

# Logical functions

INTERMEDIATE DAX IN POWER BI



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# Overview of logical functions

Logical functions act upon an expression to return information about the values or sets in the expression.

The most used logical functions are:

- `IF()`
- `AND()`, `OR()`, `NOT()`
- `SWITCH()`

# IF() is one of the most commonly used logic functions

## Structure:

- `IF(<logical_test>, <value_if_true>, <value_if_false>)`

## Example:

- `Performance = IF([Total Sales] >= 50 000, "Target Reached", "Target Not Reached")`

# IF() is one of the most commonly used logic functions

## Structure:

- `IF(<logical_test>, <value_if_true>[, <value_if_false>])`

## Example:

- `Performance = IF([Total Sales] >= 50 000, "Target Reached", "Target Not Reached")`

| Name   | Total Sales |
|--------|-------------|
| Jenny  | 48,431      |
| Jane   | 76,528      |
| Dwayne | 24,167      |
| Thomas | 52,125      |

# IF() is one of the most commonly used logic functions

## Structure:

- `IF(<logical_test>, <value_if_true>[, <value_if_false>])`

## Example:

- `Performance = IF([Total_Sales] >= 50 000, "Target Reached", "Target Not Reached")`

| Name   | Total Sales | Performance        |
|--------|-------------|--------------------|
| Jenny  | 48,431      | Target not Reached |
| Jane   | 76,528      | Target Reached     |
| Dwayne | 24,167      | Target Not Reached |
| Thomas | 52,125      | Target Reached     |

# AND(), OR() & NOT() operators

All three operators return `TRUE` or `FALSE` as the output.

- `AND(<logical1>, <logical2>)`
  - Returns `TRUE` if both conditions are `TRUE`
  - *Example:* `AND(5 < 4, 5 < 6) = AND(FALSE, TRUE) = FALSE`
- `OR(<logical1>, <logical2>)`
  - Returns `TRUE` if at least one condition is `TRUE`
  - *Example:* `OR(5 < 4, 5 < 6) = OR(FALSE, TRUE) = TRUE`
- `NOT(<logical>)`
  - Changes `TRUE` to `FALSE` and vice versa
  - *Example:* `NOT(OR(5 < 4, 5 < 6)) = NOT(TRUE) = FALSE`

# AND(), OR() & NOT() operators

AND can be replaced by &&

- `AND(5 < 4, 5 < 6) = 5 < 4 && 5 < 6`

OR can be replaced by ||

- `OR(5 < 4, 5 < 6) = 5 < 4 || 5 < 6`

# The power of SWITCH()

Evaluates an expression against a list of values and returns one of multiple possible result expressions.

- `SWITCH(<expression>, <value>, <result>[, <value>, <result>] ... [, <else>])`
- Often preferred over nested `IF()` functions

```
Performance = SWITCH(TRUE,  
  [Total_Sales] < 25 000, "Poor",  
  [Total_Sales] < 50 000, "Below expectations",  
  [Total_Sales] < 75 000, "Above expectations",  
  "Exceptional")
```



# The power of SWITCH()

```
Performance = SWITCH(TRUE,  
[Total_Sales] < 25 000, "Poor",  
[Total_Sales] < 50 000, "Below expectations",  
[Total_Sales] < 75 000, "Above expectations",  
"Exceptional")
```

| Name   | Total Sales |
|--------|-------------|
| Jenny  | 48,431      |
| Jane   | 76,528      |
| Dwayne | 24,167      |
| Thomas | 52,125      |

# The power of SWITCH()

```
Performance = SWITCH(TRUE,  
[Total_Sales] < 25 000, "Poor",  
[Total_Sales] < 50 000, "Below expectations",  
[Total_Sales] < 75 000, "Above expectations",  
"Exceptional")
```

| Name   | Total Sales | Performance        |
|--------|-------------|--------------------|
| Jenny  | 48,431      | Below Expectations |
| Jane   | 76,528      | Exceptional        |
| Dwayne | 24,167      | Poor               |
| Thomas | 52,125      | Above expectations |

# The power of SWITCH()

```
DISCOUNT = SWITCH([Clothing Type],  
    "Shoes", 0.15,  
    "Pants", 0.20,  
    "Belts", 0.30,  
    "T-shirt", 0.25)
```

| Clothing Type |
|---------------|
| Shoes         |
| Pants         |
| Belt          |
| T-shirt       |

# The power of SWITCH()

```
DISCOUNT = SWITCH([Clothing Type],  
    "Shoes", 0.15,  
    "Pants", 0.20,  
    "Belts", 0.30,  
    "T-shirt", 0.25)
```

| Clothing Type | Discount |
|---------------|----------|
| Shoes         | 15%      |
| Pants         | 20%      |
| Belt          | 30%      |
| T-shirt       | 25%      |

# Let's switch up!

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# Logical functions in Power BI

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# Let's practice!

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