# DAX Data Analysis Expressions



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## Data Warehouse Design & Develop



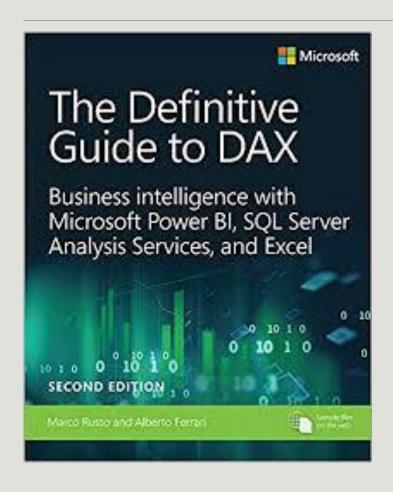
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## منابع





#### DAX



- DAX یک زبان بر اساس فرمول نویسی است.
  - شبیه به توابع Excel رفتار می کند.
- DAX از دو روش در مدل SSAS بارگزاری می شود:
  - calculated column o
  - calculate measure o

### DAX Formula



- پس از محاسبه یک مقدار بر می گردانند.
- رای ایجاد column ،kpi ،measure استفاده می شوند.
  - داده را به صورت یک جدول بر می گردانند.
    - برای ایجاد dataset استفاده می شوند.
- و برای تولید مجموعه داده و استفاده در فرمول دیگری استفاده می شوند.

### DAX Formula Measure



- Sum\_debit\_balance: = SUM('BI FactAccountingVoucher'[DebitBalance])
- count\_records := COUNT('BI FactAccountingVoucher'[ID])
- SSAS column summarized by options:
  - **.** Sum
  - Average
  - Count
  - DistinctCount
  - Max
  - \* Min

### DAX Formula Calculated Columns



- \* = 'BI FactAccountingVoucher'[Credit] 'BI FactAccountingVoucher'[Debit]
- = YEAR('BI DimDate'[GregorianDate])

## DAX Formula Conditions



- IF(<logical\_test>,<value\_if\_true>,<value\_if\_false>)
- SWITCH(<expression>,<value>,<result>[, <value>,<result>][,else])
- \* =IF('BI FactSales'[SalesDocumentID] = 3, 'BI FactSales'[NetPrice], 0)
- ❖ = SWITCH('BI FactSales'[SalesDocumentID], 1, "Sales", 2, "Return Sales", "Net Sales")

## DAX Formula String



- = CONCATENATE("Y", YEAR('BI DimDate'[GregorianDate]))
- LEFT(<text>,<num\_chars>)
- RIGHT(<text>,<num\_chars>)

## DAX Formula Relations



- RELATED(<column>)
- =RELATED('BI DimAccount'[Title])
- RELATEDTABLE(<tableName>)
- = COUNTROWS(RELATEDTABLE('BI FactAccountingVoucher'))

#### DAX Formula Filter



- FILTER(,<filter>)
- sum\_of\_net\_sales:=SUMX(FILTER('BI FactSales', 'BI FactSales'[SalesDocumentID] = 3), 'BI FactSales'[NetPrice])
- sum\_debit\_1398:= CALCULATE(SUM('BI FactAccountingVoucher'[Debit]), 'BI DimDate'[CalendarYear] = 1398)
- ALL(|<column>)
  - to remove any conditions that are on your data



- Select \*
  - EVALUATE 'tablename'
  - EVALUATE 'BI FactAccountingVoucher'
  - **EVALUATE**

'BI FactAccountingVoucher'

**ORDER BY** 

[ID] DESC





```
SUMMARIZE

EVALUATE
SUMMARIZE(

'BI FactAccountingVoucher',

'BI DimDate'[CalendarYear],

"Sum of Debit",

SUM('BI FactAccountingVoucher'[Debit])
```





```
❖ SUMMARIZE
 EVALUATE
 SUMMARIZE(
                 'BI FactAccountingVoucher',
                 ROLLUP(
                           'BI DimDate'[CalendarYear],
                           'BI DimAccount'[PrimaryTitle]
                 "Sum of Debit",
                 SUM('BI FactAccountingVoucher'[Debit])
```

#### DAX Date Functions



- \* =CALENDAR("1/1/2020","1/1/2021")
- = = YEAR(DateTable[Date])
- = = MONTH(DateTable[Date])
- =FORMAT(DateTable[Date],"MMM")
  - ❖"M": returns month number
  - \*"MM": returns the 2-digit month number
  - \*"MMM": returns the first three characters of the month name
  - \*"MMMM": returns the full length of the month name
- =WEEKDAY(DateTable[Date],1) + 1
- =FORMAT(WEEKDAY(DateTable[Date]), "DDD")

## DAX Date Functions



- ❖ TODAY
  - current date
- ❖ NOW
  - current datetime

#### DAX Date Functions



- **♦** DATEDIFF
  - **❖** SECOND
  - ❖ MINUTE
  - **♦** HOUR
  - DAY
  - ❖ WEEK
  - **⋄** MONTH
  - QUARTER
  - YEAR
  - first\_date := MIN('BI DimDate'[GregorianDate])
  - first\_date := FIRSTDATE('BI DimDate'[GregorianDate])
  - last\_date := LASTDATE('BI DimDate'[GregorianDate])
  - days\_since\_first\_date :=DATEDIFF(first\_date, TODAY(), DAY)

#### DAX Periods



```
sum_debit:= SUM('BI FactAccountingVoucher'[Debit])
sum_debit_pre_year:= CALCULATE(
                               SUM('BI FactAccountingVoucher'[Debit]),
                                PARALLELPERIOD('BI DimDate'[GregorianDate], -1, YEAR)
YOY_Growth:=([sum_debit]-[sum_debit_pre_year])/ [sum_debit_pre_year]
YOY_Growth_New:= IF( [sum_debit_pre_year],
                       ([sum_debit]-[sum_debit_pre_year])/ [sum_debit_pre_year],
                       BLANK()
```

#### DAX Periods



OpeningMonth:=OPENINGBALANCEMONTH(

SUM('BI FactAccountingVoucher'[Debit]),

'BI DimDate'[GregorianDate])

OpeningYear:=OPENINGBALANCEYEAR(

SUM('BI FactAccountingVoucher'[Debit]),

'BI DimDate'[GregorianDate])

#### DAX Periods



ClosingMonth:=CLOSINGBALANCEMONTH(

SUM('BI FactAccountingVoucher'[Debit]),

'BI DimDate'[GregorianDate])

ClosingYear:=CLOSINGBALANCEYEAR(

SUM('BI FactAccountingVoucher'[Debit]),

'BI DimDate'[GregorianDate])





YTDDebitBalance:=TOTALYTD( SUM('BI FactAccountingVoucher'[Debit]),
'BI DimDate'[GregorianDate])