...

Lab - Load data in Power BI Desktop

45 minutes

Access your environment

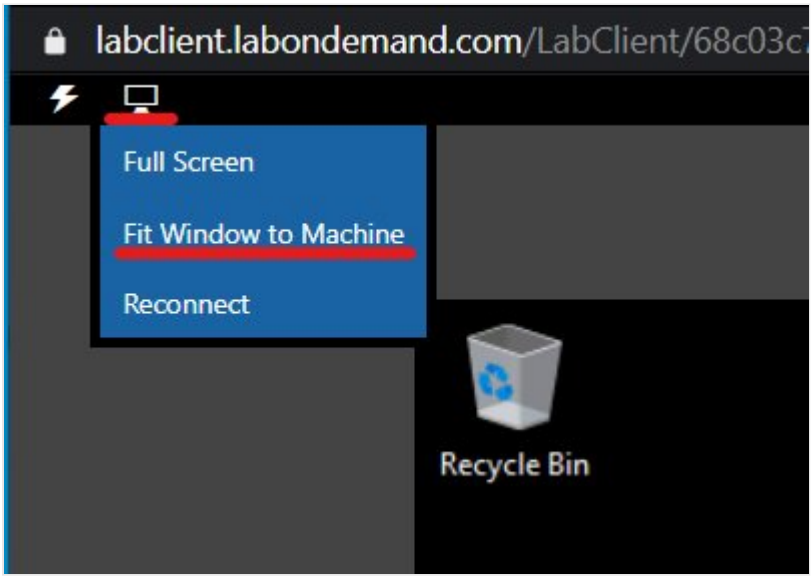
Before you start this lab (unless you are continuing from a previous lab), select **Launch lab** above.

You are automatically logged in to your lab environment as data-ai\student.

You can now begin your work on this lab.

Tip

To dock the lab environment so that it fills the window, select the PC icon at the top and then select **Fit Window to Machine**.



Overview

The estimated time to complete the lab is 45 minutes.

In this lab, you'll begin to apply transformations to queries. You'll then apply the queries to load each as a table to the data model.

In this lab, you learn how to:

- Apply various transformations
- Apply queries to load them to the data model

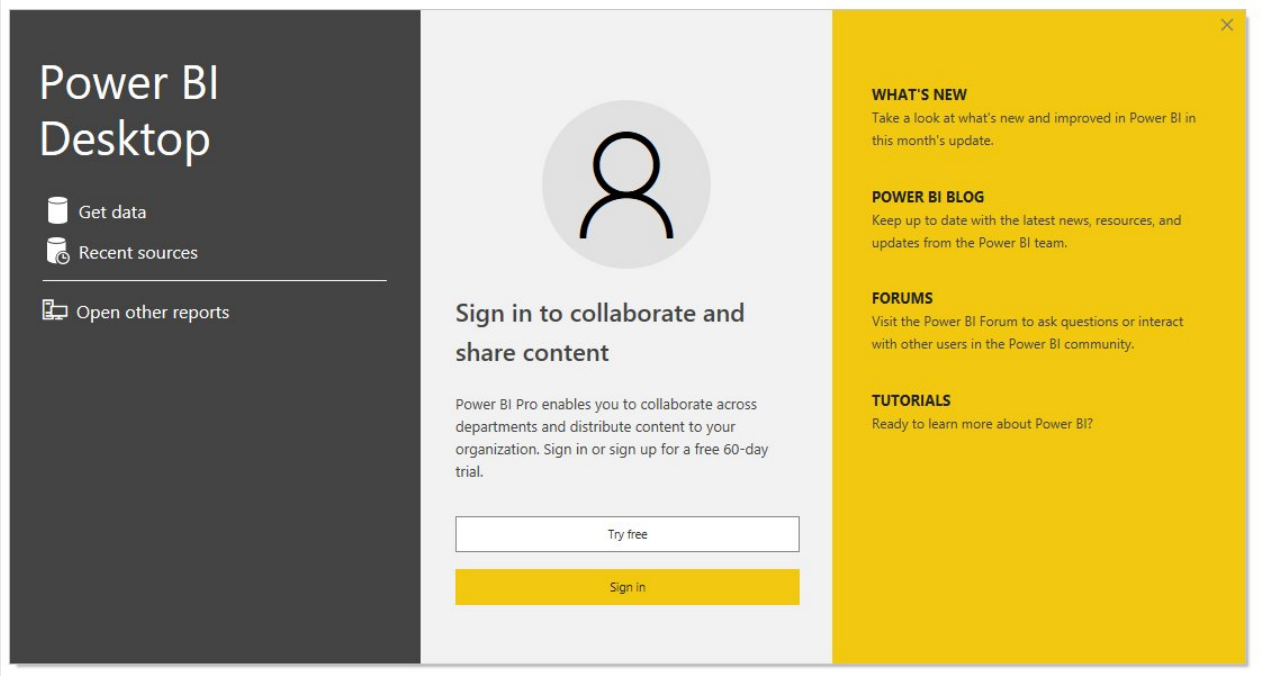
Before you start this lab, you will need to open the lab environment link above, and log in to the lab environment. There is no need to provide your own environment, as an environment has been prepared for this lab.

Load Data

In this exercise, you'll apply transformations to each of the queries.

Open the solution file

1. Double-click the Power BI Desktop icon. (This may take a minute or two to open.)
2. Dismiss the splash screen by selecting **X** to close.



3. From the **File** tab, select **Open report**, and then **Browse reports**.

4. You will open **Sales Analysis.pbix** file, which is found in the **D:\DA100\02-load-data-with-power-query-in-power-bi-desktop\Starter** folder.

Configure the Salesperson query

In this task, you'll configure the **Salesperson** query.

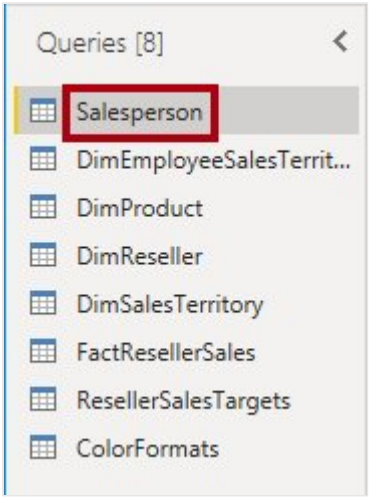
1. To open the **Power Query Editor** window, in Power BI Desktop, on the Home ribbon tab, click **Transform Data**.

2. In the **Power Query Editor** window, in the **Queries** pane, select the **DimEmployee** query.

3. To rename the query, in the **Query Settings** pane (located at the right), in the **Name** box, replace the text with **Salesperson**, and then press **Enter**.

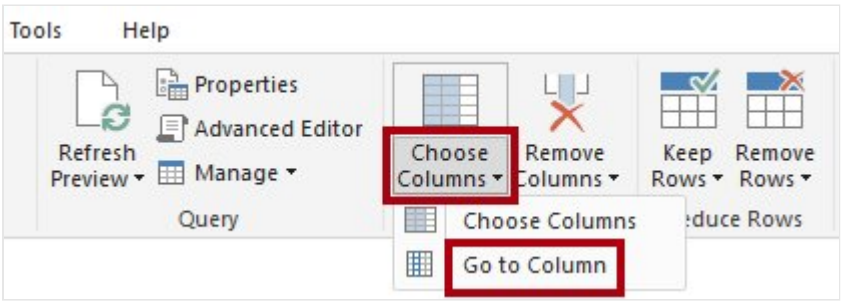
   The query name will determine the model table name. It's recommended to define concise, yet friendly, names.

4. In the **Queries** pane, verify that the query name has updated.



   You'll now filter the query rows to retrieve only employees who are salespeople.

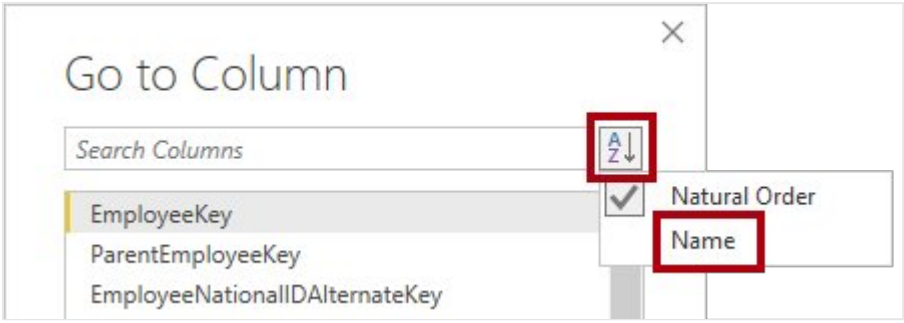
5. To locate a specific column, on the **Home** ribbon tab, from inside the **Manage Columns** group, click the **Choose Columns** down-arrow, and then select **Go to Column**.



   Tip

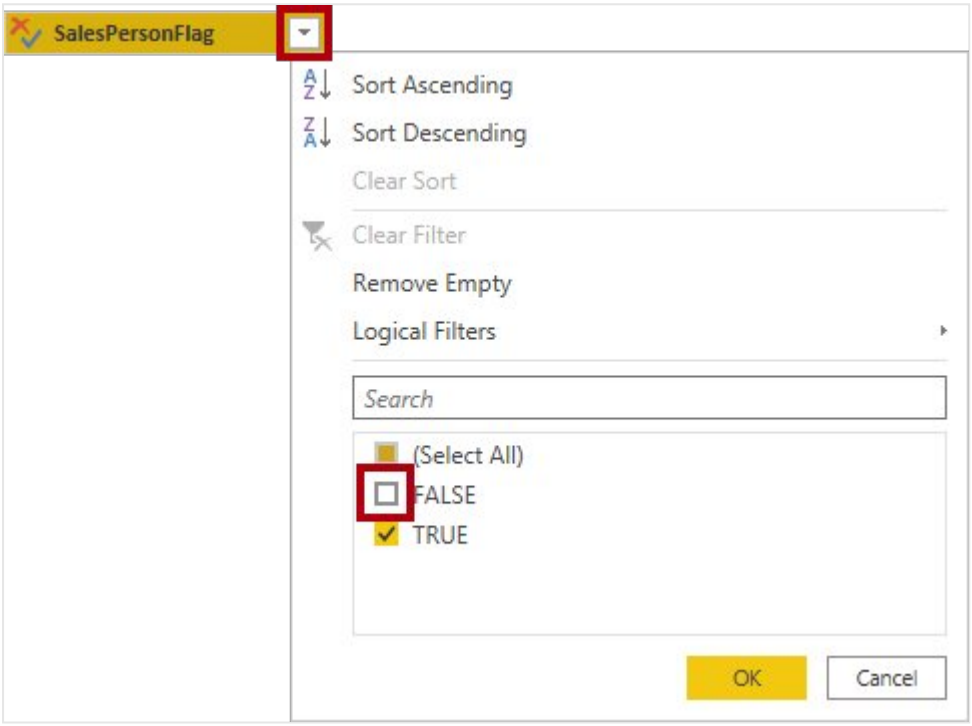
This technique is useful when a query contains many columns. Usually, you can simply horizontally scroll to locate the column.

6. In the **Go to Column** window, to order the list by column name, click the **AZ** sort button, and then select **Name**.



7. Select the **SalesPersonFlag** column, and then click **OK**.

8. To filter the query, in the **SalesPersonFlag** column header, click the down-arrow, and then uncheck **FALSE**.



9. Click **OK**.

10. In the **Query Settings** pane, in the **Applied Steps** list, notice the addition of the **Filtered Rows** step.

    Each transformation you create results in additional step logic. It's possible to edit or delete steps. It's also possible to select a step to preview the query results at that stage of transformation.

11. To remove columns, on the **Home** ribbon tab, from inside the **Manage Columns** group, click the **Choose Columns** icon.

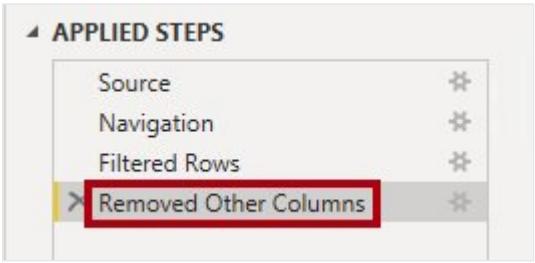
12. In the **Choose Columns** window, to uncheck all columns, uncheck the **(Select All Columns)** item.

13. To include columns, check the following six columns:

    - EmployeeKey
    - EmployeeNationalIDAlternateKey
    - FirstName
    - LastName
    - Title
    - EmailAddress

14. Click **OK**.

15. In the **Applied Steps** list, notice the addition of another query step.



16. To create a single name column, first select the **FirstName** column header.

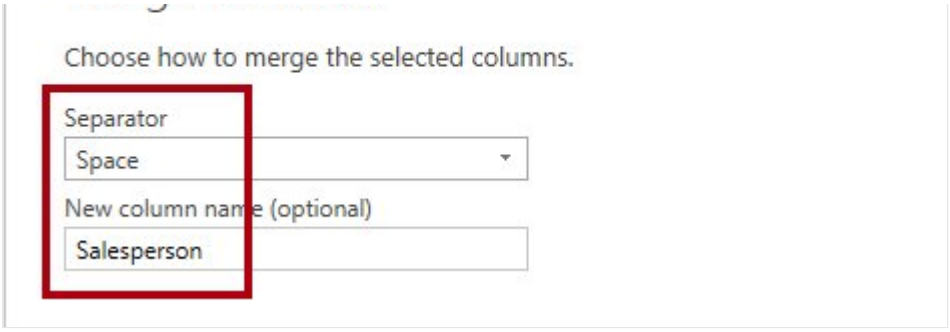
17. While pressing the **Ctrl** key, select the **LastName** column.

18. Right-click either of the select column headers, and then in the context menu, select **Merge Columns**.

    Many common transformations can be applied by right-clicking the column header, and then choosing them from the context menu. However, that all transformations and more are available in the ribbon.

19. In the **Merge Columns** window, in the **Separator** dropdown list, select **Space**.

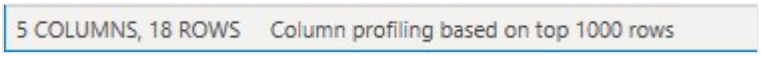
20. In the **New Column Name** box, replace the text with **Salesperson**.



21. Click **OK**.
22. To rename the **EmployeeNationalIDAlternateKey** column, double-click the **EmployeeNationalIDAlternateKey** column header.
23. Replace the text with **EmployeeID**, and then press **Enter**.

    When instructed to rename columns, it's important that you rename them exactly as described.
24. Use the previous steps to rename the **EmailAddress** column to **UPN**.

    UPN is an acronym for User Principal Name. The values in this column will be used when you configure row-level security in **Lab 05A**.
25. At the bottom-left, in the status bar, verify that the query has 5 columns and 18 rows.

    It's important that you do not proceed if your query does not produce the correct result, it won't be possible to complete later labs. If it doesn't, refer back to the steps in this task to fix any problems.

Configure the SalespersonRegion query

In this task, you'll configure the **SalespersonRegion** query.

1. In the **Queries** pane, select the **DimEmployeeSalesTerritory** query.
2. In the **Query Settings** pane, rename the query to **SalespersonRegion**.
3. To remove the last two columns, first select the **DimEmployee** column header.
4. While pressing the **Ctrl** key, select the **DimSalesTerritory** column header.
5. Right-click either of the select column headers, and then in the context menu, select **Remove Columns**.

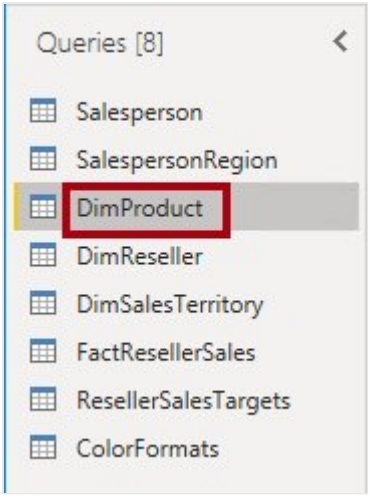
6. In the status bar, verify that the query has 2 columns and 39 rows.

Configure the Product query

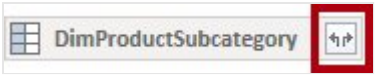
In this task, you'll configure the **Product** query.

When detailed instructions have already been provided in the labs, the lab steps will now provide more concise instructions. If you need the detailed instructions, you can refer back to other tasks.

1. Select the **DimProduct** query.

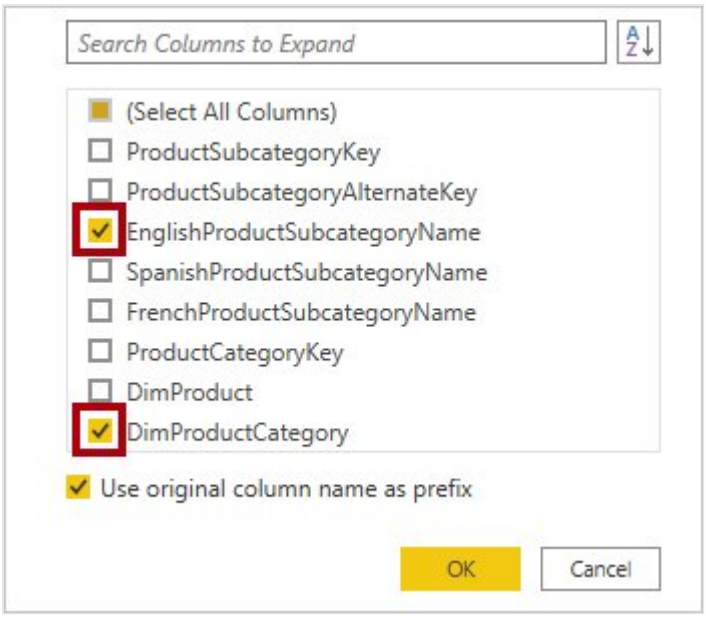


2. Rename the query to **Product**.
3. Locate the **FinishedGoodsFlag** column, and then filter the column to retrieve products that are finished goods (that is, TRUE).
4. Remove all columns, except the following:
    - ProductKey
    - EnglishProductName
    - StandardCost
    - Color
    - DimProductSubcategory
5. Notice that the **DimProductSubcategory** column represents a related table (it contains **Value** links).
6. In the **DimProductSubcategory** column header, at the right of the column name, click the expand button.



7. To uncheck all columns, uncheck the **(Select All Columns)** item.

8. Check the **EnglishProductSubcategoryName** and **DimProductCategory** columns.



   By selecting these two columns, a transformation will be applied to join to the **DimProductSubcategory** table, and then include these columns. The **DimProductCategory** column is, in fact, another related table.

9. Uncheck the **Use Original Column Name as Prefix** checkbox.

   Query column names must always be unique. When checked, this checkbox would prefix each column with the expanded column name (in this case **DimProductSubcategory**). Because it's known that the selected columns don't collide with columns in the **Product** query, the option is deselected.

10. Click **OK**.

11. Expand the **DimProductCategory**, and then introduce only the **EnglishProductCategoryName** column.

12. Rename the following four columns:

    - **EnglishProductName** to **Product**
    - **StandardCost** to **Standard Cost** (include a space)
    - **EnglishProductSubcategoryName** to **Subcategory**
    - **EnglishProductCategoryName** to **Category**

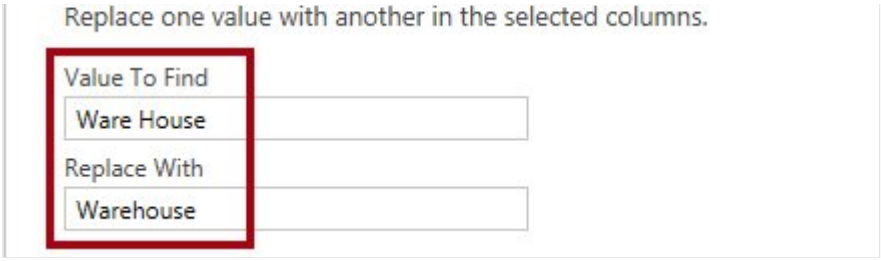
13. In the status bar, verify that the query has six columns and 397 rows.

Configure the Reseller query

In this task, you will configure the **Reseller** query.

1. Select the **DimReseller** query.
2. Rename the query to **Reseller**.
3. Remove all columns, except the following:
    - ResellerKey
    - BusinessType
    - ResellerName
    - DimGeography
4. Expand the **DimGeography** column, to include only the following three columns:
    - City
    - StateProvinceName
    - EnglishCountryRegionName
5. In the **Business Type** column header, click the down-arrow, and then review the items, and the incorrect spelling of warehouse.

6. Right-click the **Business Type** column header, and then select **Replace Values**.
7. In the **Replace Values** window, configure the following values:
    - In the **Value to Find** box, enter **Ware House**
    - In the **Replace With** box, enter **Warehouse**

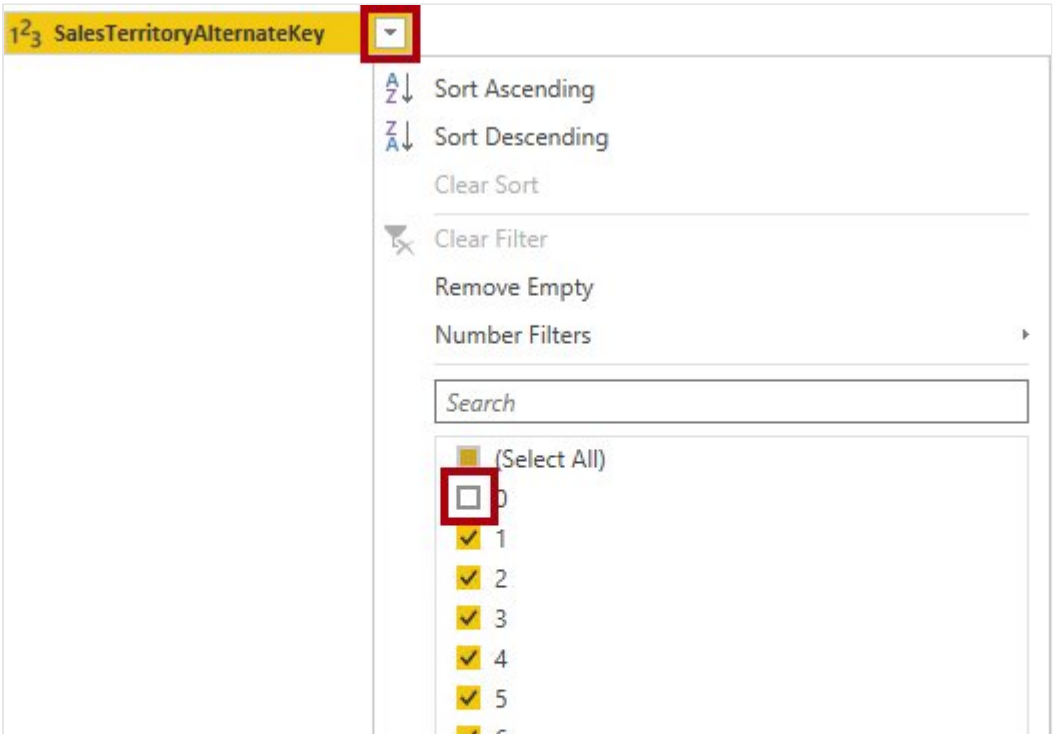


8. Click **OK**.
9. Rename the following four columns:
    - **BusinessType** to **Business Type** (include a space)
    - **ResellerName** to **Reseller**
    - **StateProvinceName** to **State-Province**
    - **EnglishCountryRegionName** to **Country-Region**
10. In the status bar, verify that the query has 6 columns and 701 rows.

Configure the Region query

In this task, you will configure the **Region** query.

1. Select the **DimSalesTerritory** query.
2. Rename the query to **Region**.
3. Apply a filter to the **SalesTerritoryAlternateKey** column to remove the value 0 (zero).



4. Remove all columns, except the following:
    - SalesTerritoryKey
    - SalesTerritoryRegion
    - SalesTerritoryCountry
    - SalesTerritoryGroup
5. Rename the following three columns:
    - **SalesTerritoryRegion** to **Region**
    - **SalesTerritoryCountry** to **Country**
    - **SalesTerritoryGroup** to **Group**
6. In the status bar, verify that the query has 4 columns and 10 rows.

Configure the Sales query

In this task, you will configure the **Sales** query.

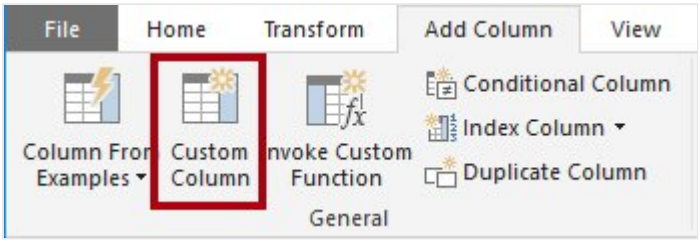
1. Select the **FactResellerSales** query.
2. Rename the query to **Sales**.
3. Remove all columns, except the following:
    - SalesOrderNumber
    - OrderDate
    - ProductKey
    - ResellerKey
    - EmployeeKey
    - SalesTerritoryKey

- OrderQuantity
- UnitPrice
- TotalProductCost
- SalesAmount
- DimProduct

Recall in **Lab 02A** that a small percentage of **FactResellerSales** rows had missing **TotalProductCost** values. The **DimProduct** column has been included to retrieve the product standard cost, to fix the missing values.

4. Expand the **DimProduct** column, and then include the **StandardCost** column.

5. To create a custom column, on the **Add Column** ribbon tab, from inside the **General** group, click **Custom Column**.



6. In the **Custom Column** window, in the **New Column Name** box, replace the text with **Cost**.

7. In the **Custom Column Formula** box, enter the following expression (after the equals symbol):

8. For your convenience, you can copy the expression from the **D:\DA100\Lab03A\Assets\Snippets.txt** file.

   Power Query

   ```
   if [TotalProductCost] = null then [OrderQuantity] * [StandardCost] else [TotalProductCost]
   ```

   This expression tests if the **TotalProductCost** value is missing. If it is, produce a value by multiplying the **OrderQuantity** value by the **StandardCost** value; otherwise, it uses the existing **TotalProductCost** value.

9. Click **OK**.

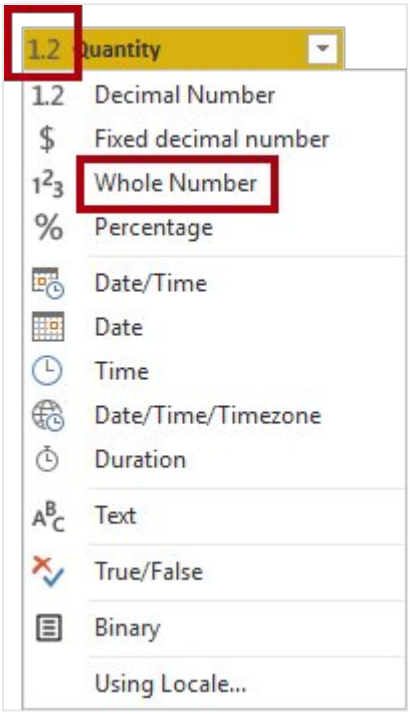
10. Remove the following two columns:

    - TotalProductCost
    - StandardCost

11. Rename the following three columns:

    - **OrderQuantity** to **Quantity**
    - **UnitPrice** to **Unit Price** (include a space)
    - **SalesAmount** to **Sales**

12. To modify the column data type, in the **Quantity** column header, at the left of the column name, click the **1.2** icon, and then select **Whole Number**.



    Configuring the correct data type is important. When the column contains numeric value, it's also important to choose the correct type if you expect to perform mathematic calculations.

13. Modify the following three-column data types to **Fixed Decimal Number**.

    - Unit Price
    - Sales
    - Cost

    The fixed decimal number data type stores values with full precision, and so requires

more storage space than the decimal number. It's important to use the fixed decimal number type for financial values, or rates (like exchange rates).

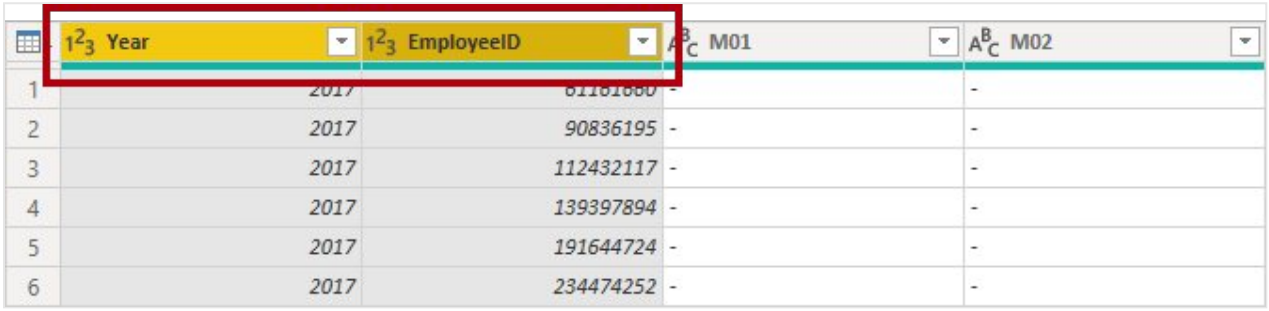
14. In the status bar, verify that the query has 10 columns and 999+ rows.

    A maximum of 1000 rows will be loaded as preview data for each query.

Configure the Targets query

In this task, you'll configure the **Targets** query.

1. Select the **ResellerSalesTargets** query.
2. Rename the query to **Targets**.
3. To unpivot the 12-month columns (**M01**-**M12**), first multi-select the **Year** and **EmployeeID** column headers.



	Year	EmployeeID	M01	M02
1	2017	61161660	-	-
2	2017	90836195	-	-
3	2017	112432117	-	-
4	2017	139397894	-	-
5	2017	191644724	-	-
6	2017	234474252	-	-

4. Right-click either of the select column headers, and then in the context menu, select **Unpivot Other Columns**.
5. Notice that the column names now appear in the **Attribute** column, and the values appear in the **Value** column.
6. Apply a filter to the **Value** column to remove hyphen (-) values.
7. Rename the following two columns:

    - **Attribute** to **MonthNumber** (no space between the two words it will be removed later)
    - **Value** to **Target**

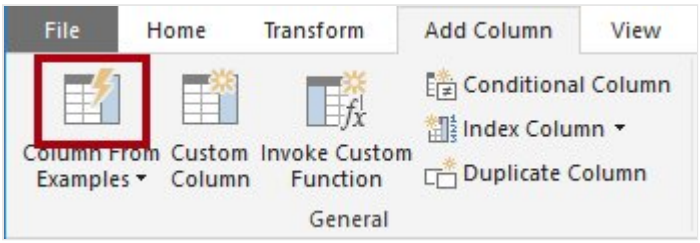
    You'll now apply transformations to produce a date column. The date will be derived from the **Year** and **MonthNumber** columns. You'll create the column by using the **Columns From Examples** feature.

8. To prepare the **MonthNumber** column values, right-click the **MonthNumber** column

header, and then select **Replace Values**.

9. In the **Replace Values** window, in the **Value To Find** box, enter **M**.
10. Click **OK**.
11. Modify the **MonthNumber** column data type to **Whole Number**.

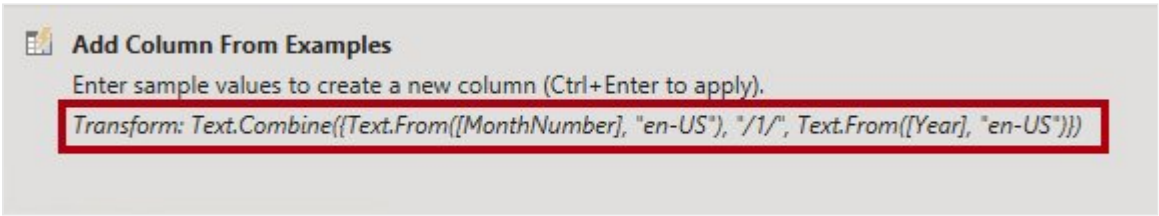
12. On the **Add Column** ribbon tab, from inside the **General** group, click The **Column From Examples** icon.



13. Notice that the first row is for year **2017** and month number **7**.
14. In the **Column1** column, in the first grid cell, enter **7/1/2017**, and then press **Enter**.

    The virtual machine uses US regional settings, so this date is in fact July 1, 2017.
15. Notice that the grid cells update with predicted values.

    The feature has accurately predicted that you're combining values from two columns.
16. Notice also the formula presented above the query grid.

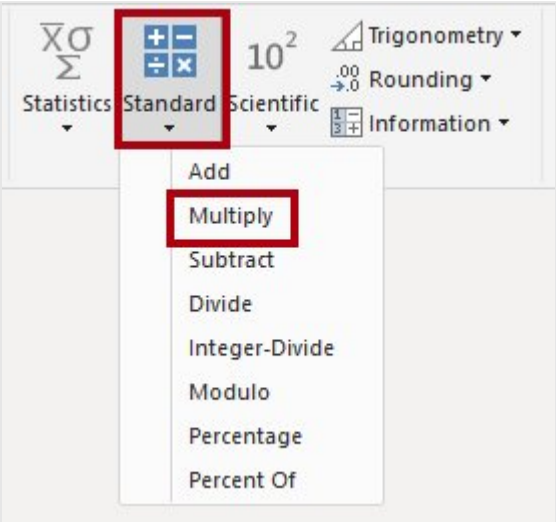


17. To rename the new column, double-click the **Merged** column header.
18. Rename the column as **TargetMonth**.
19. Click **OK**.
20. Remove the following columns:

    - Year

- MonthNumber

21. Modify the following column data types:
    - **Target** as fixed decimal number
    - **TargetMonth** as date
22. To multiply the **Target** values by 1000, select the **Target** column header, and then on the **Transform** ribbon tab, from inside the **Number Column** group, click **Standard**, and then select **Multiply**.

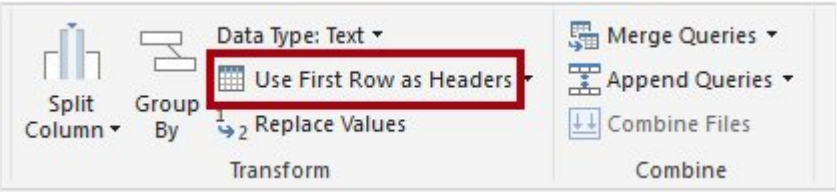


23. In the **Multiply** window, in the **Value** box, enter **1000**.
24. Click **OK**.
25. In the status bar, verify that the query has 3 columns and 809 rows.

Configure the ColorFormats query

In this task, you'll configure the **ColorFormats** query.

1. Select the **ColorFormats** query.
2. Notice that the first row contains the column names.
3. On the **Home** ribbon tab, from inside the **Transform** group, click **Use First Row as Headers**.

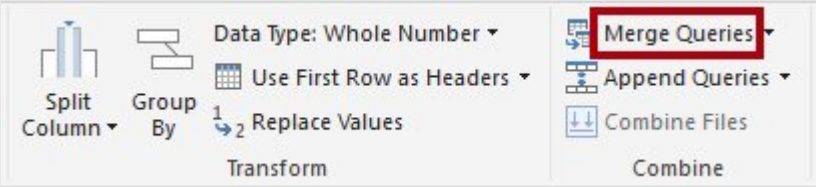


4. In the status bar, verify that the query has 3 columns and 10 rows.

Update the Product query

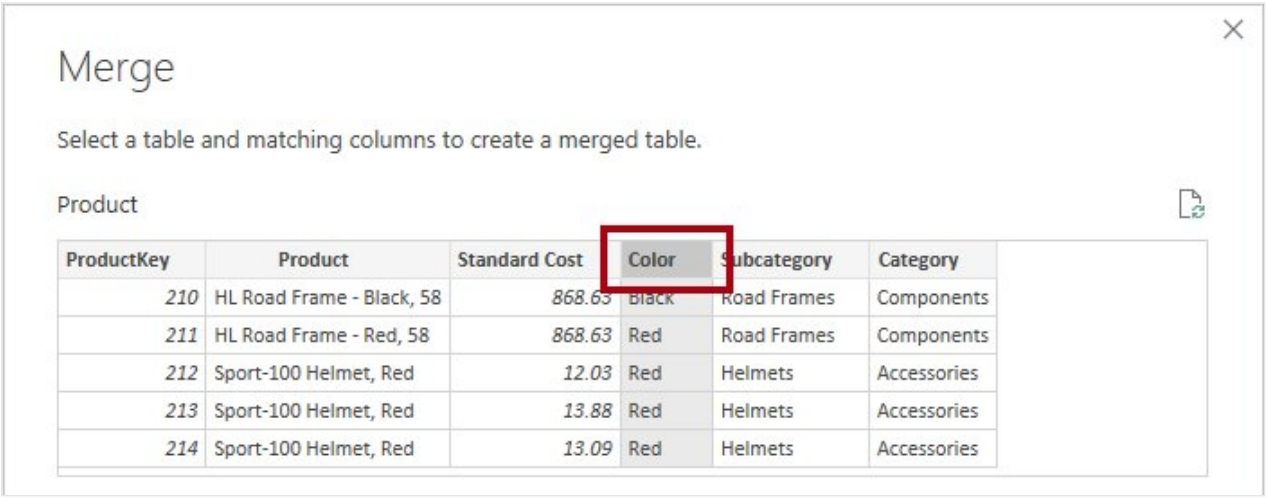
In this task, you'll update the **Product** query by merging the **ColorFormats** query.

1. Select the **Product** query.
2. To merge the **ColorFormats** query, on the **Home** ribbon tab, from inside the **Combine** group, click **Merge Queries**.



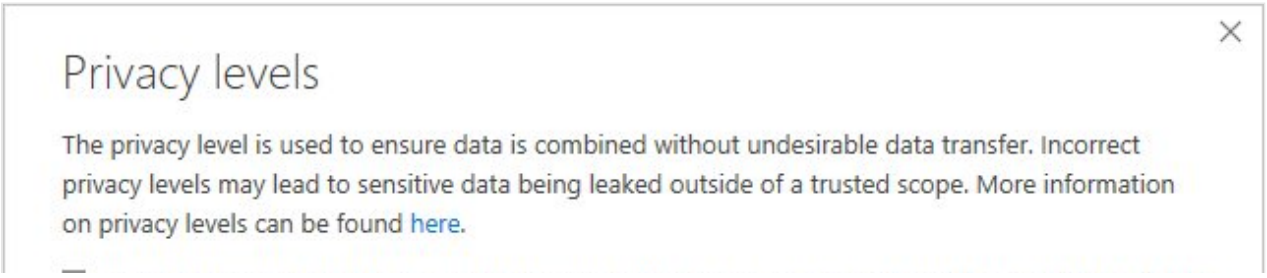
   Merging queries allows integrating data, in this case from different data sources (SQL Server and a CSV file).

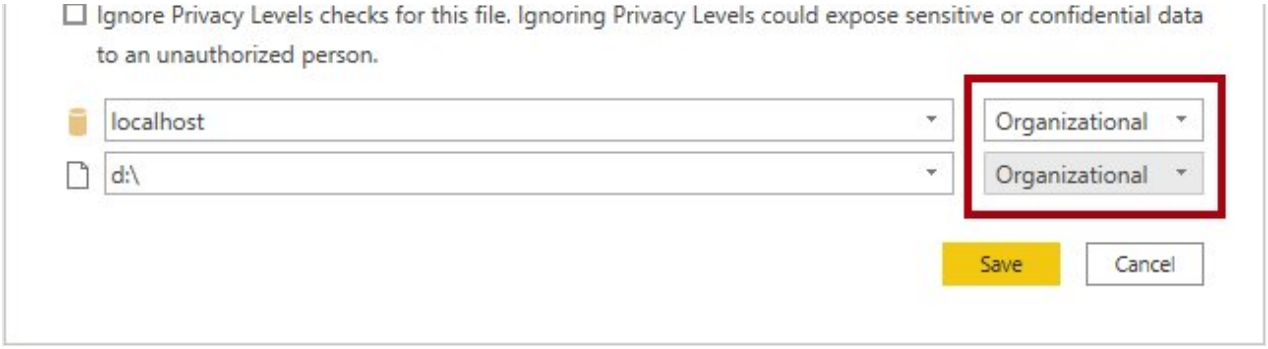
3. In the **Merge** window, in the **Product** query grid, select the **Color** column header.



ProductKey	Product	Standard Cost	Color	Subcategory	Category
210	HL Road Frame - Black, 58	868.63	Black	Road Frames	Components
211	HL Road Frame - Red, 58	868.63	Red	Road Frames	Components
212	Sport-100 Helmet, Red	12.03	Red	Helmets	Accessories
213	Sport-100 Helmet, Red	13.88	Red	Helmets	Accessories
214	Sport-100 Helmet, Red	13.09	Red	Helmets	Accessories

4. Beneath the **Product** query grid, in the dropdown list, select the **ColorFormats** query.
5. In the **ColorFormats** query grid, select the **Color** column header.
6. When the **Privacy Levels** window opens, for each of the two data sources, in the corresponding dropdown list, select **Organizational**.





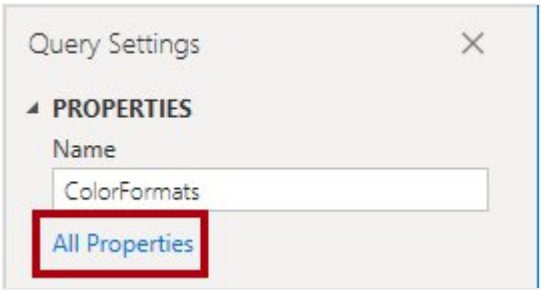
Privacy levels can be configured for data source to determine whether data can be shared between sources. Setting each data source as **Organizational** allows them to share data, if necessary. Private data sources can never be shared with other data sources. It doesn't mean that Private data cannot be shared; it means that the Power Query engine cannot share data between the sources.

7. Click **Save**.
8. In the **Merge** window, click **OK**.
9. Expand the **ColorFormats** column to include the following two columns:
    - Background Color Format
    - Font Color Format
10. In the status bar, verify that the query now has 8 columns and 397 rows.

Update the ColorFormats query

In this task, you'll update the **ColorFormats** to disable its load.

1. Select the **ColorFormats** query.
2. In the **Query Settings** pane, click the **All Properties** link.



3. In the **Query Properties** window, uncheck the **Enable Load To Report** checkbox.

    Disabling the load means it won't load as a table to the data model. This is done because the query was merged with the Product query, which is enabled to load to the data

model.

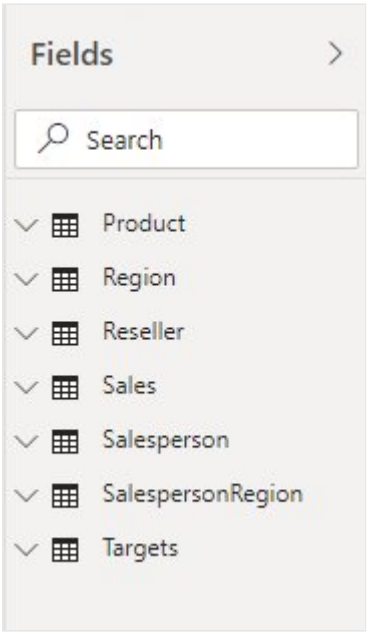
4. Click **OK**.

Finish up

In this task, you'll complete the lab.

1. Verify that you have eight queries, correctly named as follows:
    - Salesperson
    - SalespersonRegion
    - Product
    - Reseller
    - Region
    - Sales
    - Targets
    - ColorFormats (which won't load to the data model)
2. To load the data model, on the **File** backstage view, select **Close & Apply**.

    All load-enabled queries are now loaded to the data model.
3. In the **Fields** pane (located at the right), notice the seven tables loaded to the data model.



4. Save the Power BI Desktop file.

5. Leave Power BI Desktop open.

In the next lab, you'll configure data model tables and relationships.

Ending Your Lab

To end this lab, select the **Done** button in the bottom right corner of this instruction window.

Need help? See our troubleshooting guide or provide specific feedback by reporting an issue.