Microsoft Power Tools for Data Analysis #20
Power Query Parameter for Folder Path in Excel and Power BI
Notes from Video:

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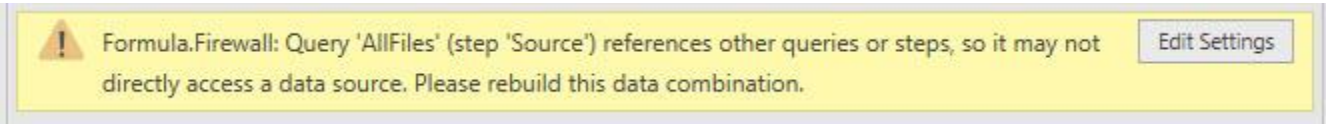
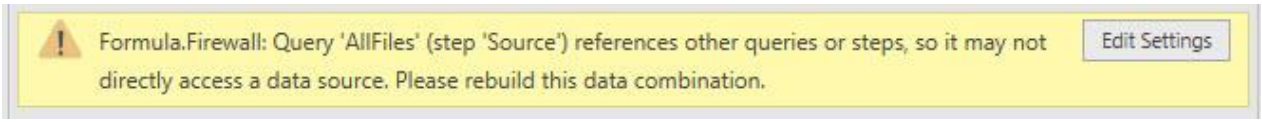
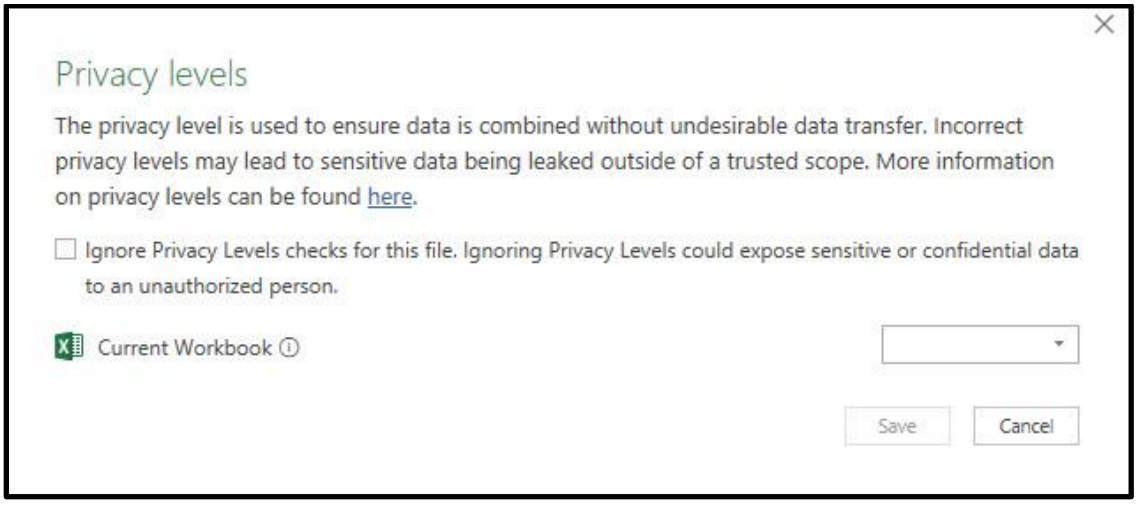
1) **Goal of Video** :
    i. Use Variable Folder Path for Query, also known as Parameter Folder Path for Query.
    ii. Because Power Query does not allow a query to point to a second query that contains the Folder Path (we get a Formula.Firewall Error), both in Excel and Power BI, we will have to create a separate query that conations the folder path and lands the list of files, then in a second query we will reference that separate query.
2) **Formula.Firewall Error**
    i. Formula.Firewall is a defense against accidentally sending data, as part of query folding, to another data source that does not have permission to receive that data, or "unintentionally leaking data between sources".
    ii. If you try to point a query to a second query that contains the Folder Path, this is the error you will see (Error We See In This Video):



    iii. If there are two data sources with different Privacy Settings (like an SQL data source and an Excel data source), you will get this error (This Happens, But We Do Not See In This Video):
        1. Error message in older versions of Power Query:



        2. Error message in newer versions of Power Query:

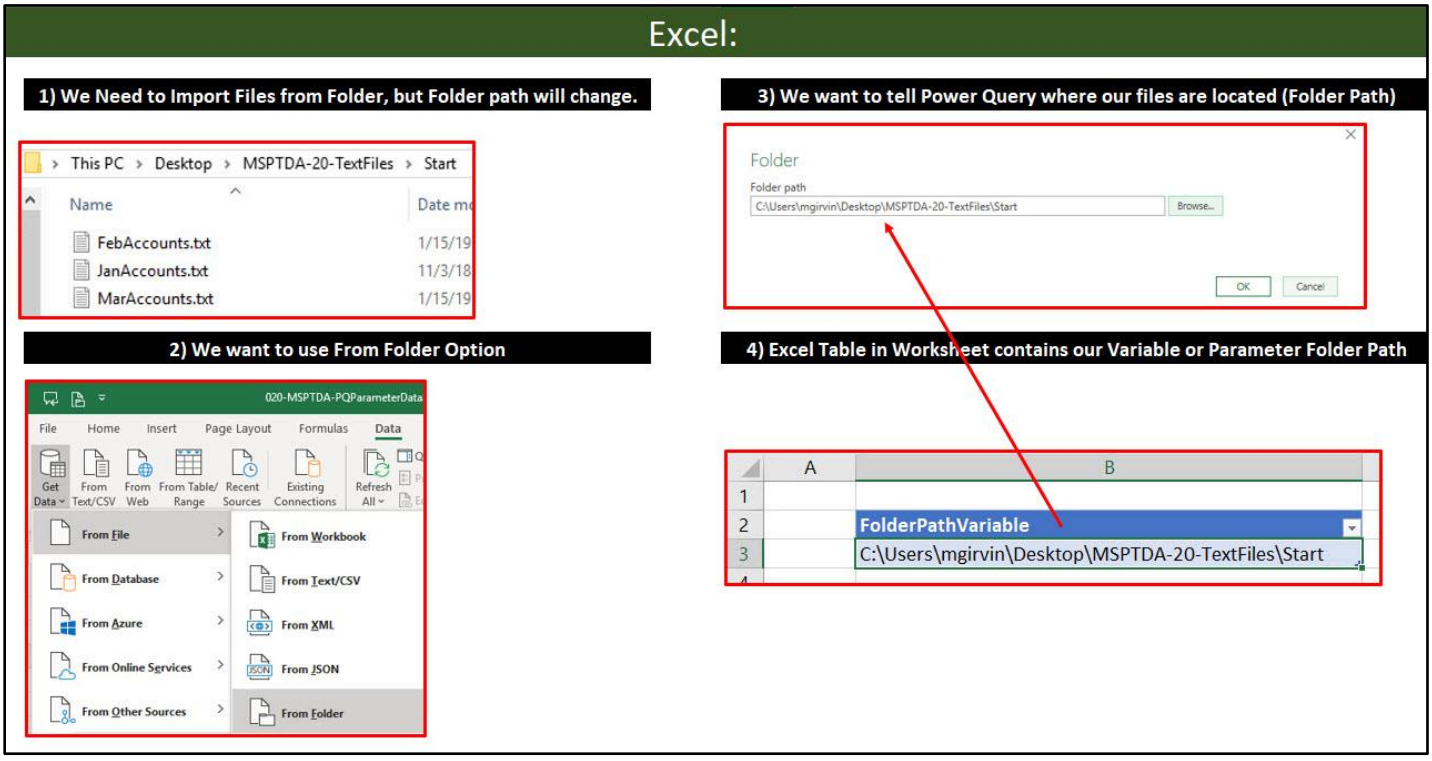


3) **Query Folding(Not in Video)**
    i. User creates query in Power Query with Applied Steps.
    ii. If the Applied steps can be sent back to the data source for more efficient processing rather than having the Power Query Engine process the query, Power Query is smart enough to send the code necessary back to the data source for more efficient processing, like with SQL Database or OData data sources.

4) **Data Source Privacy Levels(Not in Video)**
    i. Privacy Levels for a particular Data Source in Power Query determines if data can be sent to somewhere else, like from an Excel Workbook File to an SQL Database as part of a query that uses both data sources.
    ii. Levels:
        1. Public
            i. Can be sent to any other data source
        2. Organizational
            i. Data can only be sent to other organizational data sources
        3. Private
            i. Data can never be sent to another data source
    iii. Change Privacy Levels:
        1. Data Ribbon Tab, Get & Transform group, Get Data, Data Source Settings:
            i. File, Options and Settings, Data Source Settings, Edit Permissions.
        2. Options for Privacy Levels:
            i. Data Ribbon Tab, Get & Transform group, Get Data, Query Options:
                - Global, Privacy
                    i. "Always ignore Privacy Levels settings" will get rid of Formula.Firewall Error.
                        1. Microsoft help: "by selecting Ignore the Privacy levels and potentially improve performance but could expose sensitive or confidential data to an unauthorized person.
                    ii. "Combine data according to each file's Privacy Level settings".
                        1. Microsoft help: "Privacy level settings are used to determine the level of isolation between data sources when combining data."
                    iii. "Always combine data according to your Privacy Level setting each source".
                        1. Microsoft help: none.

5) **Parmenter Query** :
    i. Parameter Query = A query that has a variable input
    ii. Parameter synonyms:
        1. Parameter
        2. Variable
        3. Formula Input
        4. Argument

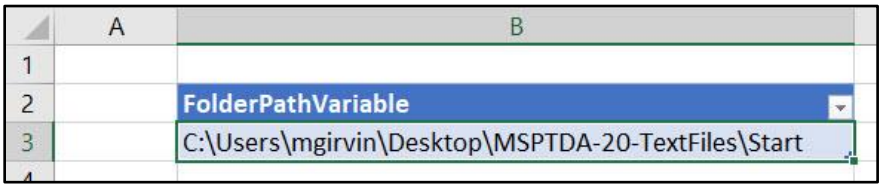
6) **Situation in Excel for this Video**



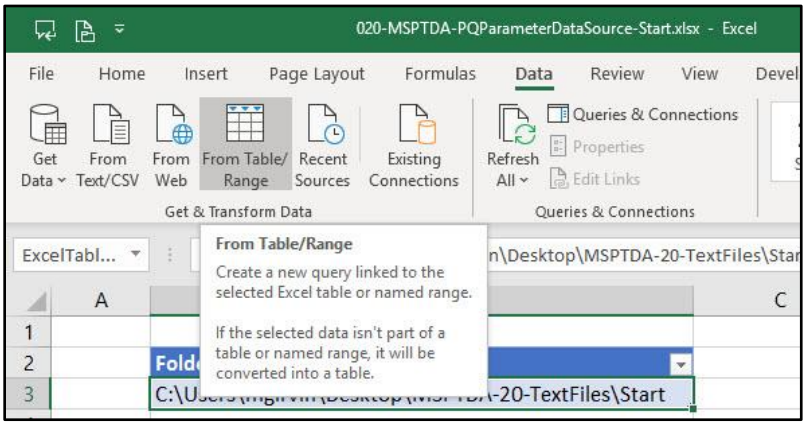
7) **Steps to Create Folder Path Parameter in Excel**

i. Open file named "020-MSPTDA-PQParameterDataSource-Start.xlsx".

ii. Create a One-Row, One-Column Excel Table in the Excel Worksheet that contains the variable Folder Path, (we will call it an Excel Parameter Table) as seen here:



iii. Use the "From Table" button in the Get & Transform group in the Data Ribbon Tab to import the Excel Parameter table into the Power Query Editor, as seen here:



iv. Name the query "FolderParameter".

v. Delete the "Change Type" step that is automatically created in the Applied Steps list when you import the Excel Parameter Table.

vi. Using the formula bar, Modify the M Code for the “Source” step in the Applied Steps List, as see below:

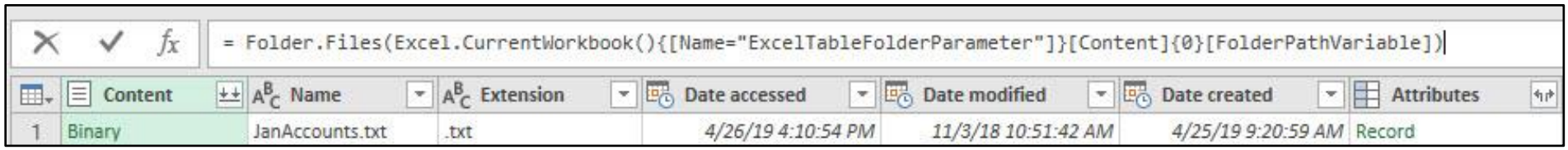
1. As discussed in the video and in MSPTDA Video #9, there are two different Two-Way Lookups in this formula:
    i. Two-Way Lookup to get Excel Table from Excel Worksheet:

        Excel.CurrentWorkbook(){[Name="ExcelTableFolderParameter"]}

    ii. Two-Way Lookup to get Folder Path from first row of imported Excel Table:

        [Content]{0}[FolderPathVariable]

2. The Folder.Files Power Query function takes a Folder Path and retrieves all the files in the specified folder.

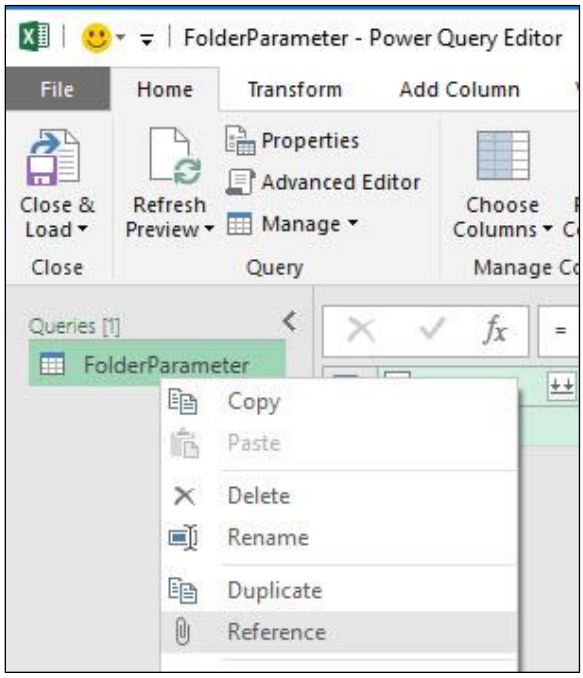


vii. Close & Load the “FolderParameter” query as a Connection Only.

viii. The “FolderParameter” has successfully imported the files in the folder without getting a Formula.Firewall Error. Because this query is not referring to another query with the folder path, we do not get the error.

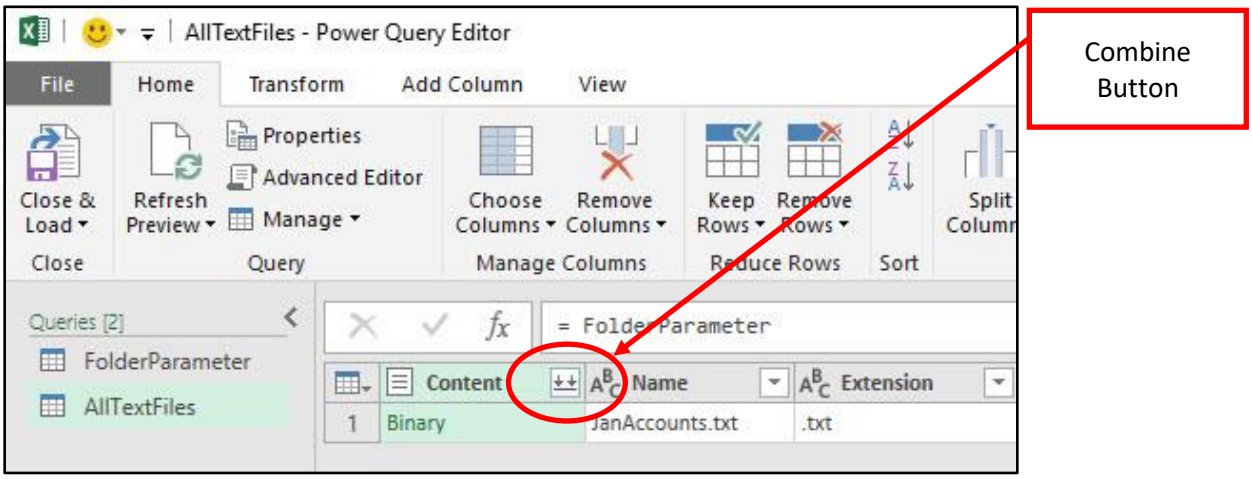
ix. Open the Power Query window back up. One way to do this is by right-clicking the "FolderParameter" query in the Queries & Connections Pane.

x. On the left-side of the Power Query Editor, in the Queries Pane, right-click the "FolderParameter" query and point to Reference, as seen here:

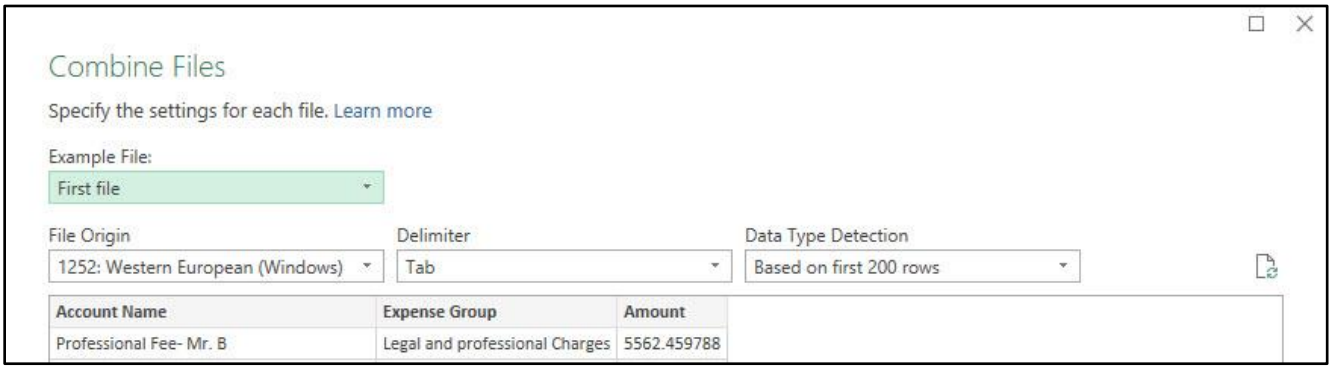


i. Name the query "FolderParameter".

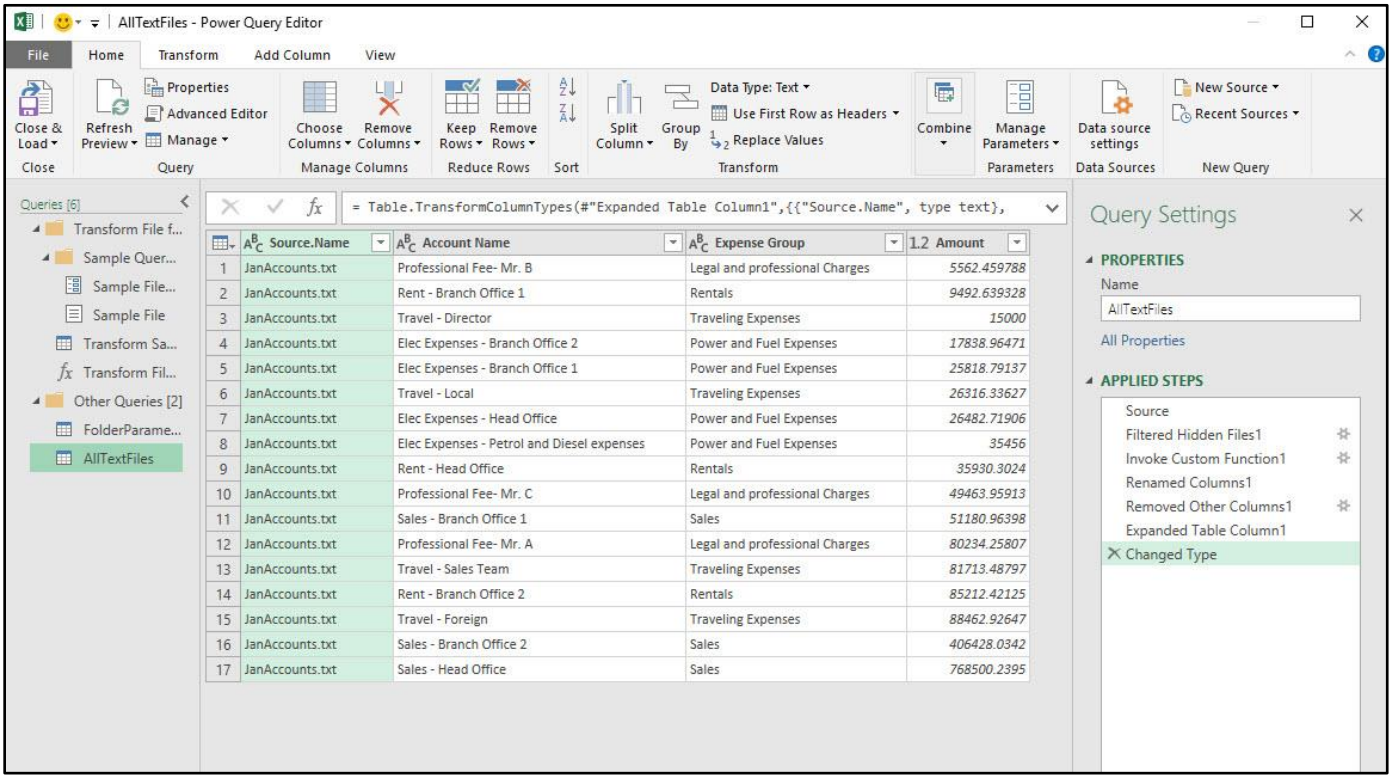
ii. Click Combine button at top of Content Column to Append all Text File Data Sets.



iii. In the next step, make sure the Delimiter is Tab, then click OK.

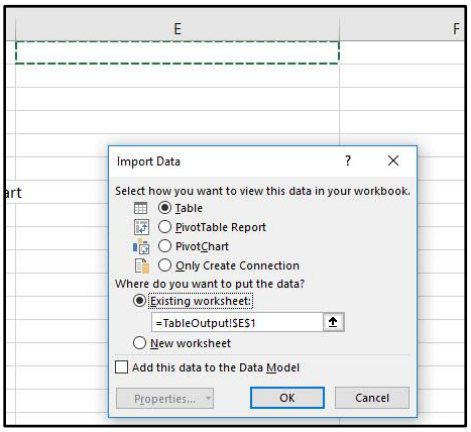


iv. The Final Table in the Power Query Editor and all the Queries (on the left) and Applied Steps (on the right), are seen here:

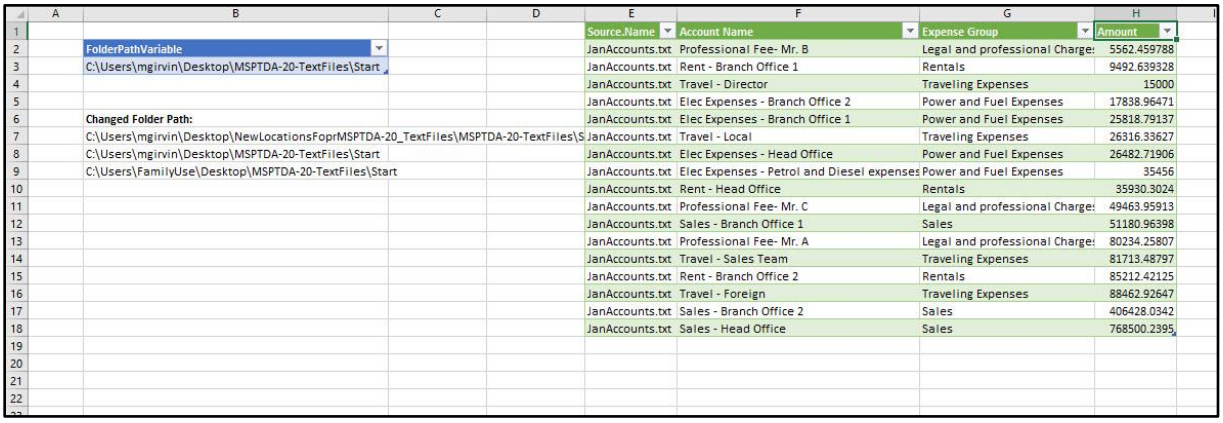


v. Close & Load the query to the Excel Worksheet.

vi. Import Data dialog box should look like this:



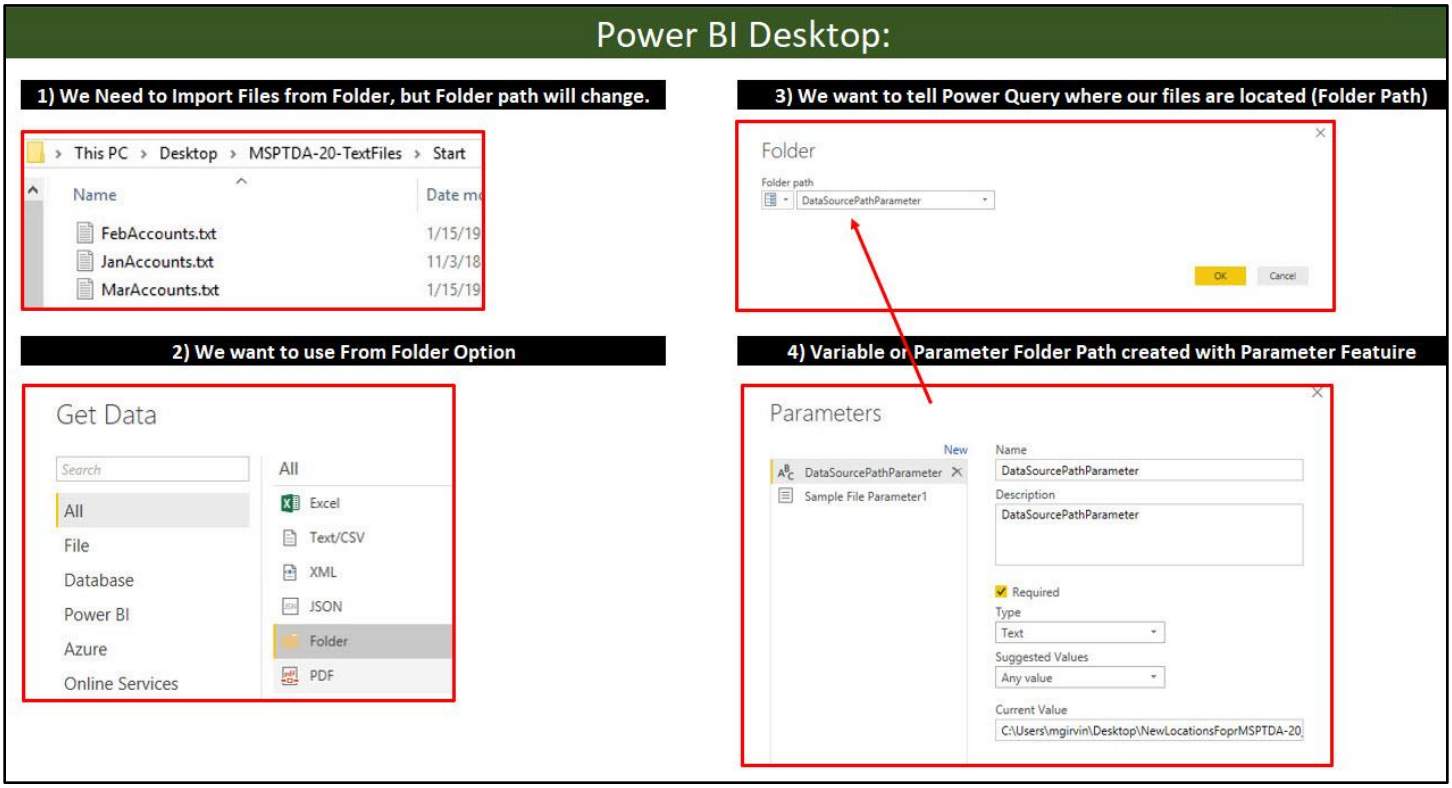
vii. Final query output should look like this:



viii. When you change the parameter and use the keyboard to Refresh All in the Excel Workbook, it can look like this:

	A	B	C	D	E	F	G	H	I
1					Source.Name	Account Name	Expense Group	Amount	
2		FolderPathVariable			FebAccounts.txt	Professional Fee- Mr. B	Legal and professional Charges	24586.2	
3		C:\Users\mgirvin\Desktop\NewLocationsFoprMSPTDA-20_TextFiles\MSPTDA-20-TextFiles\S			FebAccounts.txt	Rent - Branch Office 1	Rentals	11226.53	
4					FebAccounts.txt	Travel - Director	Traveling Expenses	14622.14	
5					FebAccounts.txt	Elec Expenses - Branch Office 2	Power and Fuel Expenses	14424.87	
6		**Changed Folder Path:**			FebAccounts.txt	Elec Expenses - Branch Office 1	Power and Fuel Expenses	16492.73	
7		C:\Users\mgirvin\Desktop\NewLocationsFoprMSPTDA-20_TextFiles\MSPTDA-20-TextFiles\S			FebAccounts.txt	Travel - Local	Traveling Expenses	15308.31	
8		C:\Users\mgirvin\Desktop\MSPTDA-20-TextFiles\Start			FebAccounts.txt	Elec Expenses - Head Office	Power and Fuel Expenses	12558.96	
9		C:\Users\FamilyUse\Desktop\MSPTDA-20-TextFiles\Start			FebAccounts.txt	Elec Expenses - Petrol and Diesel expenses	Power and Fuel Expenses	10802.43	
10					FebAccounts.txt	Rent - Head Office	Rentals	24619.04	
11					FebAccounts.txt	Professional Fee- Mr. C	Legal and professional Charges	48759	
12					FebAccounts.txt	Sales - Branch Office 1	Sales	18019.45	
13					FebAccounts.txt	Professional Fee- Mr. A	Legal and professional Charges	25113.99	
14					FebAccounts.txt	Travel - Sales Team	Traveling Expenses	11549.3	
15					FebAccounts.txt	Rent - Branch Office 2	Rentals	22907.84	
16					FebAccounts.txt	Travel - Foreign	Traveling Expenses	23402.71	
17					FebAccounts.txt	Sales - Branch Office 2	Sales	10203.74	
18					FebAccounts.txt	Sales - Head Office	Sales	21961.17	
19					FebAccounts.txt	Admin - Salary	Admin	18024.31	
20					FebAccounts.txt	Admin - Office	Admin	12633.17	
21					JanAccounts.txt	Professional Fee- Mr. B	Legal and professional Charges	5562.459788	
22					JanAccounts.txt	Rent - Branch Office 1	Rentals	9492.639328	
23					JanAccounts.txt	Travel - Director	Traveling Expenses	15000	
24					JanAccounts.txt	Elec Expenses - Branch Office 2	Power and Fuel Expenses	17838.96471	
25					JanAccounts.txt	Elec Expenses - Branch Office 1	Power and Fuel Expenses	25818.79137	
26					JanAccounts.txt	Travel - Local	Traveling Expenses	26316.33627	
27					JanAccounts.txt	Elec Expenses - Head Office	Power and Fuel Expenses	26482.71906	
28					JanAccounts.txt	Elec Expenses - Petrol and Diesel expenses	Power and Fuel Expenses	35456	
29					JanAccounts.txt	Rent - Head Office	Rentals	35930.3024	
30					JanAccounts.txt	Professional Fee- Mr. C	Legal and professional Charges	49463.95913	
31					JanAccounts.txt	Sales - Branch Office 1	Sales	51180.96398	
32					JanAccounts.txt	Professional Fee- Mr. A	Legal and professional Charges	80234.25807	

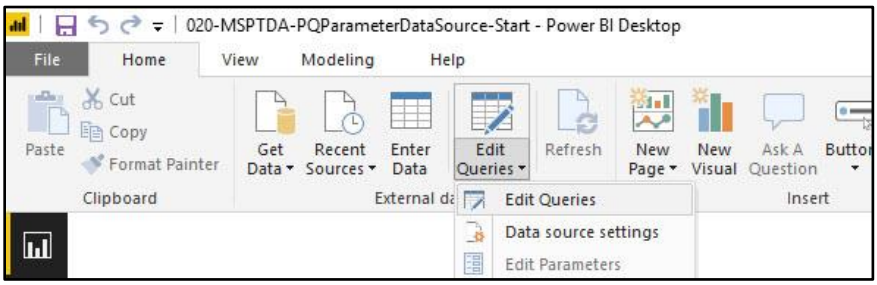
8) **Situation in Power BI Desktop for this Video**



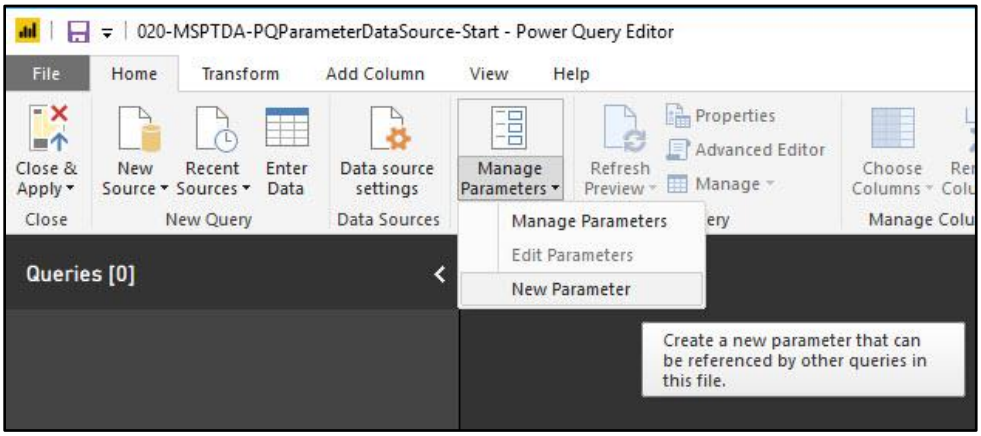
9) **Steps to Create Folder Path Parameter in Power BI**

i. Open the file named "020-MSPTDA-PQParameterDataSource-Start.xlsx".

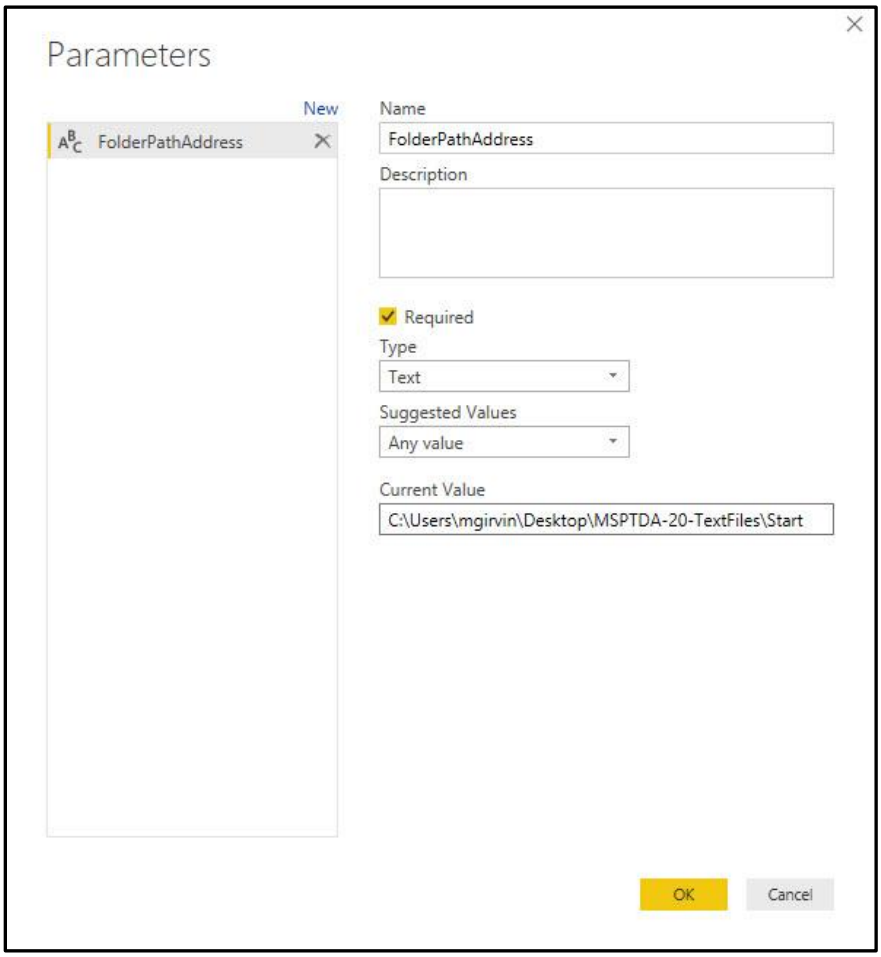
ii. In the Power BI Desktop window, in the Home Ribbon Tab, in the External data group, click the Edit Query drop-down, then click on Edit Queries, as seen here:



iii. In the Power Query window, in the Home Ribbon Tab, in the Parameter group, click the Manage Parameter drop-down, then click on New Parameter, as seen here:

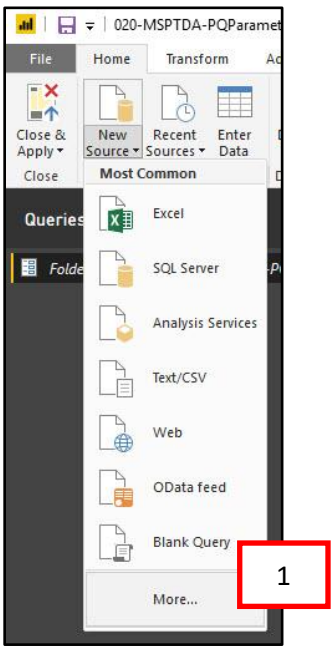


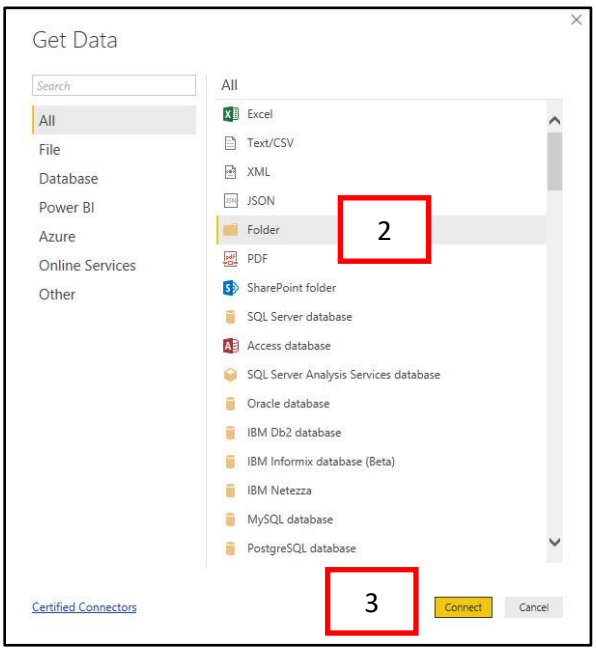
iv. Create your Parameter, then click OK, as seen here:



v. In the Power Query Editor window:

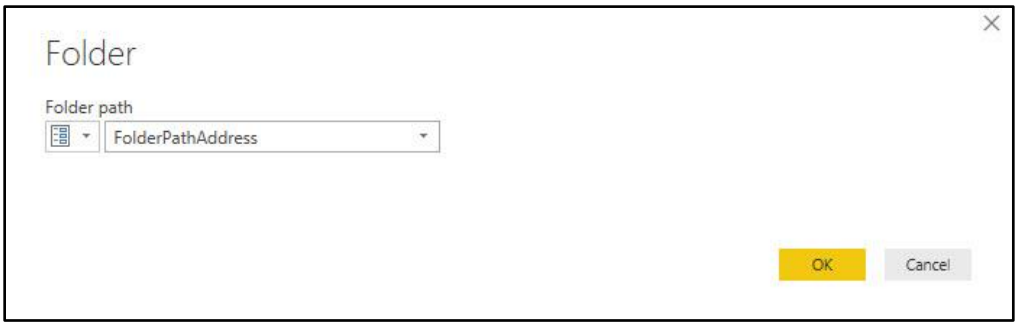
1. in the Home Ribbon Tab, in the Get external data group, click the New Source drop-down, then click on More.
2. Then in the "Get Data" dialog box, click the "From Folder" option.
3. Then click the Connect button, as seen here:



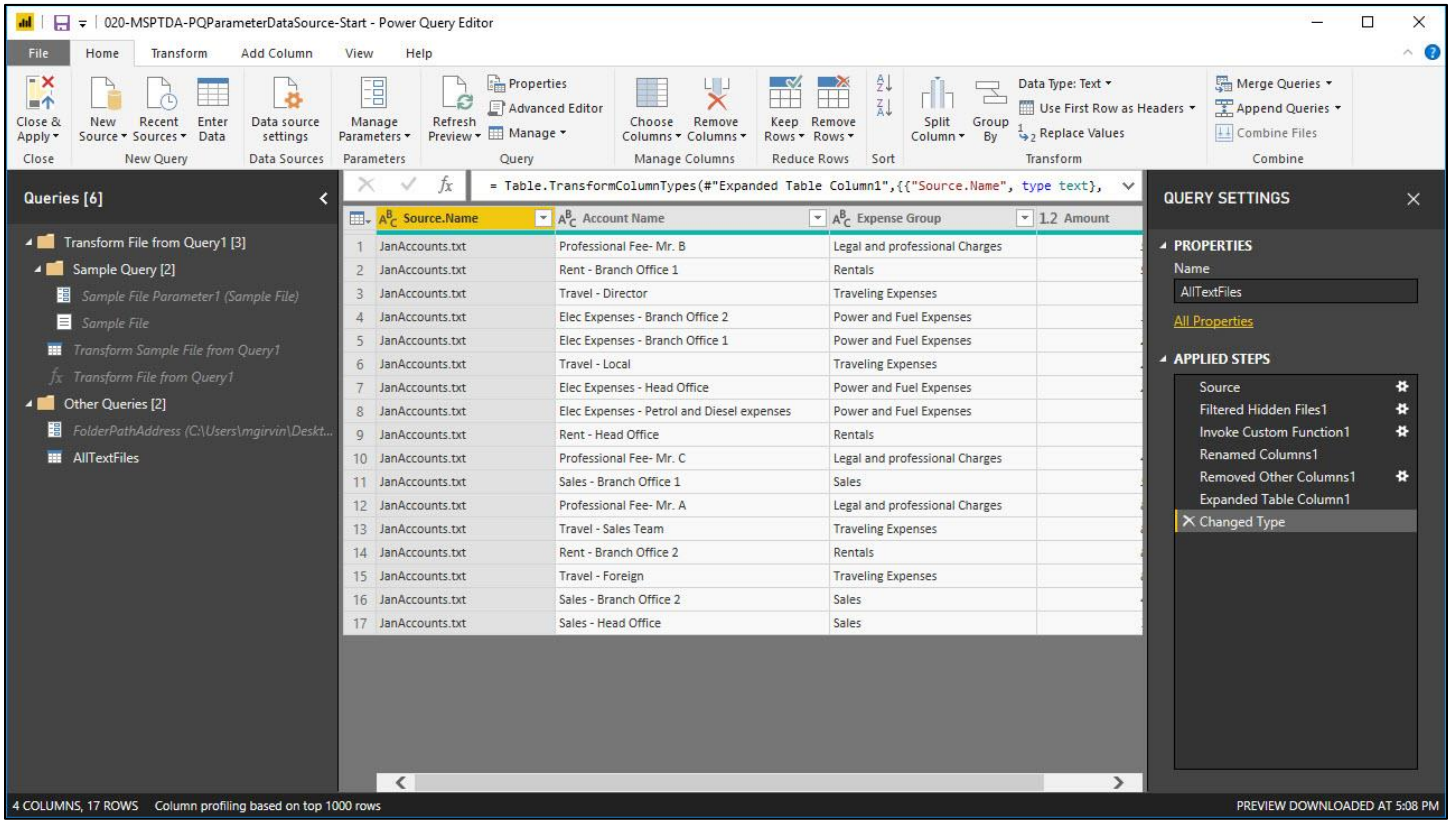


vi. In the Folder Path text box, use the drop-down to select “Parameter”, as seen here:

vii. This is what the Folder dialog box looks like before you click OK:

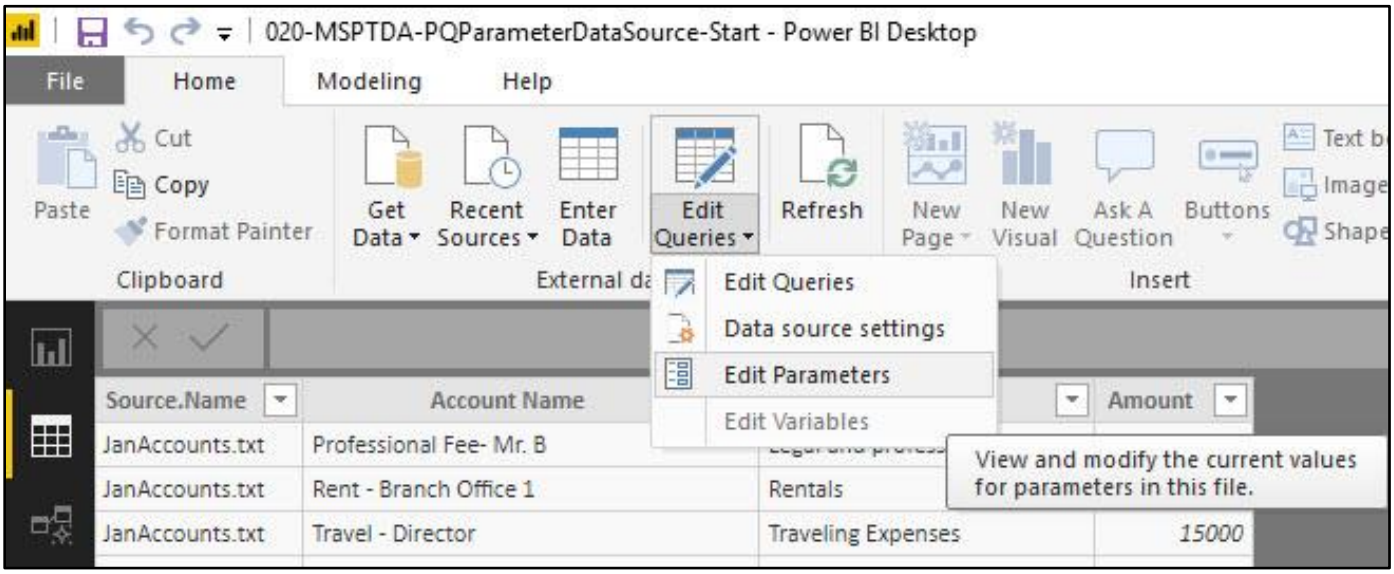


viii. The Appended Proper Data Set, a list of the queries (on the left) and the Applied Steps (on the right), can be seen here:



ix. Use the Close & Apply button to load the Proper Data Set to the Power BI Desktop Data Model, as seen here:

x. To change the Folder Path Parameter, in the Home Ribbon Tab, in the External data group, click the Edit Query drop-down, then click on Edit Parameters, as seen here:



xi. Change the Parameter, then click OK