

# Lesson 10

**Topic:** Advanced Filtering in DAX

**Prerequisites:** Download Lesson 10.xlsx file.

1. What does `FILTER(Sales, Sales[Amount] > 1000)` return?
  - If we define it as new table it returns a table with sales amount is greater than 1000 :

```
FilterSalesAmount = FILTER(  
    Sales, Sales[Amount]>1000)
```

2. Write a measure High Sales that sums Amount where Amount > 1000 using FILTER.

```
SumHighSales = CALCULATE(  
    SUM(Sales[Amount]),  
    FILTER(  
        Sales, Sales[Amount]>1000))
```

3. How does `ALLEXCEPT(Sales, Sales[Region])` differ from `ALL(Sales)`?
  - `ALL(Sales)` removes all filters from the entire Sales table, showing results for the whole table regardless of any filters applied. In contrast, `ALLEXCEPT(Sales, Sales[Region])` removes all filters from the Sales table except for those on the Sales[Region] column, preserving the regional filter context while clearing other filters, such as those on date or product.

4. Use SWITCH to categorize Amount:

```
"Medium" if 500-1000  
"High" if > 1000 ``
```

```
Categorized Amount = SWITCH(TRUE(),  
    Sales[Amount]>=500 && Sales[Amount]<=1000, "Medium",  
    Sales[Amount]>1000, "High"  
)
```

5. What is the purpose of ALLSELECTED?
- The ALLSELECTED function in Power BI's DAX is used to remove filters from within a specific visual or table, while still respecting other active filters from slicers or other parts of the report. Its primary purpose is to display subtotals, grand totals, or overall context that account for all selected data points within the current scope, allowing for comparisons to a broader, yet still filtered, set of data.
6. Write a measure Regional Sales % showing each sale's contribution to its region's total (use ALLEXCEPT).

```
Regional Sales % =  
DIVIDE (  
    SUM ( Sales[Amount] ),  
    CALCULATE (  
        SUM ( Sales[Amount] ),  
        ALLEXCEPT ( Sales, Sales[Region] )  
    )  
)
```

7. Create a dynamic measure using SWITCH to toggle between SUM, AVERAGE, and COUNT of Amount.

```
Dynamic Amount Measure =  
VAR SelectedCalculation = SELECTEDVALUE('Dynamic  
Measure'[Calculation Type])  
RETURN  
    SWITCH(  
        SelectedCalculation,  
        "Sum", SUM('Sales'[Amount]),  
        "Average", AVERAGE('Sales'[Amount]),  
        "Count", COUNT('Sales'[Amount]),  
        // Default value if nothing is selected or an  
unexpected value  
        SUM('Sales'[Amount])  
    )
```

8. Use FILTER inside CALCULATE to exclude "Furniture" sales (Products[Category] = "Furniture").

```
Furniture Excluded = CALCULATE(  
    SUM(Sales[Amount]),  
    FILTER(Products, Products[Category] <> "Furniture")
```

```
)
    FILTER(Products, Products[Category]="Furniture")
)
```

9. Why might ALLSELECTED behave unexpectedly in a pivot table?

- ALLSELECTED can behave unexpectedly in Power BI pivot tables due to complex interactions with context transition and shadow filter contexts, incorrect usage with iterators or hierarchical slicers, the presence of composite models, or applying it in calculated columns instead of measures. To resolve issues, ensure your measure uses ALLSELECTED as a CALCULATE modifier within the correct filter context, rather than as a table expression inside an iterator, to accurately remove filters while preserving external context.

10. Write a measure that calculates total sales and ignores filters from region

```
Removed Region =
CALCULATE (
    SUM ( Sales[Amount] ),
    REMOVEFILTERS ( Sales[Region] )
)
```

11. Optimize this measure:

High Sales = CALCULATE(SUM(Sales\[Amount]), FILTER(Sales, Sales\[Amount] > 1000)) (Hint: Replace FILTER with a Boolean filter inside CALCULATE.)

```
High Sales = CALCULATE(
    SUM(Sales[Amount]),
    Sales[Amount]>1000
)
```

12. Write a measure Top 2 Products using TOPN and FILTER to show the highest-grossing products.

```
Top 2 Products Table =
VAR TopNProducts =
    TOPN(
        2,
        ALLSELECTED(Products[ProductName]), -- Or
        ALL(Products[ProductName]) if you want to ignore slicers
        [Total Sales],
        DESC
    )
```

```

    )
RETURN
    CALCULATETABLE(
        VALUES(Products[ProductName]),
        KEEPFILTERS(TopNProducts)
    )

```

Displaying the results.

You can use this measure in a visual like a table or matrix. Drag Products[ProductName] to the rows of your visual, and then add a measure like [Total Sales] to the values. You can then use the visual-level filter on Products[ProductName] and select "Top N" and apply it based on your Top 2 Products Table measure (or a similar ranking measure if you prefer).

13. Use ALLSELECTED with no parameters to respect slicers but ignore visual-level filters.

```

Measure for AllSelected =
CALCULATE (
    SUM ( Sales[Amount] ),
    ALLSELECTED ()
)

```

14. Debug: A SWITCH measure returns incorrect values when fields are added to a matrix visual.

Debugging a SWITCH measure returning incorrect values in a Power BI matrix visual often involves understanding the evaluation context and how it changes when fields are added to the matrix.

Understand the Evaluation Context:

Matrix Context: A matrix visual creates a complex filter context for each cell based on the rows and columns. When you add fields, you introduce new levels of granularity and filtering.

Simplify and Isolate:

Start with a basic table: Replace the matrix with a simple table visual containing only the fields used in your SWITCH measure and the measure itself. This helps isolate if the issue is with the measure's logic or the matrix's complex context.

Relationships and Data Model:

Active Relationships: In Model view, verify that all necessary relationships between tables are active (solid lines) and correctly configured.

Cardinality and Filter Direction: Check the cardinality and filter direction of relationships, especially if you're using fields from multiple tables in your matrix. Incorrect settings can lead to unexpected filtering and incorrect measure results.

Data Types: Ensure that the data types of the columns involved in your SWITCH conditions and relationships are consistent.

15. Simulate a "reset filters" button using ALL in a measure.

Create this measure (Reset Filters Sales).

```
Reset Filters Sales =  
CALCULATE (  
    SUM ( Sales[Amount] ),  
    ALL ( Sales )  
)
```

Place it on a card visual → it always shows the global total, regardless of slicers.

Optionally, put the regular sales measure and the reset measure side by side in a table