Tasks

The automatic filtering that occurs in Power BI is a really awesome feature and is one of the reasons that so many companies are gravitating to this tool. The active relationships that are defined in the data model, are automatically used by DAX to perform the automatic filtering of calculated measures.

Task 1 - Using CALCULATE() to modify filter context

The **CALCULATE** function is an extremely powerful tool in the arsenal of any DAX author. In fact, the CALCULATE function is one of the most important functions in all of DAX. This is because the CALCULATE function can be used to ignore, overwrite, or change the existing filter context.

Let's assume you want to return the total sales of each country as a percentage of all countries. This is a very basic percentage of total calculation: Total Sales per country divided by Total Sales for all countries. However, how do you get the total sales of all the countries so that you can perform this calculation?

Step 1: Create a new calculated measure in your *Internet Sales* table using the following DAX formula to get *Total Sales all Countries* on the same row as *Total Sales*:

```
1 Total Sales all Countries =
2 CALCULATE(
3     [Total Sales],
4     ALL(
5         'Sales Territory'[Sales Territory Country]))
```

The calculation will return all sales for all countries, explicitly ignoring any filters that come from the *Country* column.

The first parameter of the CALCULATE function is an expression, the aggregation is simply *Total Sales*. The second parameter is a filter that allows the current filter context to be modified: The function ALL returns all the rows in a table, or all the values in a column, *ignoring any filters* that may have been applied. (Alternatively, the REMOVEFILTERS function can be used instead of ALL to achieve the same results.)

Sales Territory Country	Total Sales	Total Sales all Countries
Australia	$9 061 000,58	29 358 677,22
Canada	$1 977 844,86	29 358 677,22
France	$2 644 017,71	29 358 677,22
Germany	$2 894 312,34	29 358 677,22
NA		29 358 677,22
United Kingdom	$3 391 712,21	29 358 677,22
United States	$9 389 789,51	29 358 677,22
Total	**$29 358 677,22**	**29 358 677,22**

The most difficult challenge to creating our percentage of total calculation in DAX is creating the total sales for all countries. With this calculated measure completed, let's complete the percentage of the total calculation.

Step 2: Calculate the percentage of total

Create a new calculated measure in your *Internet Sales* table using the following DAX formula:

```
% of All Countries = DIVIDE([Total Sales], [Total Sales all Countries])
```

Step 3: Navigate to the *Measure tool*s ribbon and change the formatting to ***%:***

Sales Territory Country	Total Sales	Total Sales all Countries	% of ALL Countries
Australia	$9 061 000,58	29 358 677,22	30,86 %
Canada	$1 977 844,86	29 358 677,22	6,74 %
France	$2 644 017,71	29 358 677,22	9,01 %
Germany	$2 894 312,34	29 358 677,22	9,86 %
NA		29 358 677,22	
United Kingdom	$3 391 712,21	29 358 677,22	11,55 %
United States	$9 389 789,51	29 358 677,22	31,98 %
Total	**$29 358 677,22**	**29 358 677,22**	**100,00 %**

You may notice that a new row with the value of NA appeared in the column *Sales Territory Country.* Previously, this NA value was automatically hidden by the Power BI visual because *Total Sales* returned a blank value. However, *Total Sales all Countries* will ignore the NA filter and return total sales for all countries and therefore, the NA value now appears in the table visual.

End-of-Exercise