Filter Functions

Functions used to **manipulate table** and **filter contexts.**
Filter context
is the set of filters **applied automatically by visuals, slicers, or manually in DAX.**

Important Filter Function:-

1. **CALCULATE()** – The Heart of DAX Logic

🔷 What It Does:

Changes or adds filters to an existing filter context and **re-evaluates** an expression.

🔷 Syntax:

```
DAX
CALCULATE(<expression>, <filter1>, <filter2>, ...)
```

🔷 Example:

```
DAX
Total 1970 Crashes =
CALCULATE(
    [Total Crashes],
    'Airplane Crashes'[Crash Year] = 1970
)
```

✅ When to Use:

- When you want to **override the visual's filter** (e.g., force a year).

- When you want to **combine multiple filters**.

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2. **FILTER()** – Row-by-Row Filter Logic

🔷 What It Does:

Creates a **row context** to evaluate **complex logical expressions** and returns a filtered table.

🔷 Syntax:

```
DAX
FILTER(<table>, <condition>)
```

🔷 Example:

```
DAX
CALCULATE(
    SUM('Airplane Crashes'[Fatalities]),
    FILTER(
        ALL('Airplane Crashes'),
        'Airplane Crashes'[Crash Year] <= 1970
    )
)
```

✅ When to Use:

- When filtering on **aggregates**, comparisons, or multiple conditions.
- Inside `CALCULATE()` for complex filter logic.

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3. **ALL()** – Remove Filters

🔷 What It Does:

Removes **any existing filters** from columns or entire tables.

🔷 Syntax:

```
DAX
ALL('Table'[Column]) or ALL('Table')
```

🔷 Example:

```
DAX
Total Crashes All Years =
CALCULATE(
    [Total Crashes],
    ALL('Airplane Crashes'[Crash Year])
)
```

✅ When to Use:

- To **ignore slicers or visuals**.
- For calculating **totals**, **% of total**, or **running totals**.

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4. **ALLEXCEPT()** – Keep Filters on Specific Columns

🔷 What It Does:

Removes all filters **except** those on specified columns.

🔷 Syntax:

```
DAX
ALLEXCEPT('Table', 'Table'[Column1], 'Table'[Column2])
```

🔷 Example:

```
DAX
Total Crashes Per Year =
CALCULATE(
    [Total Crashes],
    ALLEXCEPT('Airplane Crashes', 'Airplane Crashes'[Crash Year])
)
```

✅ When to Use:

- In % share calculations.
- When you want totals **by one or two dimensions only**.

5. **ALLSELECTED()**

🔷 What It Does:

Removes filters **except** those explicitly **selected by the user through visuals or slicers**.

> Unlike ALL, it respects slicers and multi-level selections (like hierarchy).

🔷 Syntax:

```
DAX
ALLSELECTED('Table'[Column])
```

🔷 Example:

```
DAX
% of Selected Total Fatalities =
```

```
DIVIDE(
    [Total Fatalities],
    CALCULATE([Total Fatalities], ALLSELECTED('Airplane Crashes'))
)
```

✅ When to Use:

- To get **% of total** only within the **user's current selection**.
- For **dynamic visuals** that reflect slicer interactions accurately.

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6. **KEEPFILTERS()**

🔷 What It Does:

Keeps existing filters **and adds** new ones **without overriding**.

> Normally, CALCULATE overwrites filters. KEEPFILTERS makes it additive.

🔷 Syntax:

```
DAX
CALCULATE(
    [Total Crashes],
    KEEPFILTERS('Airplane Crashes'[Crash Year] = 1970)
)
```

🔷 Example:

If a visual already filters by year 1970 and you add `KEEPFILTERS(Year = 1970)` — the filter **is preserved** rather than replaced.

✅ When to Use:

- When you want to **narrow down filters** without removing existing ones.

- In **calculated columns** or **multiple-layer filters**.

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7. REMOVEFILTERS()

🔷 What It Does:

Removes filters from the specified column or table — just like `ALL()`, but more explicit.

> It's the modern replacement of ALL() when you just want to clear filters without affecting row context.

🔷 Syntax:

```
DAX
REMOVEFILTERS('Table'[Column])
```

🔷 Example:

```
DAX
CopyEdit
CALCULATE(
    [Total Crashes],
    REMOVEFILTERS('Airplane Crashes'[Crash Year])
)
```

✅ When to Use:

- When using `REMOVEFILTERS` reads **cleaner than ALL**, especially in nested DAX.
- When you only want to **clear filter context**, but not affect granularity.

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8. SELECTEDVALUE()

🔷 What It Does:

Returns the **single selected value** from a column — or a default value if there are **multiple or no selections**.

🔷 Syntax:

```
DAX
SELECTEDVALUE('Table'[Column], "Default")
```

🔷 Example:

```
DAX
CopyEdit
Selected Year = SELECTEDVALUE('Airplane Crashes'[Crash Year], "All Years")
```

✅ When to Use:

- For showing **user-selected filter values** in cards or titles.
- For **conditional logic** based on current selections.

DAX Function	What it Does	Use When...
CALCULATE	Changes/applies filters	You want to change visual filters or add new ones
FILTER	Filters a table row-by-row	Complex logic or aggregate-based filters
ALL	Removes all filters from column/table	Get total or override slicer/visual filters
ALLEXCEPT	Removes all filters **except some**	Retain dimension-based grouping while ignoring others
ALLSELECTED	Removes filters except user-selected slicers/visuals	% of total in selected time range

DAX Function	What it Does	Use When...
KEEPFILTERS	Adds filters without replacing existing ones	Add 1970 filter without removing visual’s filter
REMOVEFILTERS	Clears filters from specific column/table	Reset crash year filter for total view
SELECTEDVALUE	Gets a single selected value or default	Show selected year or "All Years" in dynamic titles