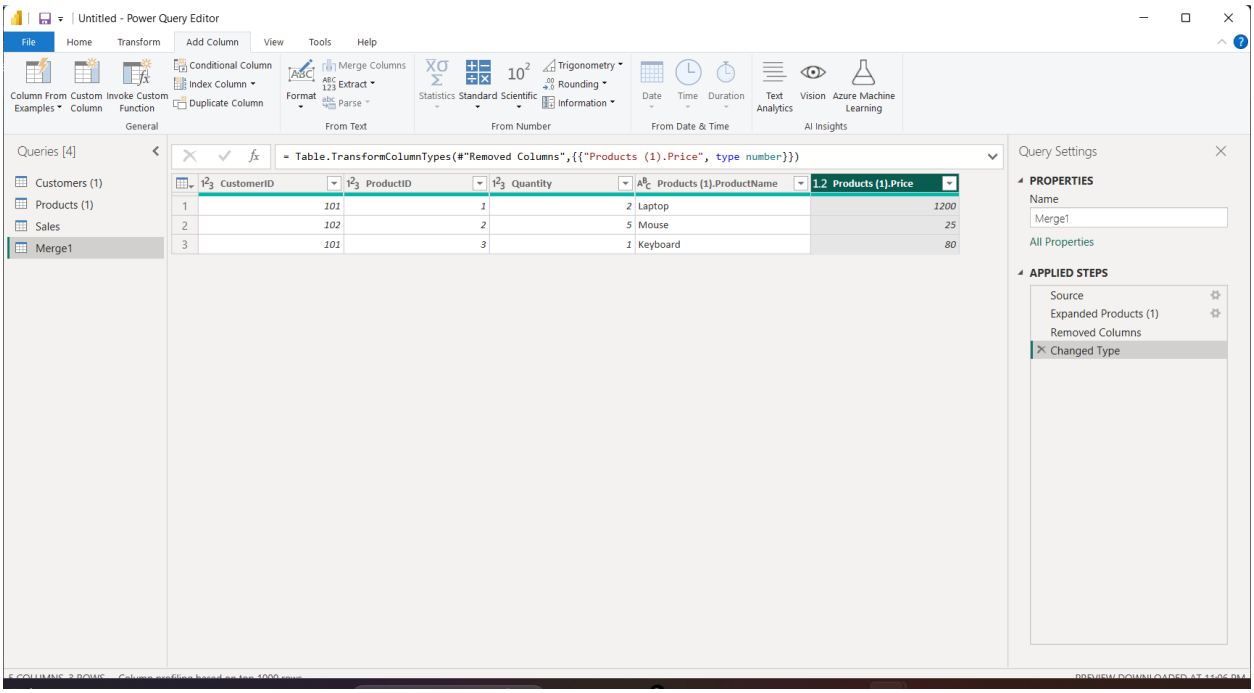
8. Fix a relationship error where ProductID has mismatched data types.

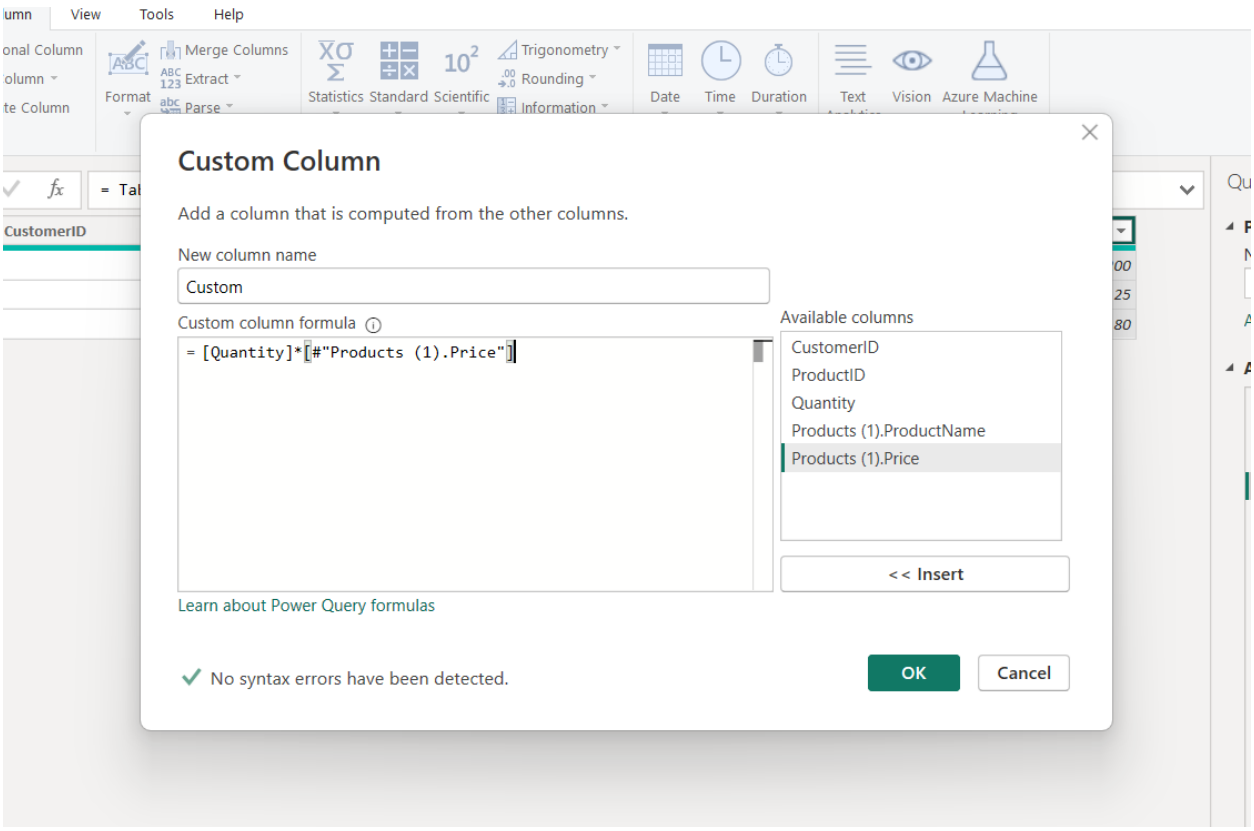


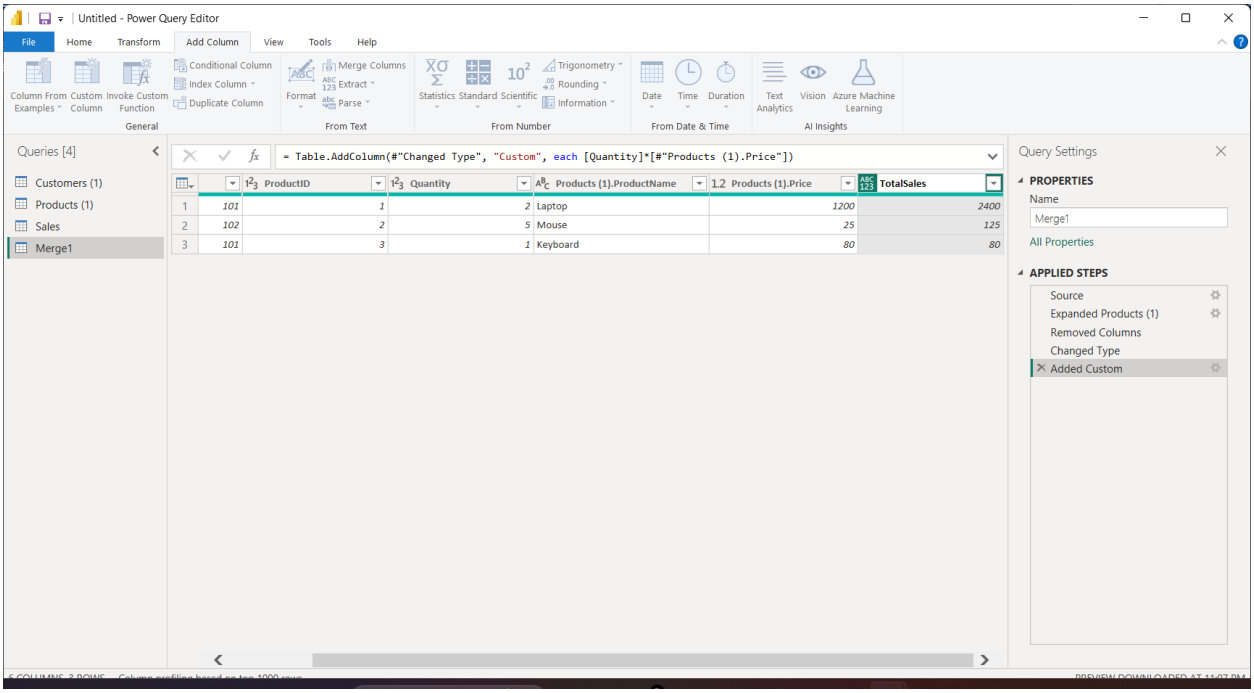
9. Explain why a star schema improves performance.

   A star schema improves query performance primarily due to its denormalized structure, which minimizes the number of joins needed to retrieve data. This simpler design makes data access for reporting and analytics faster and more efficient, especially for complex queries

10. Add a new column TotalSales in Sales (Quantity * Price from Products).


Untitled - Power Query Editor
File
Home
Transform
Add Column
View
Tools
Help
Column From Examples
Custom Column
Invoke Custom Function
Conditional Column
Index Column
Duplicate Column
General
Format
Merge Columns
Extract
Parse
From Text
Statistics
Standard
Scientific
Trigonometry
Rounding
Information
From Number
Date
Time
Duration
From Date & Time
Text Analytics
Vision
Azure Machine Learning
AI Insights
Queries [4]
Customers (1)
Products (1)
Sales
Merge1
= Table.TransformColumnTypes(#"Removed Columns",{{"Products (1).Price", type number}})
CustomerID
ProductID
Quantity
Products (1).ProductName
Products (1).Price
1 101 1 2 Laptop 1200
2 102 2 5 Mouse 25
3 101 3 1 Keyboard 80
Query Settings
PROPERTIES
Name
Merge1
All Properties
APPLIED STEPS
Source
Expanded Products (1)
Removed Columns
Changed Type





11. Optimize a model with circular relationships—how would you resolve it?

Break the circular relationship by removing one relationship and instead merge the necessary tables in Power Query. Or you can use DAX

12. Create a role-playing dimension for OrderDate and ShipDate.

    Use one Date table

    Create two relationships to the Sales table:

        Active → OrderDate

        Inactive → ShipDate

    Use USERELATIONSHIP() in measures to switch dates when needed.

13. Handle a many-to-many relationship between Customers and Products.

14. Use bidirectional filtering sparingly—when is it appropriate?

15. Write DAX to enforce referential integrity if a CustomerID is deleted.