

DATA SHAPING TIPS & TRICKS WITH M

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July 2019

AGENDA



- Intro to Power Query Formula Language (M)
- Language data types
- Data manipulation and data enhancements
- Functions
- Dynamic data manipulation
- Q&A



Mountain 15 - Power BI Designer Preview

File Home Transform Add Column View

Get Data Recent Sources External Data Refresh Preview Properties Query Choose Columns Remove Columns Manage Columns Keep Rows Remove Rows Reduce Rows Sort Split Column Group By Data Type: Text Use First Row As Headers Replace Values Merge Queries Append Queries Combine Binaries Combine

1 query
XBRLReportFundamen...

	IndustrySic	IndustryType	IndustryGroup	IndustryDetail	StateKey
1	3 35	Sort Ascending		Industrial and Commercial Machinery and Computer Equipment	CA
2	2 35	Sort Descending		Industrial and Commercial Machinery and Computer Equipment	CA
3	3 35	Clear Sort		Industrial and Commercial Machinery and Computer Equipment	CA
4	4 35	Clear Filter		Industrial and Commercial Machinery and Computer Equipment	CA
5	5 35	Text Filters		Industrial and Commercial Machinery and Computer Equipment	CA
6	6 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
7	7 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
8	8 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
9	9 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
10	10 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
11	11 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
12	12 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
13	13 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
14	14 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
15	15 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
16	16 35	Search		Industrial and Commercial Machinery and Computer Equipment	CA
17	17 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
18	18 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
19	19 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
20	20 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
21	21 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
22	22 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
23	23 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA
24	24 3571	ELECTRONIC COMPUTERS	Manufacturing	Industrial and Commercial Machinery and Computer Equipment	CA

Report Query

13 COLUMNS, 28 ROWS

Query Settings

PROPERTIES

Name

CA Sic Resorts

APPLIED STEPS

Source

Duplicated Column

Split Column by Delimiter

Changed Type

Renamed Columns

Replaced Value

Trimmed Text

Filtered Rows

Replaced Value1

Filtered Rows1

Changed Type1

Renamed Columns1

Split Column by Delimiter1

Changed Type2

Removed Columns

Replaced Value2

Changed Type3

PREVIEW DOWNLOADED ON SATURDAY.



- **What is Power Query M Formula Language (or aka M)?**
 - **Query language** optimized for building queries that **mashup data**. It's a **functional, case sensitive** language, which can be used with **Power Query** in **Excel 2013**, **Get & Transform** in **Excel 2016** onwards, and **Power BI Desktop**.
- **Target audience is Information Workers and data analysts**
 - Specifically, the intermediate/advanced Excel users
 - "User benefits from the Excel's Formula bar"
- **For that audience, the language should be:**
 - Familiar, easy to remember
 - Easy to read and write; limited syntax, use of non standard symbols
 - A superset of the Excel formula language
 - Powerful capabilities for the advanced user



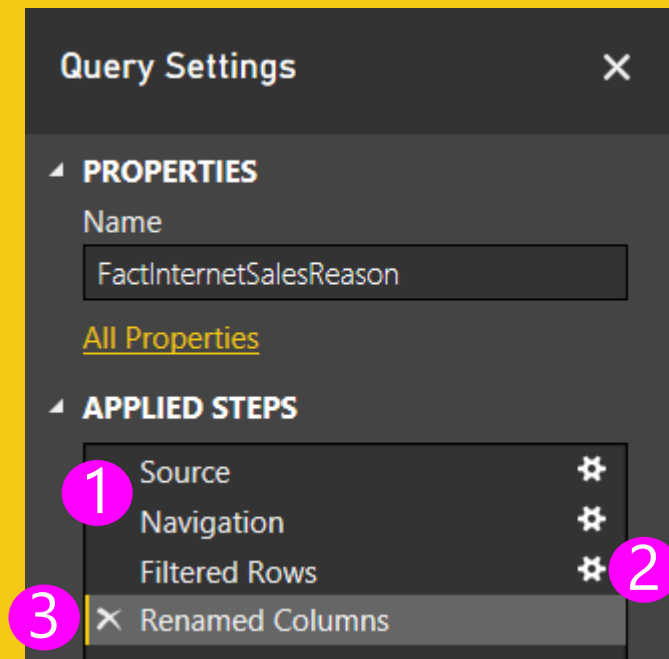
Simple Value	Literal
Null	null
Logical	true, false
Number	1, 1.2, 1.2e-3, #infinity, #nan
Text	"hello, world!"
Date	#date(2013, 3, 8)
Time	#time(15, 10, 0)
DateTime	#datetime(2013, 3, 8, 15, 10, 0)
DateTimeZone	#datetimezone(2013, 3, 8, 15, 10, 0, -8, 0)
Duration	#duration(1, 13, 59, 12.34)



Simple Value	Literal
List	<code>{ 1, 2, 3, "hello, world" }</code>
Record	<code>[a = 1, b = { 1, 2, 3 }, C2 = true]</code>
Table	<code>#table("n", "n^2", { {1, 2}, {2, 4} })</code>
Function	<code>MyFunction = (x, y, optional z) => if z = null then x + y else (x + y) / z</code>
Type	<code>type table [n = number, #"n^2" = number]</code>
Binary	<code>#binary({0x68, 0x65, 0x6C, 0x6C, 0x6F})</code>



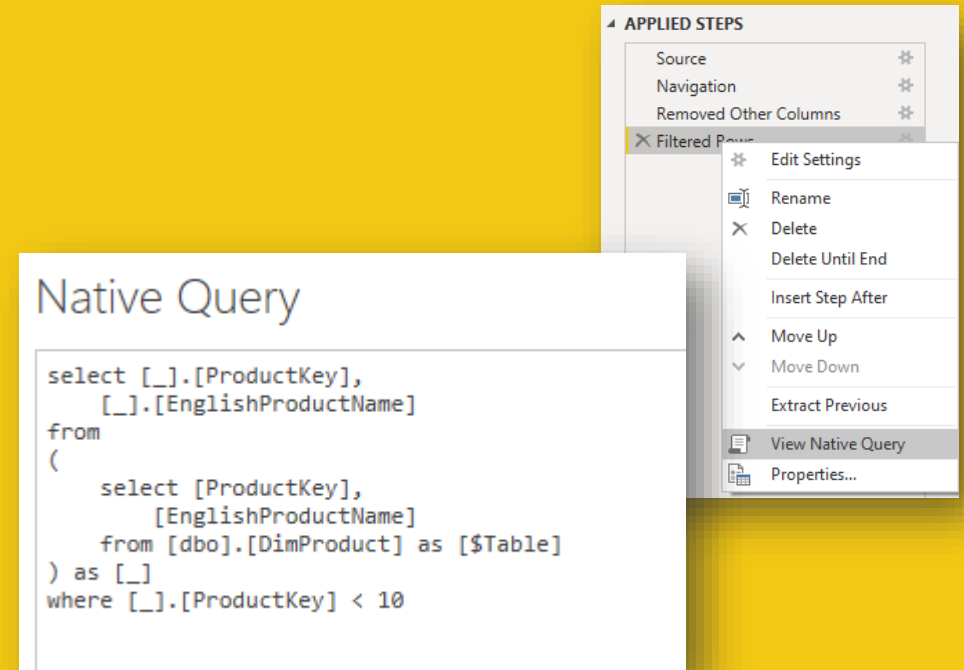
- Push the transformation work to the data source and execute it there in its native language
- If query folding doesn't happen, all the data has to be loaded into the tool
- This is important from an optimization perspective



```
SELECT
[salesordernumber] as [Sales Order Number],
[salesorderlinenumber] AS
[SalesOrderLineNumber],
[salesreasonkey] AS [SalesReasonKey]
FROM
[dbo].[factinternetsalesreason]
WHERE
[salesorderlinenumber] = 2
```



- In order to see what query is being generated use the “View Native Query” option, for a given step.
- Supported data sources:
 - Relational Databases
 - Odata
 - Exchange
 - Active Directory
- Not all transformations are supported (e.g. custom T-SQL)



REFERENCES

Power Query M Reference

<https://docs.microsoft.com/en-us/powerquery-m/power-query-m-reference>

Power Query M function reference

<https://docs.microsoft.com/en-us/powerquery-m/power-query-m-function-reference>

Create a date dimension using M

<https://www.mattmasson.com/2014/02/creating-a-date-dimension-with-a-power-query-script/>

Iterating over an unknown number of pages in Power Query

<https://www.mattmasson.com/2014/11/iterating-over-an-unknown-number-of-pages-in-power-query/>

M syntax highlight in notepad++

<https://www.mattmasson.com/2014/11/notepad-language-file-for-the-power-query-formula-language-m/>

<https://community.powerbi.com/t5/Community-Blog/Get-your-own-Power-Query-Editor-using-Notepad/ba-p/146347>



Q&A

