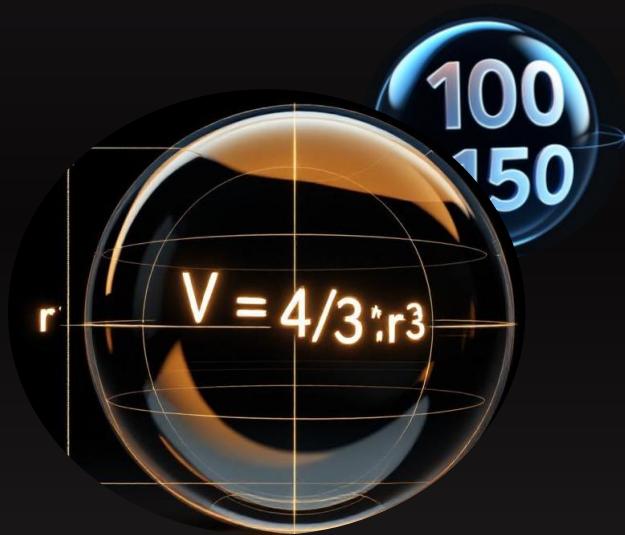


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"From Rookie to Rock"

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Practice

Create your own
DAX function with **UDF**



Patou Tips #58



Create your own function with UDF

About UDF (User Defined Function)



The new **UDF** functionality finally allows you to create your own DAX functions, which is very convenient:

- in terms of **reuse**,
- as well as business **functions specific to your business culture**
- or predefined **DAX functions that do not exist**.

In this "Patou Tips" we will see how to create simple trigonometric and business functions.



Resources on GitHub

[Patou-Tips/#52 Patou Tips \(Quick guide to develop faster with TDML\) at main :](#)

[PatouTips/Patou-Tips](#)

Create your own function with UDF

Get Started

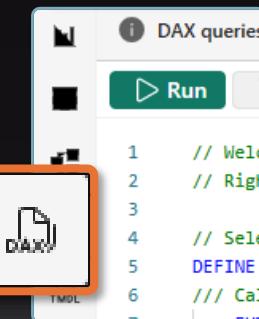


- 1 In Power BI Desktop, go to File > Options > Preview features. Select the "DAX functions defined by user" option, and restart Power BI Desktop

The screenshot shows the 'Preview features' section of the Power BI Options dialog. On the left, there's a list of global settings. The 'Preview features' option is highlighted with a green border. On the right, a list of preview features is shown, each with a checkbox and a 'Learn more' link. One feature, 'DAX functions defined by user', has its checkbox checked and is highlighted with an orange arrow pointing to it, indicating it's the selected option.

GLOBAL	Preview features
Data Load	<input checked="" type="checkbox"/> Utilisez la nouvelle implémentation du connecteur Databricks Learn more
Power Query Editor	<input checked="" type="checkbox"/> Utiliser la nouvelle implémentation du connecteur Google BigQuery Learn more
DirectQuery	<input checked="" type="checkbox"/> Utiliser l'implémentation héritée du connecteur Snowflake Learn more
R scripting	<input checked="" type="checkbox"/> Visuel Carte de formes Learn more
Python scripting	<input type="checkbox"/> Prise en charge de l'espagnol dans Questions et réponses Learn more
Security	<input checked="" type="checkbox"/> Questions et réponses sur les bases de données Analysis Services connectées en direct Learn more
Privacy	<input checked="" type="checkbox"/> Importer vos mesures dans votre rapport Learn more
Regional Settings	<input checked="" type="checkbox"/> Connectez-vous aux modèles sémantiques externes partagés avec moi Learn more Share feedback
Updates	<input checked="" type="checkbox"/> Info-bulles visuelles modernes Learn more Share feedback
Usage Data	<input checked="" type="checkbox"/> Visuel d'indicateurs de performance Learn more
Diagnostics	<input checked="" type="checkbox"/> DAX functions defined by user Learn more
Preview features	<input checked="" type="checkbox"/> Définir une étiquette de confidentialité sur des fichiers PDF exportés Learn more

- 2 Go to the « DAX query view » to start to write your own function



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Create your own function with UDF

Syntax for an UDF



The general syntax for an UDF is finally easy.

DAX

```
/// Optional description above the function  
FUNCTION <FunctionName> = ( <ParameterName>: <ParameterType>, ... ) => <FunctionBody>
```

1

`/// Optional description above the function`

→ Document this part that help your user to understand your function, because this part appear also when your user start to use your function.

2

`FUNCTION <FunctionName>`

Define the name of your function by using the DAX function « **FUNCTION** ».

3

`(<ParameterName>: <ParameterType>, ...) =>`

Declare one or more parameters and their type. Don't forget to end this declaration with `=>`

anyref
anyval
boolean
datetime
decimal
double
expr
int64
numeric
scalar
string
table

4

`<FunctionBody>`

Write your function.

Parameters type

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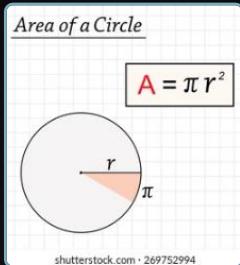
Create your own function with UDF Geometric function (1/3)



Exemple 1: Area of a circle.

A simple function to calculate the area of a circle.

- 1 Go to the "DAX query view" to write the following function



```
DEFINE
/// Calculate the area of a circle of a given radius
Update model: Overwrite function
FUNCTION Area_Circle =
(
    Radius :scalar
) =>
PI() * SQRT([Radius])
```

- 2 Update model with changes (1)

Don't forget to update your function (top of the view).

- 3 Now you can write a measure

```
Area of a circle = Area_Circle('Measure'[Radius])
```



Circle	Radius	Area of a circle
Circle 1	2	4,44
Circle 2	5	7,02
Circle 3	8	8,89
Circle 4	12	10,88
Circle 5	17	12,95

Create your own function with UDF Geometric function (2/3)



Exemple 2: Volume of a sphere (1/2)

Another simple function to calculate the volume of a sphere.

- 1 Go to the "DAX query view" to write the following function

Volume of a Sphere

= $\frac{4}{3}\pi r^3$

byjus.com

```
DEFINE
/// Calculate the volume of a sphere of a given radius
Update model: Overwrite function
FUNCTION Volume_Sphere =
(
    Radius :scalar
) =>
Divide(4,3) * PI() * POWER([Radius],3)
```

- 2 ↑ Update model with changes (1)

Don't forget to update your function (top of the view).

- 3 Now you can write a measure

```
Volume of a sphere = Volume_Sphere('Measure'[Radius])
```



Circle	Radius	Volume of a sphere
Circle 1	2	33,51
Circle 2	5	523,60
Circle 3	8	2 144,66
Circle 4	12	7 238,23
Circle 5	17	20 579,53

Create your own function with UDF Geometric function (3/3)



Exemple 2: Volume of a sphere (2/2)

Another simple function to calculate the volume of a sphere.

4

Note: It is essential to clearly explain the "why" of your function, not only for yourself, but especially for your users...

```
DEFINE
/// Calculate the volume of a sphere of a given radius
Update model: Overwrite function
FUNCTION Volume_Sphere =
(
    Radius :scalar
) =>
Divide(4,3) * PI() * POWER([Radius],3)
```

```
Volume_Sphere(Radius: scalar)
Calculate the volume of a sphere of a given radius
1 Volume of a sphere = Volume_Sphere(
    [Radius]
    'Measure'
```

...Thus, when a user writes a measure, the function description will appear in a pop-up window and serve as a guide.

Create your own function with UDF Business function (1/2)



Exemple 3: Last Year (LY)

Often used in activity reporting, particularly in finance, the value of an activity in the previous year can be reduced to its simplest expression.

```
DEFINE
/// Calculate the previous year's value (YoY) from the current year's value (reference value).
Update model: Overwrite function
FUNCTION Last_Year =
(
    Reference_Value : expr
) =>

CALCULATE(
    Reference_Value, DATEADD(DimDate[Date],-1,YEAR))
```

Exemple 4: YoY absolute variation

Another measure frequently used in activity reporting.

```
DEFINE
/// Calculate the absolute variation in a Value (Reference_Value) compared to its value Year Over Year (YoY).
Update model: Overwrite function
FUNCTION YoY_Absolute_Variation =
(
    Reference_Value : expr
) =>

VAR LY = CALCULATE(
    Reference_Value, DATEADD(DimDate[Date],-1,YEAR))

VAR Result = Reference_Value-LY

RETURN Result
```

Create your own function with UDF Business function (2/2)



Exemple 5: YoY relative variation

Relative variation, combined with absolute variation, allows us to visualize the magnitude of the variation.

```
DEFINE
/// Calculate the relative variation in a Value (Reference_Value) compared to its value
Year Over Year (YoY). This function also works for negative values, as in finance. The
result must be in decimal format, change it in %.
Update model: Overwrite function
FUNCTION YoY_Relative_Variation =
(
    Reference_Value : expr
) =>

VAR LY = CALCULATE(
    Reference_Value, DATEADD(DimDate[Date], -1, YEAR))

VAR Result = DIVIDE(
    (Reference_Value-LY), ABS(LY))

RETURN Result
```

Year	Last Year (LY)	This Year (TY)	YoY absolute	YoY relative
2022				
janv	2 370 663	2 826 560	455 897	19,2 %
févr	2 843 340	2 677 182	-166 158	-5,8 %
mars	2 904 775	2 780 417	-124 358	-4,3 %
avr	2 935 235	2 826 626	-108 609	-3,7 %
mai	2 118 842	3 091 387	972 545	45,9 %
juin	2 293 254	3 339 128	1 045 874	45,6 %
juil	2 920 484	4 248 771	1 328 287	45,5 %
août	3 801 135	5 432 050	1 630 915	42,9 %
sept	4 229 031	4 525 100	296 069	7,0 %
oct	3 852 219	3 963 715	111 496	2,9 %
nov	2 674 993	3 160 262	485 269	18,1 %
déc	3 225 220	4 198 802	973 582	30,2 %



See Patou Tips #12 about
the calculation of the
relative variation

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Patou Tips #58

Coming soon, in 2026!



Patrice Fayard

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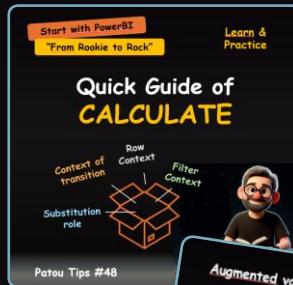
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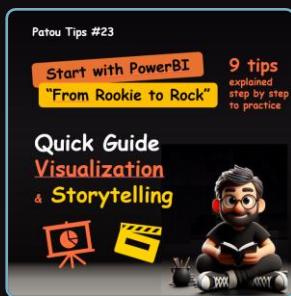
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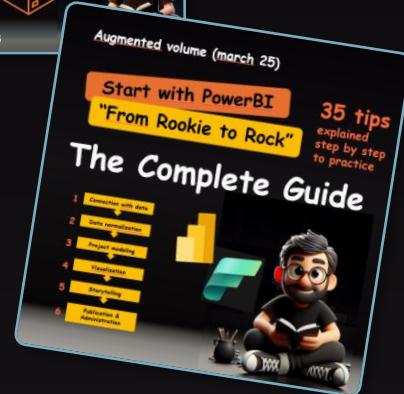
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<https://github.com/Patou-Tips/Patou-Tips>

Patou Tips

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