

My Perfect Date (Table)

Markus Ehrenmueller-Jensen



Platinum partners



Goud partners



Zilver partners



Brons partners



Community partners



My Perfect Date

Other people



Me

The screenshot shows the Microsoft Power BI Desktop interface. The main area displays a DAX formula for creating a date table. The formula is as follows:

```
1 Date = CALENDAR(
2 ADDCOLLUMNS(
3 CALENDAR(DATE(YEAR(MAX('Fact Reseller Sales'[orderDate])), 0), 31),
4 "datekey", YEAR([Date]) * 10000 + MONTH([Date]) * 100 + DAY([Date]),
5 "year", YEAR([Date]),
6 "month", YEAR([Date]) * 12 + MONTH([Date]),
7 "month number", MONTH([Date]),
8 "month", FORMAT([Date], "mmmm", "en-us"),
9 "yyyy-mm", FORMAT([Date], "yyyy-mm"),
10 "day", DAY([Date]),
11 "day of week", WEEKDAY([Date], 2),
12 "day name", FORMAT([Date], "dddd", "en-us"),
13 "datekey", VALUE([Date]),
14 "week of year", WEEKDAY([Date]),
15 "week of year (iso)", WEEKDAY([Date], 21)
16 )
17 )
```

Below the formula, a data table is displayed with the following columns: Date, DateKey, Year, MonthID, Month Number, Month, YYYY-MM, Day, Day of Week, Day Name, DateID, Week of Year, and Week of Year (ISO). The table contains 31 rows of data for the month of December 2024.

Date	DateKey	Year	MonthID	Month Number	Month	YYYY-MM	Day	Day of Week	Day Name	DateID	Week of Year	Week of Year (ISO)
2024-12-05 00:00:00	20241205	2024	24300	12	December	2024-12	5	4	Thursday	45631	49	49
2024-12-06 00:00:00	20241206	2024	24300	12	December	2024-12	6	5	Friday	45632	49	49
2024-12-07 00:00:00	20241207	2024	24300	12	December	2024-12	7	6	Saturday	45633	49	49
2024-12-08 00:00:00	20241208	2024	24300	12	December	2024-12	8	7	Sunday	45634	50	49
2024-12-09 00:00:00	20241209	2024	24300	12	December	2024-12	9	1	Monday	45635	50	50
2024-12-10 00:00:00	20241210	2024	24300	12	December	2024-12	10	2	Tuesday	45636	50	50
2024-12-11 00:00:00	20241211	2024	24300	12	December	2024-12	11	3	Wednesday	45637	50	50
2024-12-12 00:00:00	20241212	2024	24300	12	December	2024-12	12	4	Thursday	45638	50	50
2024-12-13 00:00:00	20241213	2024	24300	12	December	2024-12	13	5	Friday	45639	50	50
2024-12-14 00:00:00	20241214	2024	24300	12	December	2024-12	14	6	Saturday	45640	50	50
2024-12-15 00:00:00	20241215	2024	24300	12	December	2024-12	15	7	Sunday	45641	51	50
2024-12-16 00:00:00	20241216	2024	24300	12	December	2024-12	16	1	Monday	45642	51	51
2024-12-17 00:00:00	20241217	2024	24300	12	December	2024-12	17	2	Tuesday	45643	51	51
2024-12-18 00:00:00	20241218	2024	24300	12	December	2024-12	18	3	Wednesday	45644	51	51
2024-12-19 00:00:00	20241219	2024	24300	12	December	2024-12	19	4	Thursday	45645	51	51
2024-12-20 00:00:00	20241220	2024	24300	12	December	2024-12	20	5	Friday	45646	51	51
2024-12-21 00:00:00	20241221	2024	24300	12	December	2024-12	21	6	Saturday	45647	51	51
2024-12-22 00:00:00	20241222	2024	24300	12	December	2024-12	22	7	Sunday	45648	52	51
2024-12-23 00:00:00	20241223	2024	24300	12	December	2024-12	23	1	Monday	45649	52	52
2024-12-24 00:00:00	20241224	2024	24300	12	December	2024-12	24	2	Tuesday	45650	52	52
2024-12-25 00:00:00	20241225	2024	24300	12	December	2024-12	25	3	Wednesday	45651	52	52
2024-12-26 00:00:00	20241226	2024	24300	12	December	2024-12	26	4	Thursday	45652	52	52
2024-12-27 00:00:00	20241227	2024	24300	12	December	2024-12	27	5	Friday	45653	52	52
2024-12-28 00:00:00	20241228	2024	24300	12	December	2024-12	28	6	Saturday	45654	52	52
2024-12-29 00:00:00	20241229	2024	24300	12	December	2024-12	29	7	Sunday	45655	53	52
2024-12-30 00:00:00	20241230	2024	24300	12	December	2024-12	30	1	Monday	45656	53	1
2024-12-31 00:00:00	20241231	2024	24300	12	December	2024-12	31	2	Tuesday	45657	53	1

Date Table

Typical dimension table

Most data is connected to a point in time

For convenience

Extraction of elements should not happen in report

E. g. Year, Month Number, Month Name, Day of Week, Is Holiday, ...

Date table needed for DAX's Time Intelligence functions

Full years (from January 1 to December 31) for all years

Turn off *Auto date/time*

Do not create from fact table

Usually has gaps, possibly bad performance

Create in DAX, Power Query, SQL, etc. instead

Set correct column properties

Data types, *Default summarization*, *Sort by column*, create hierarchy

Mark as date table

Disadvantages of “Auto date/time”

Creates a calendar table for every column of data type date/datetime

- Including columns like birthdate, valid from/until, create date, ...

- Tables are hidden

- Can contain a significant amount of data

Available columns are restricted to Year, Month, Month Number, Day

- No way to edit or add columns

Disabling *Auto date/time* later can corrupt your data model and/or your reports

- References in DAX have a special notation

- Visuals using the date hierarchy will change their content

- People get used to reference columns of fact table

Demo

[Auto date/time](#)



Waiving the date table?

Not recommended for Power BI

Bad data compression

Slower slicers

Slower reports for more complex calculations

Faster for simple calculations

Slower refresh

Slower throughput

Updates to dimensional data requires full refresh

Only one fact table

As there are no (shared) dimension tables

Auto-Exist



Demo

[Auto-Exist](#)

Add a Date/Time dimension table (DAX)



CALENDARAUTO()

CALENDAR()

GENERATESERIES()

FORMAT() is your friend

Demo

[Date & Time \(DAX\)](#)



Add a Date/Time dimension table (Power Query)



```
{Number.From() .. Number.From()}
```

```
List.Times()
```

Column from Examples is your friend

Demo

[Date & Time \(Power Query\)](#)



Add a Date/Time dimension table (SQL)



Generate a number table

T-SQL loop, self-join, ...

Add number of number table to start date/time

Use T-SQL functions to derive columns

FORMAT() is your friend

Table vs. view vs. function vs. stored procedure

Demo

Add a Date/Time dimension table



Column properties

Choose correct data types

Date vs. Date/time

Set Default Summarization off

You do not want to aggregate e.g. the Year column

Set Order By Column right

You do not want the month names ordered alphabetically

Create a hierarchy

Adds convenience to the report creator



Demo

Choose Data type

Set Default Summarization off

Set Order By column

Add Hierarchy

Mark as Date Table

Only necessary when

1. Relationship to Date table is not based on a column of data type date/datetime (e. g. integer 20240229)
2. You want to use built-in time intelligence functions of DAX

In other cases, not necessary, but does not do any harm

→ Always mark your data table(s) as a data table

Demo

[Mark as Date Table](#)



Duplicate tables for role-playing purposes

E. g. Order date vs. Ship date

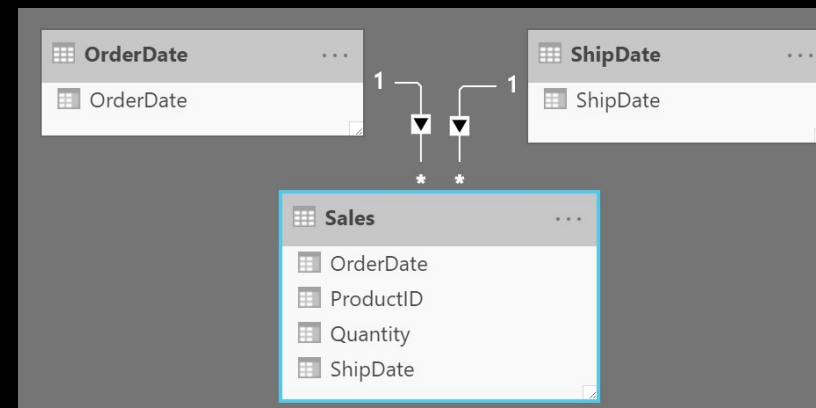
Concept can be applied to any dimension

Duplicating dimension table is one option

Alternative: DAX measures with USERELATIONSHIP()

Make sure to rename the columns accordingly

e. g. Order Year, Order Month, Order Date, etc.



Duplicate tables for role-playing purposes (DAX)



Duplicating dimension table is one option

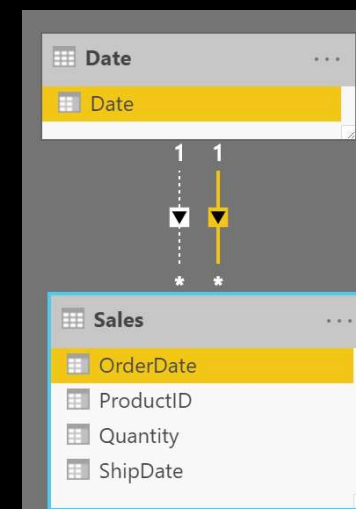
Calculated Table

Make sure to rename the columns accordingly

e. g. Order Year, Order Month, Order Date, etc.

`SELECTCOLUMNS()`

Alternative: Add inactive relationships & activate in DAX measures with `USERELATIONSHIP()`





Demo

Duplicate tables for role-playing purposes (DAX)

USERRELATIONSHIP (DAX)

Duplicate tables for role-playing purposes (Power Query)



Duplicating or reference dimension table

Make sure to rename the columns accordingly

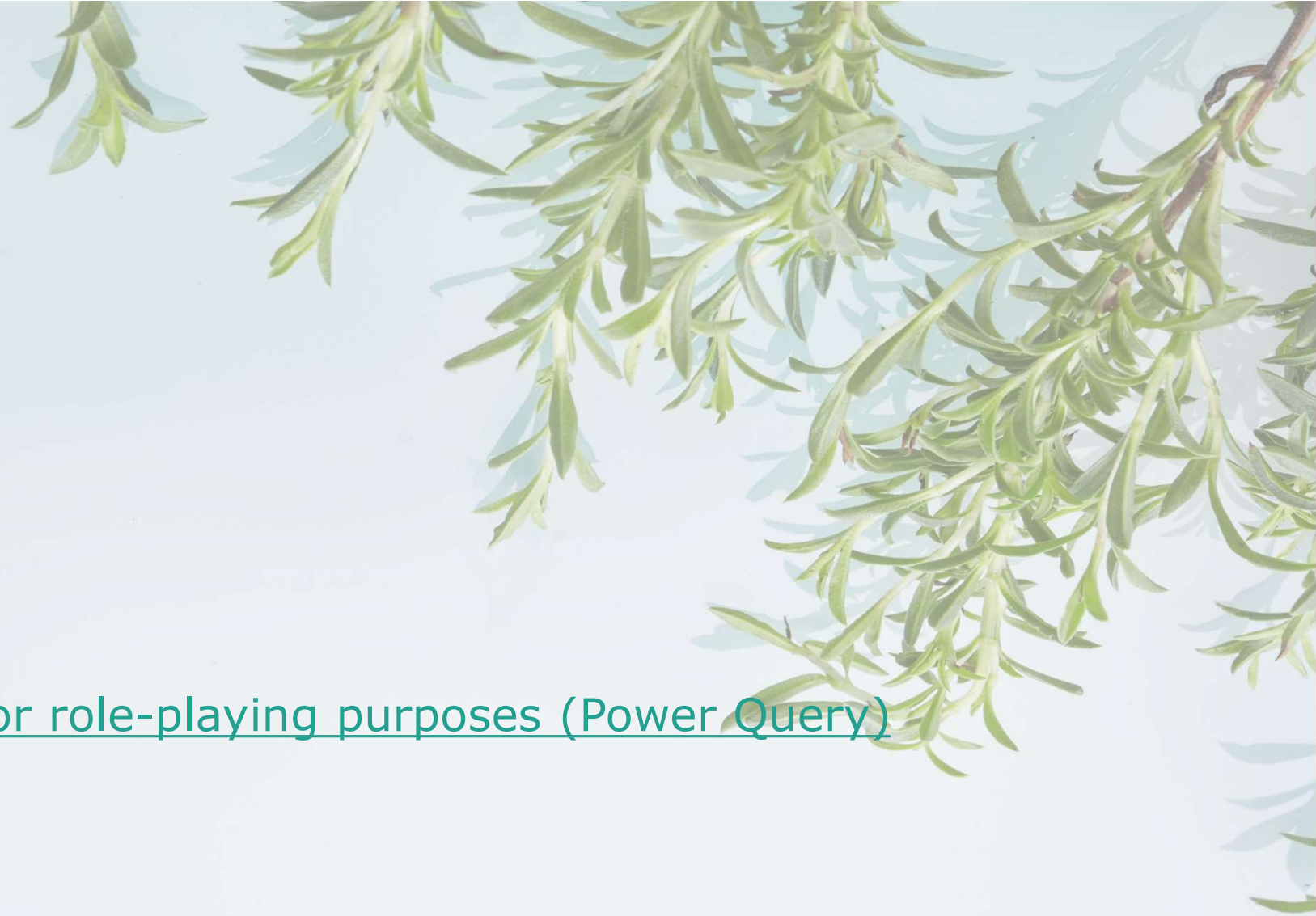
```
Table.TransformColumnNames(Source, (columnName as text) as text  
=> "Order " & columnName)
```

**Renaming all
columns by hand?**

```
Table.TransformColumnNames(  
    Source,  
    (columnName as text)  
    as text  
=> "Prefix" & columnName)
```


Demo

[Duplicate tables for role-playing purposes \(Power Query\)](#)



Duplicate tables for role-playing purposes (SQL)



Use alias

```
SELECT Date AS OrderDate FROM dbo.DimDate;
```

Manually vs. script

Table vs. view vs. stored procedure

Demo

Duplicate tables for role-playing purposes



PLEASE DESCRIBE YOUR IDEA OF A PERFECT DATE.

**I'D HAVE TO SAY APRIL 25TH. BECAUSE IT'S NOT TOO HOT,
NOT TOO COLD, ALL YOU NEED IS A LIGHT JACKET.**

Session evaluation



Event evaluation



Questions?

Savory
DATA



Markus Ehrenmueller-Jensen

Founder & BI Architect
markus@savorydata.com

@MEhrenmueller

/markus-ehrenmueller

www.savorydata.com



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Markus Ehrenmueller-Jensen

Microsoft Data Platform

BI Developer

Database Developer

Database Admin

Microsoft
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Trainer

