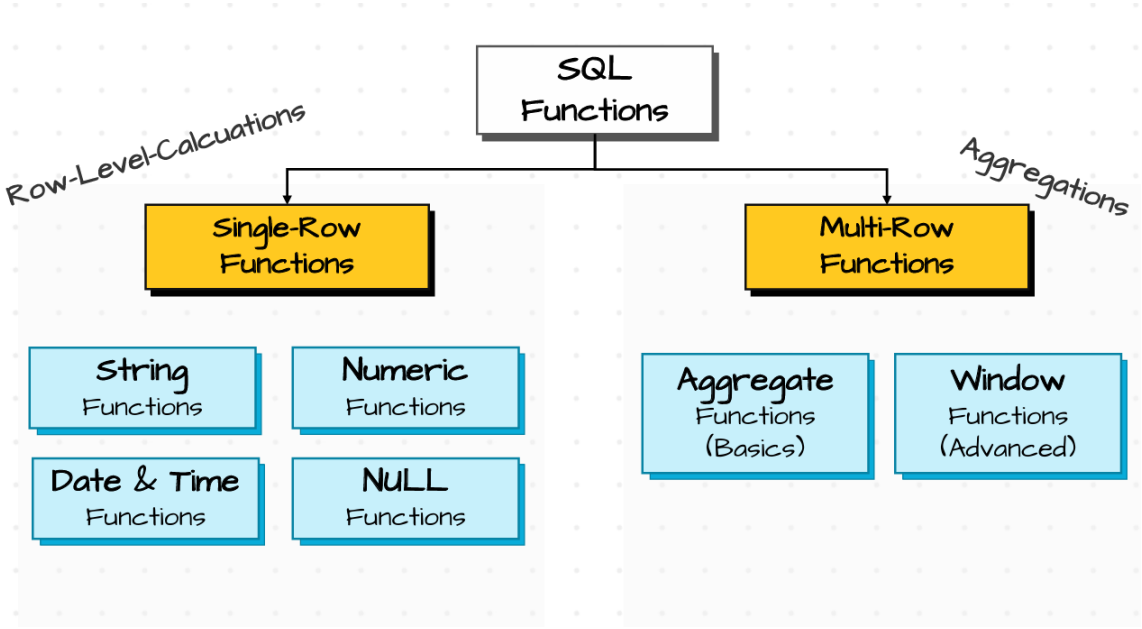
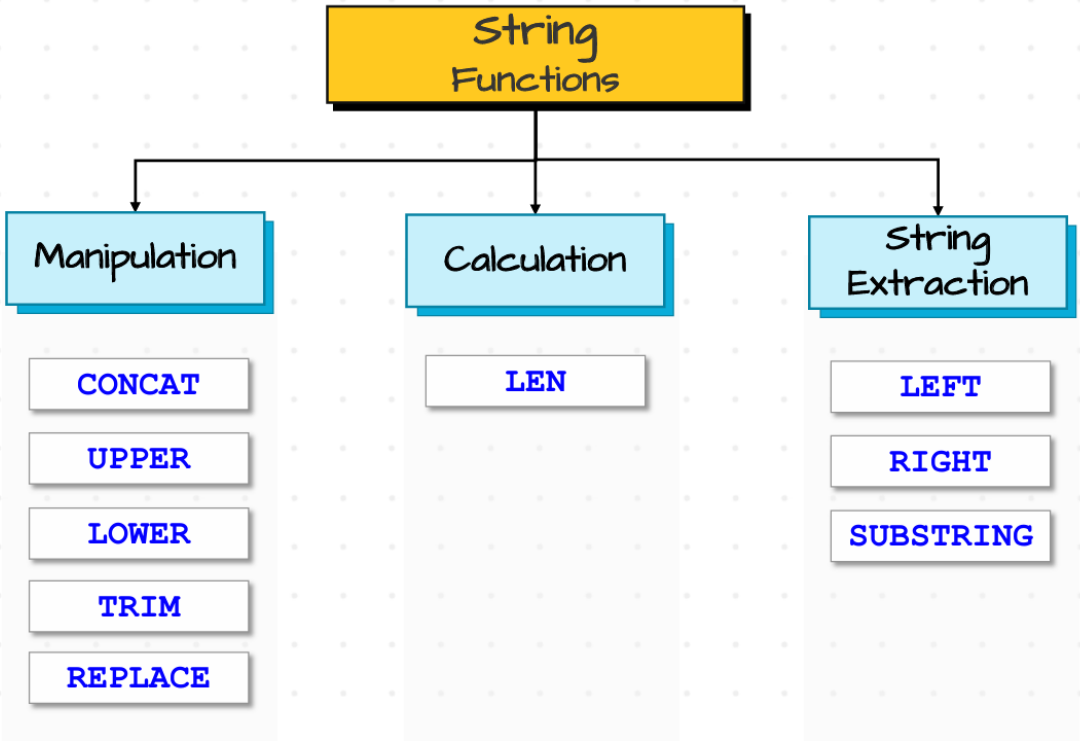
ROW-LEVEL FUNCTIONS



✓ **STRING FUNCTIONS**



- **CONCAT:**

```
SELECT
CONCAT(FirstName, ' ', LastName) AS Customer_FullName
FROM Sales.Customers
```

	Customer_FullName
1	Jossef Goldberg
2	Kevin Brown
3	Mary
4	Mark Schwarz
5	Anna Adams

- **UPPER AND LOWER:**

```
SELECT
UPPER(FirstName) AS Capitals,
LOWER(LastName) AS NON_CAPITALS
FROM Sales.Customers
```

	Capitals	NON_CAPITALS
1	JOSSEF	goldberg
2	KEVIN	brown
3	MARY	NULL
4	MARK	schwarz
5	ANNA	adams

- **TRIM:**

REMOVE LEADING AND TRAILING SPACES.

QUERY 1: FIND THE CUSTOMERS WHOSE FIRST NAME HAS TRAILING OR LEADING SPACES.

```
SELECT
first_name
FROM customers
WHERE first_name != TRIM(first_name)
```

	first_name
1	John

ANOTHER METHOD:

```
SELECT
    first_name,
    LEN(first_name) len_name,
    LEN(TRIM(first_name)) len_trim_name,
    LEN(first_name) - LEN(TRIM(first_name)) flag
FROM customers
WHERE LEN(first_name)  != LEN(TRIM(first_name))
-- WHERE first_name != TRIM(first_name)
```

Results Messages

	first_name	len_name	len_trim_name	flag
1	John	5	4	1

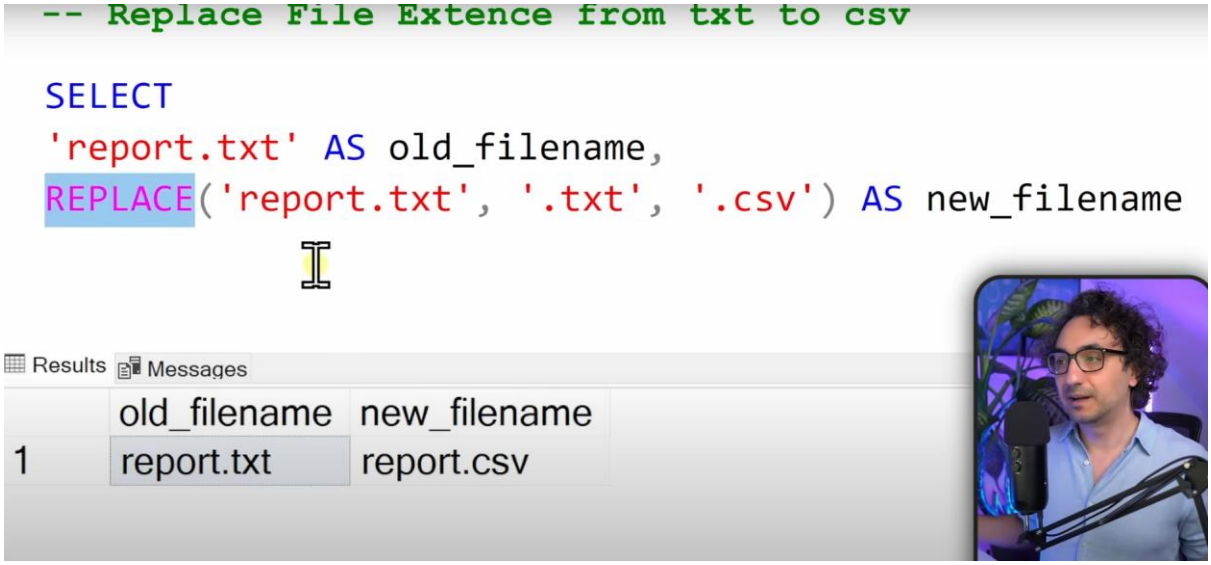
- **REPLACE:**

Replaces a specific character in to a new character.

```
SELECT
'123-456-7890' AS Phn_No,
REPLACE('123-456-7890', '-', '') AS Corrected_Phn_No
```

	Phn_No	Corrected_Phn_No
1	123-456-7890	1234567890

Another example,



- **LEN:**

Counts how many characters in a value.

```
SELECT
first_name,
LEN(first_name) AS len_name
FROM customers
```

Results | Messages

	first_name	len_name
1	Maria	5
2	John	5
3	Georg	5
4	Martin	6
5	Peter	5

- **LEFT AND RIGHT:**

LEFT extracts specific number of characters from the start.

RIGHT extracts specific number of characters from the end.

```
-- Retrieve the first two characters of each first name.
SELECT
    first_name,
    LEFT(TRIM(first_name), 2) first_2_char
FROM customers
```

Results | Messages

	first_name	first_2_char
1	Maria	Ma
2	John	Jo
3	Georg	Ge
4	Martin	Ma
5	Peter	Pe

- **SUBSTRING:**

Extracts a part of string at a specified position.

```
-- Retrieve a list of customers' first names after removing the first character.

SELECT
    first_name,
    SUBSTRING(TRIM(first_name), 2, LEN(first_name)) AS sub_name
FROM customers
```

Results Messages

	first_name	sub_name
1	Maria	aria
2	Jo	ohn
3	Georg	eorg
4	Martin	artin
5	Peter	eter

✓ **NUMBER FUNCTIONS**

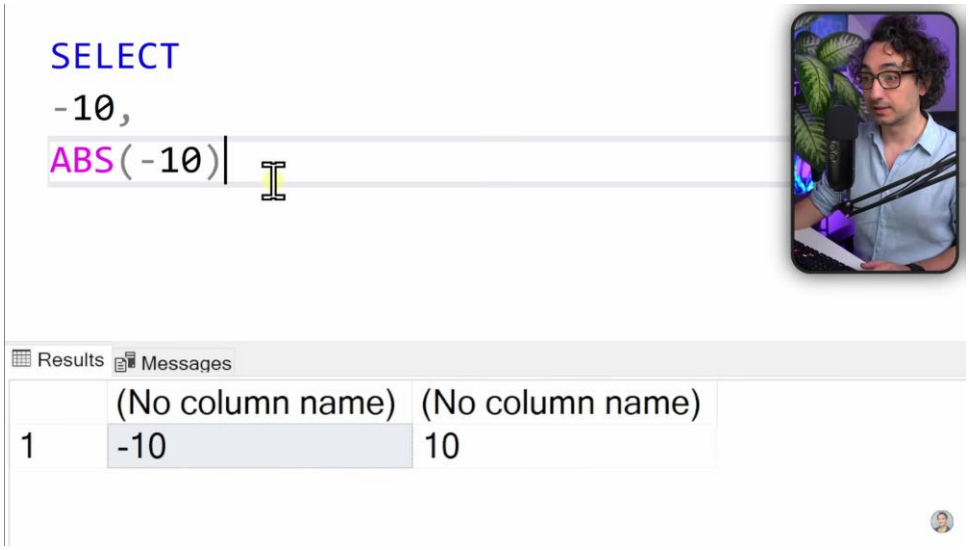
- **ROUND**

```
SELECT
3.516,
ROUND(3.516, 2) AS round_2,
ROUND(3.516, 1) AS round_1,
ROUND(3.516, 0) AS round_0
```

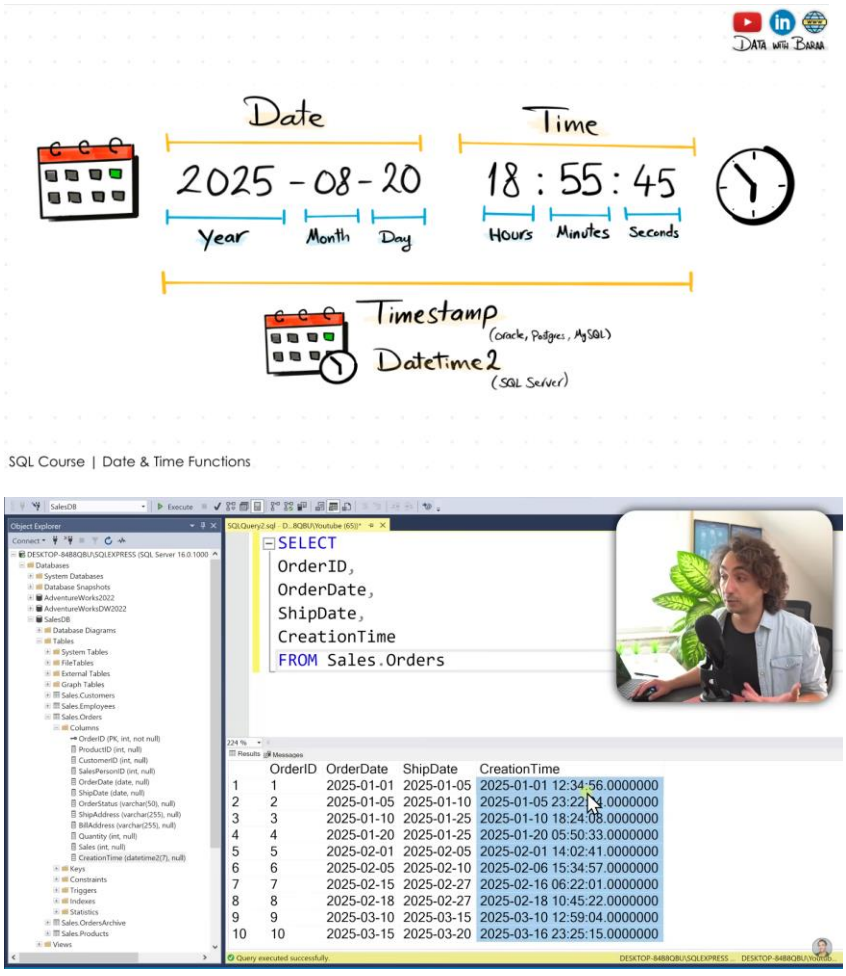
Results Messages

	(No column name)	round_2	round_1	round_0
1	3.516	3.520	3.500	4.000

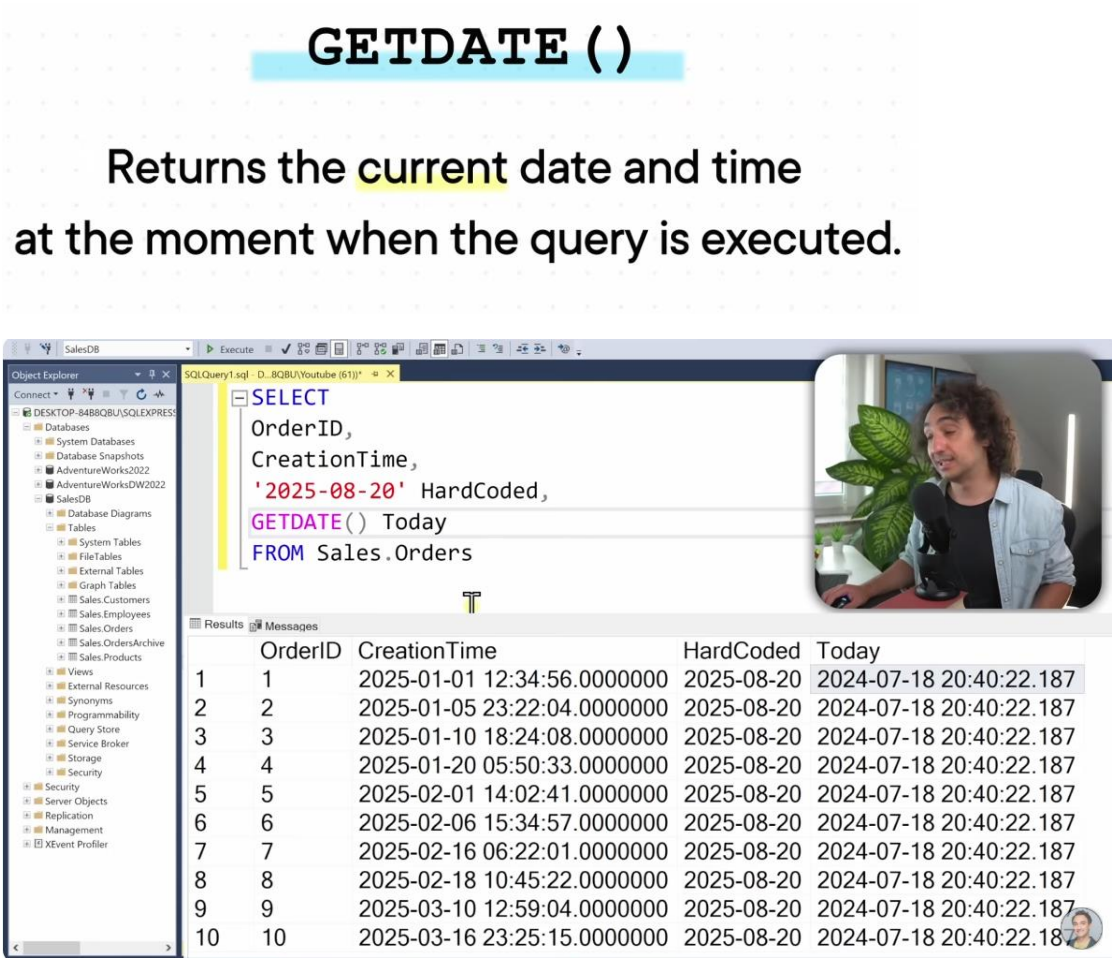
- **ABS**



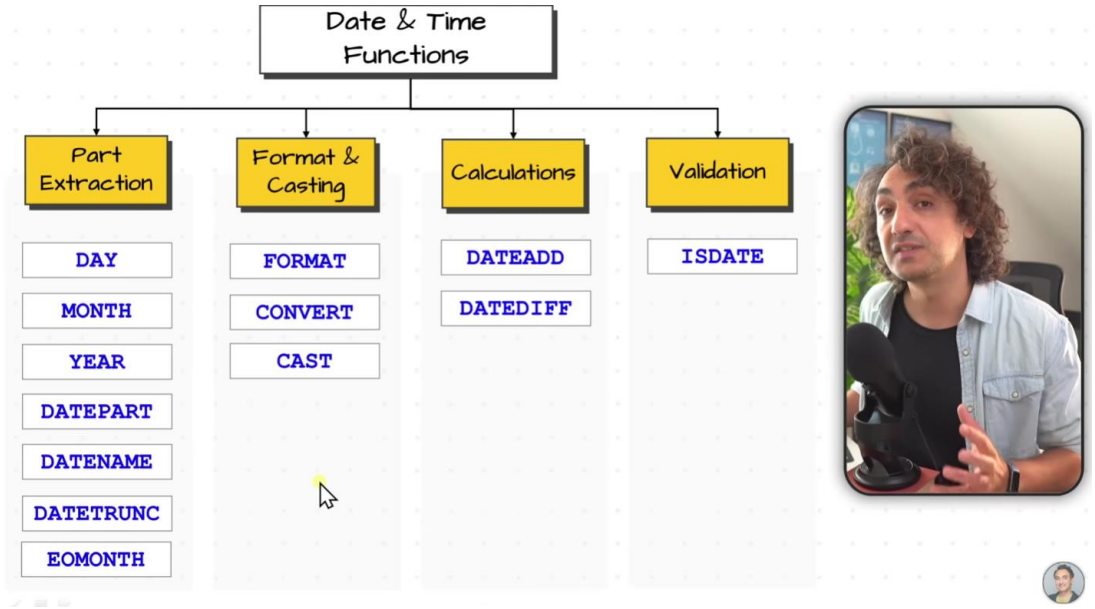
✓ **DATA AND TIME FUNCTIONS**



DATA AND TIME VALUES:

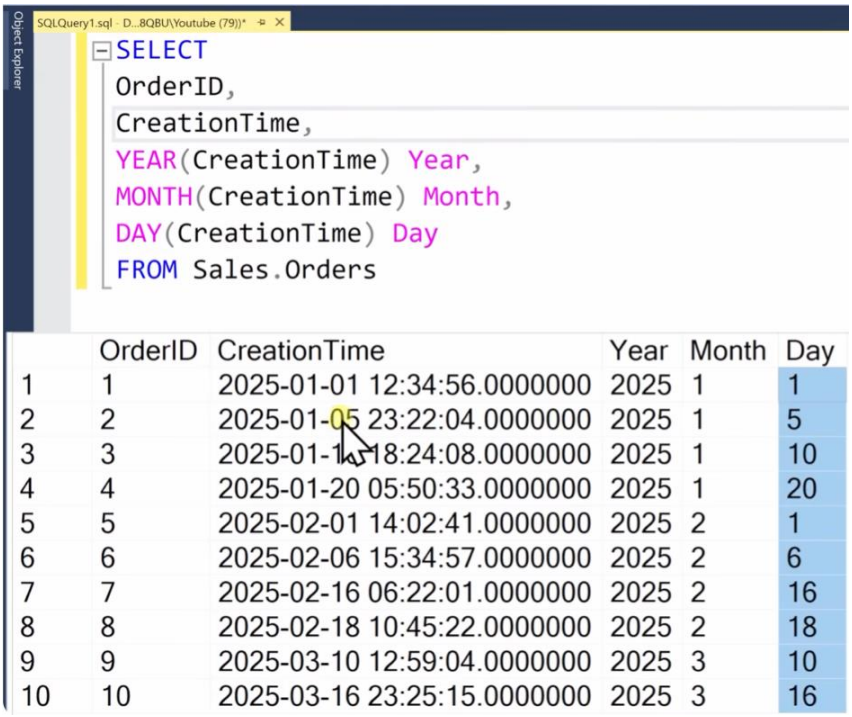


DATA AND TIME FUNCTIONS:



PART EXTRACTION :

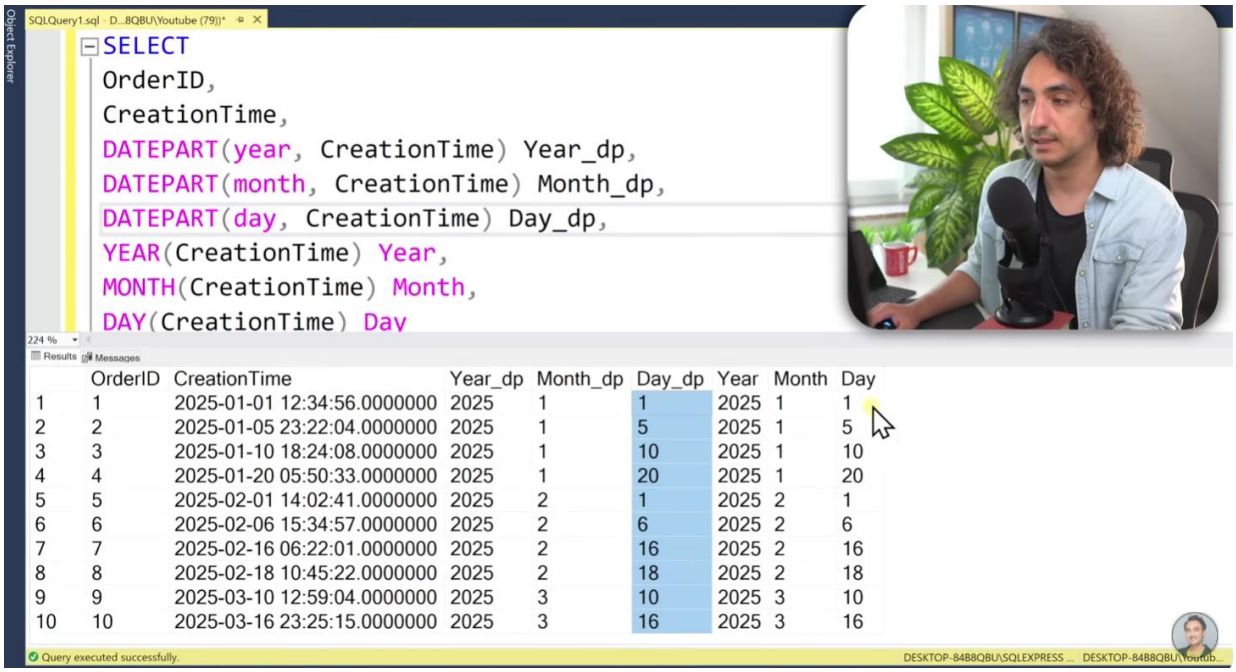
DAY, MONTH, YEAR:



```
SELECT
OrderID,
CreationTime,
YEAR(CreationTime) Year,
MONTH(CreationTime) Month,
DAY(CreationTime) Day
FROM Sales.Orders
```

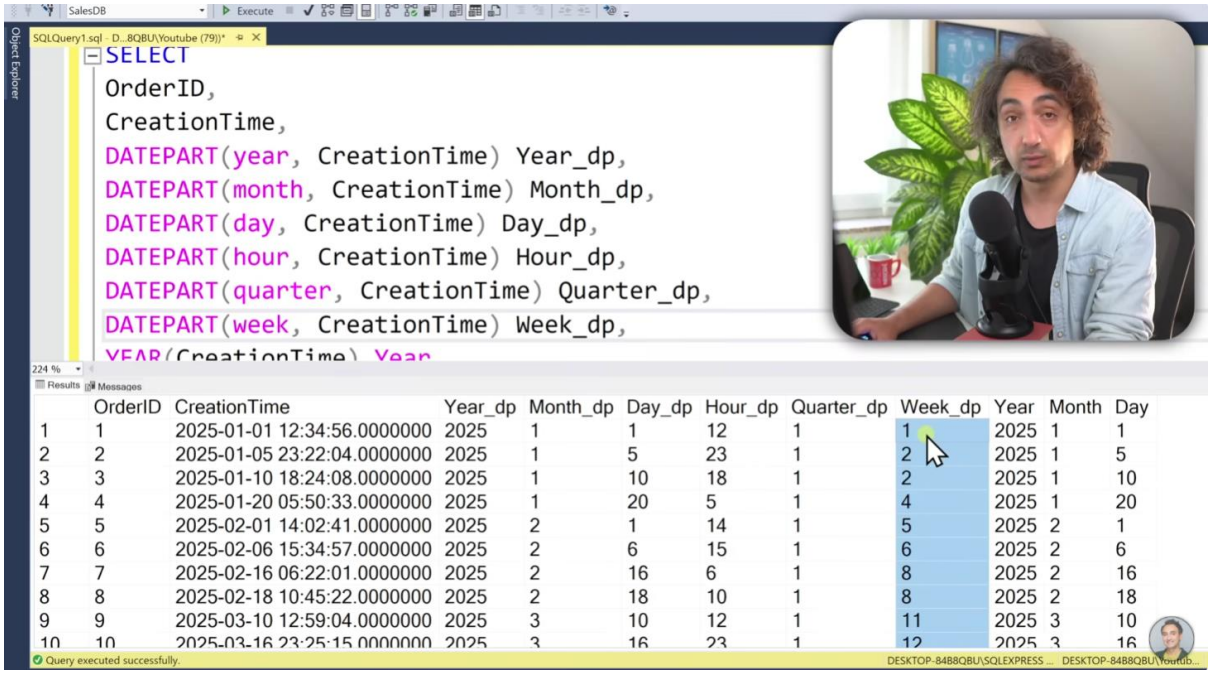
	OrderID	CreationTime	Year	Month	Day
1	1	2025-01-01 12:34:56.0000000	2025	1	1
2	2	2025-01-05 23:22:04.0000000	2025	1	5
3	3	2025-01-10 18:24:08.0000000	2025	1	10
4	4	2025-01-20 05:50:33.0000000	2025	1	20
5	5	2025-02-01 14:02:41.0000000	2025	2	1
6	6	2025-02-06 15:34:57.0000000	2025	2	6
7	7	2025-02-16 06:22:01.0000000	2025	2	16
8	8	2025-02-18 10:45:22.0000000	2025	2	18
9	9	2025-03-10 12:59:04.0000000	2025	3	10
10	10	2025-03-16 23:25:15.0000000	2025	3	16

DATEPART:



```
SELECT
OrderID,
CreationTime,
DATEPART(year, CreationTime) Year_dp,
DATEPART(month, CreationTime) Month_dp,
DATEPART(day, CreationTime) Day_dp,
YEAR(CreationTime) Year,
MONTH(CreationTime) Month,
DAY(CreationTime) Day
```

	OrderID	CreationTime	Year_dp	Month_dp	Day_dp	Year	Month	Day
1	1	2025-01-01 12:34:56.0000000	2025	1	1	2025	1	1
2	2	2025-01-05 23:22:04.0000000	2025	1	5	2025	1	5
3	3	2025-01-10 18:24:08.0000000	2025	1	10	2025	1	10
4	4	2025-01-20 05:50:33.0000000	2025	1	20	2025	1	20
5	5	2025-02-01 14:02:41.0000000	2025	2	1	2025	2	1
6	6	2025-02-06 15:34:57.0000000	2025	2	6	2025	2	6
7	7	2025-02-16 06:22:01.0000000	2025	2	16	2025	2	16
8	8	2025-02-18 10:45:22.0000000	2025	2	18	2025	2	18
9	9	2025-03-10 12:59:04.0000000	2025	3	10	2025	3	10
10	10	2025-03-16 23:25:15.0000000	2025	3	16	2025	3	16



```
SELECT
OrderID,
CreationTime,
DATEPART(year, CreationTime) Year_dp,
DATEPART(month, CreationTime) Month_dp,
DATEPART(day, CreationTime) Day_dp,
DATEPART(hour, CreationTime) Hour_dp,
DATEPART(quarter, CreationTime) Quarter_dp,
DATEPART(week, CreationTime) Week_dp,
```

	OrderID	CreationTime	Year_dp	Month_dp	Day_dp	Hour_dp	Quarter_dp	Week_dp	Year	Month	Day
1	1	2025-01-01 12:34:56.0000000	2025	1	1	12	1	1	2025	1	1
2	2	2025-01-05 23:22:04.0000000	2025	1	5	23	1	2	2025	1	5
3	3	2025-01-10 18:24:08.0000000	2025	1	10	18	1	2	2025	1	10
4	4	2025-01-20 05:50:33.0000000	2025	1	20	5	1	4	2025	1	20
5	5	2025-02-01 14:02:41.0000000	2025	2	1	14	1	5	2025	2	1
6	6	2025-02-06 15:34:57.0000000	2025	2	6	15	1	6	2025	2	6
7	7	2025-02-16 06:22:01.0000000	2025	2	16	6	1	8	2025	2	16
8	8	2025-02-18 10:45:22.0000000	2025	2	18	10	1	8	2025	2	18
9	9	2025-03-10 12:59:04.0000000	2025	3	10	12	1	11	2025	3	10
10	10	2025-03-16 23:25:15.0000000	2025	3	16	23	1	12	2025	3	16

DATENAME:

```
SELECT
OrderID,
CreationTime,
DATENAME(month, CreationTime) Month_dn,
DATENAME(weekday, CreationTime) weekday_dn,
DATENAME(day, CreationTime) Day_dn,
DATENAME(year, CreationTime) Year_dn,
-- DATEPART Examples
DATEPART(year, CreationTime) Year_dp,
DATEPART(month, CreationTime) Month_dp,
```

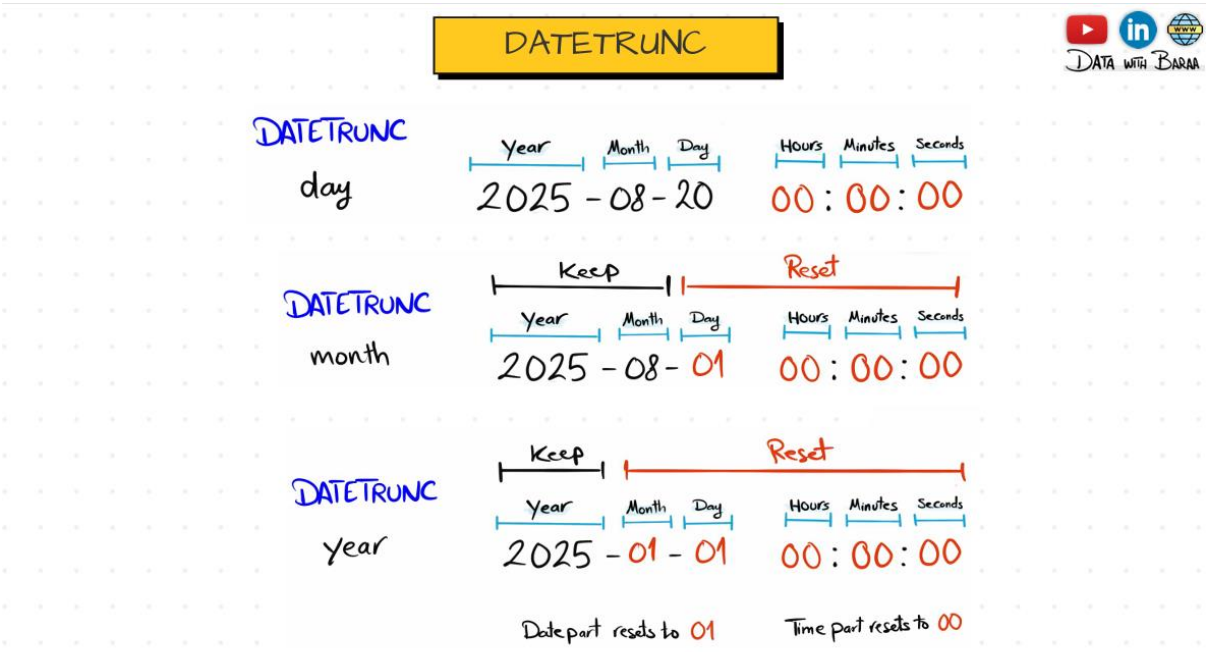
	OrderID	CreationTime	Month_dn	weekday_dn	Day_dn	Year_dn
1	1	2025-01-01 12:34:56.0000000	January	Wednesday	1	2025
2	2	2025-01-05 23:22:04.0000000	January	Sunday	5	2025
3	3	2025-01-10 18:24:08.0000000	January	Friday	10	2025
4	4	2025-01-20 05:50:33.0000000	January	Monday	20	2025
5	5	2025-02-01 14:02:41.0000000	February	Saturday	1	2025
6	6	2025-02-06 15:34:57.0000000	February	Thursday	6	2025
7	7	2025-02-16 06:22:01.0000000	February	Sunday	16	2025
8	8	2025-02-18 10:45:22.0000000	February	Tuesday	18	2025
9	9	2025-03-10 12:59:04.0000000	March	Monday	10	2025
10	10	2025-03-16 23:25:15.0000000	March	Sunday	16	2025

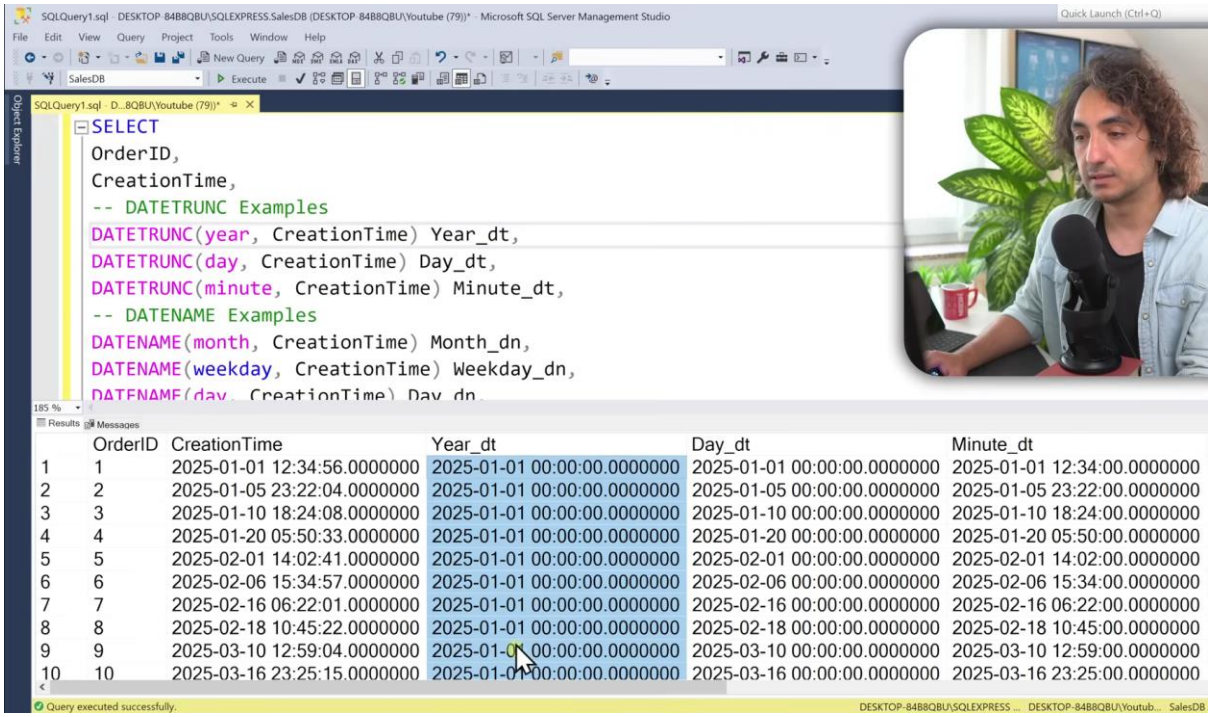
Here the output will be string, eventhough the day_dn, year_dn are lokking like integers they are strings.

DATETRUNC:

Syntax

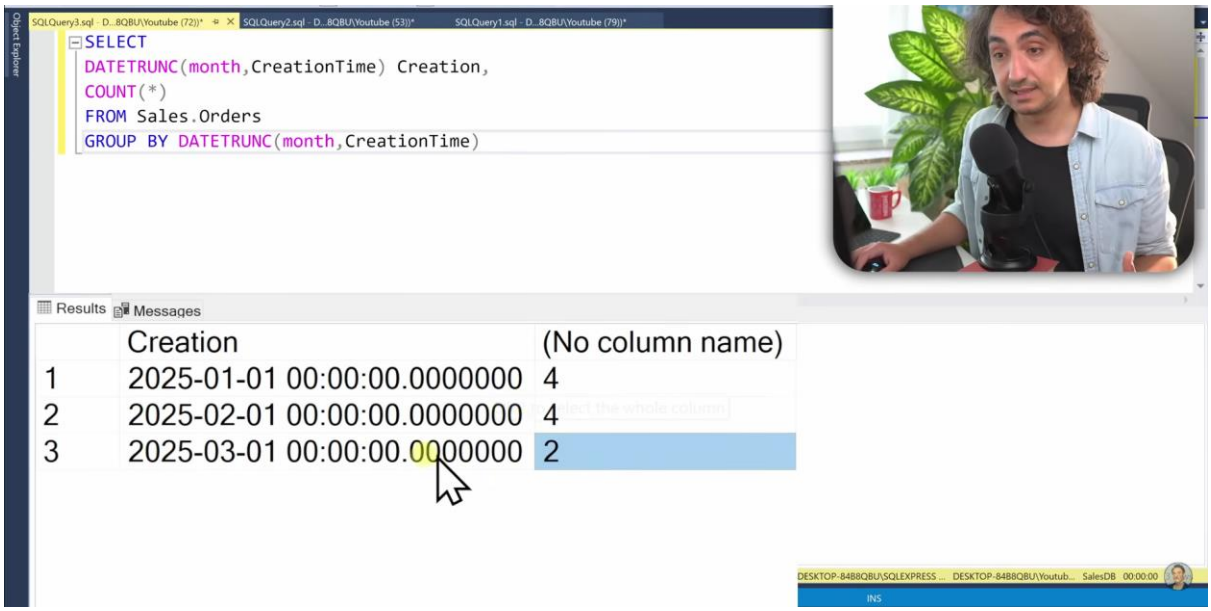
```
DATEPART(part, date)

DATENAME(part, date)

DATETRUNC(part, date)
```

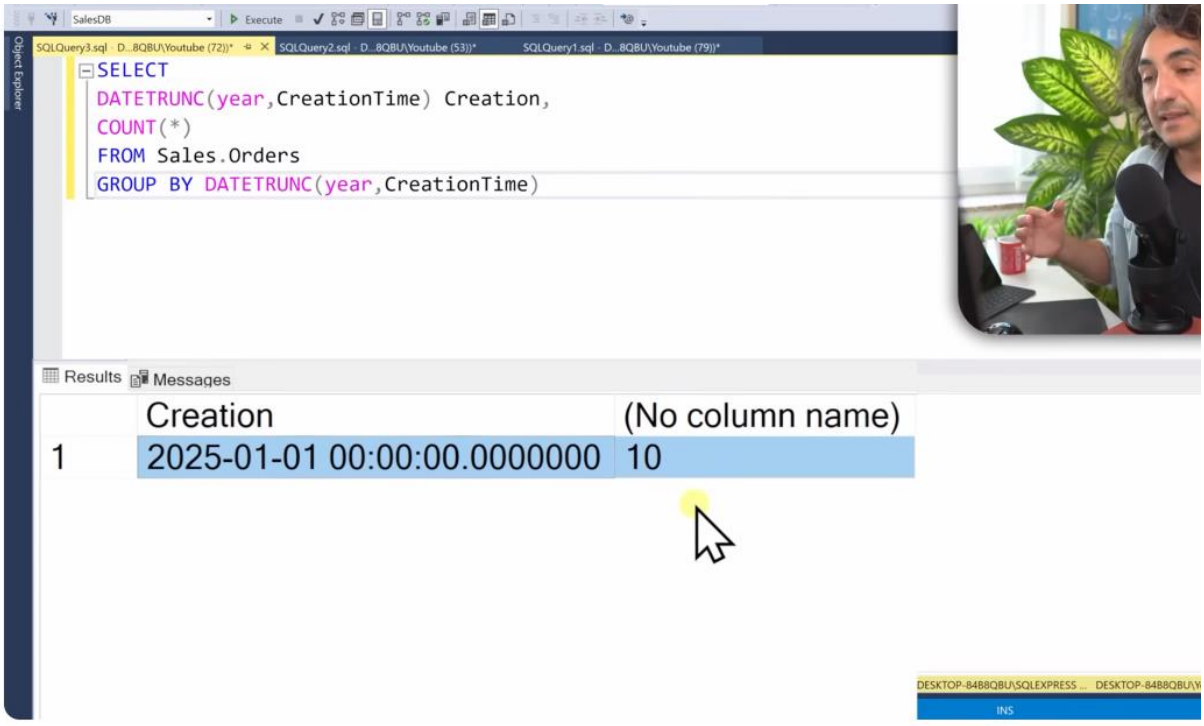




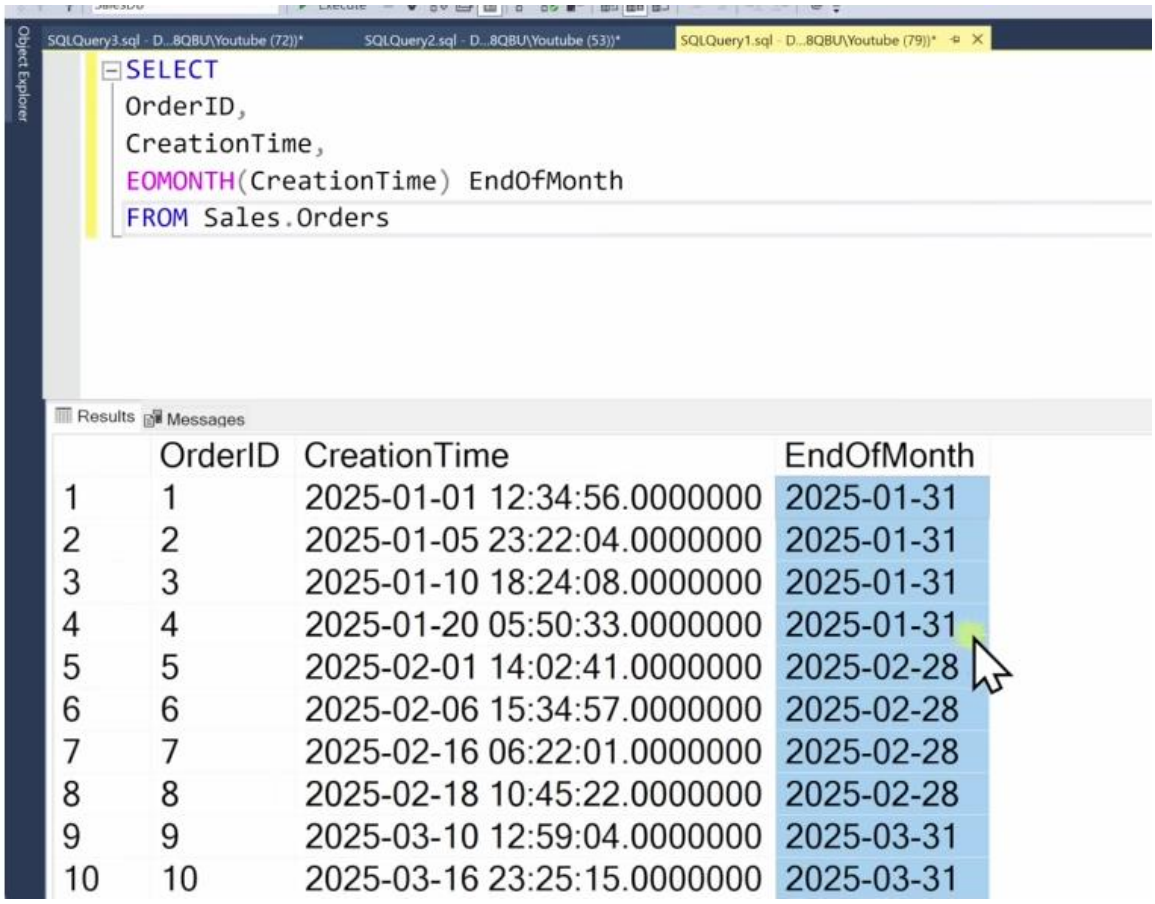
	OrderID	CreationTime	Year_dt	Day_dt	Minute_dt
1	1	2025-01-01 12:34:56.0000000	2025-01-01 00:00:00.0000000	2025-01-01 00:00:00.0000000	2025-01-01 12:34:00.0000000
2	2	2025-01-05 23:22:04.0000000	2025-01-01 00:00:00.0000000	2025-01-05 00:00:00.0000000	2025-01-05 23:22:00.0000000
3	3	2025-01-10 18:24:08.0000000	2025-01-01 00:00:00.0000000	2025-01-10 00:00:00.0000000	2025-01-10 18:24:00.0000000
4	4	2025-01-20 05:50:33.0000000	2025-01-01 00:00:00.0000000	2025-01-20 00:00:00.0000000	2025-01-20 05:50:00.0000000
5	5	2025-02-01 14:02:41.0000000	2025-01-01 00:00:00.0000000	2025-02-01 00:00:00.0000000	2025-02-01 14:02:00.0000000
6	6	2025-02-06 15:34:57.0000000	2025-01-01 00:00:00.0000000	2025-02-06 00:00:00.0000000	2025-02-06 15:34:00.0000000
7	7	2025-02-16 06:22:01.0000000	2025-01-01 00:00:00.0000000	2025-02-16 00:00:00.0000000	2025-02-16 06:22:00.0000000
8	8	2025-02-18 10:45:22.0000000	2025-01-01 00:00:00.0000000	2025-02-18 00:00:00.0000000	2025-02-18 10:45:00.0000000
9	9	2025-03-10 12:59:04.0000000	2025-01-01 00:00:00.0000000	2025-03-10 00:00:00.0000000	2025-03-10 12:59:00.0000000
10	10	2025-03-16 23:25:15.0000000	2025-01-01 00:00:00.0000000	2025-03-16 00:00:00.0000000	2025-03-16 23:25:00.0000000

WHY IS IT USEFULL:





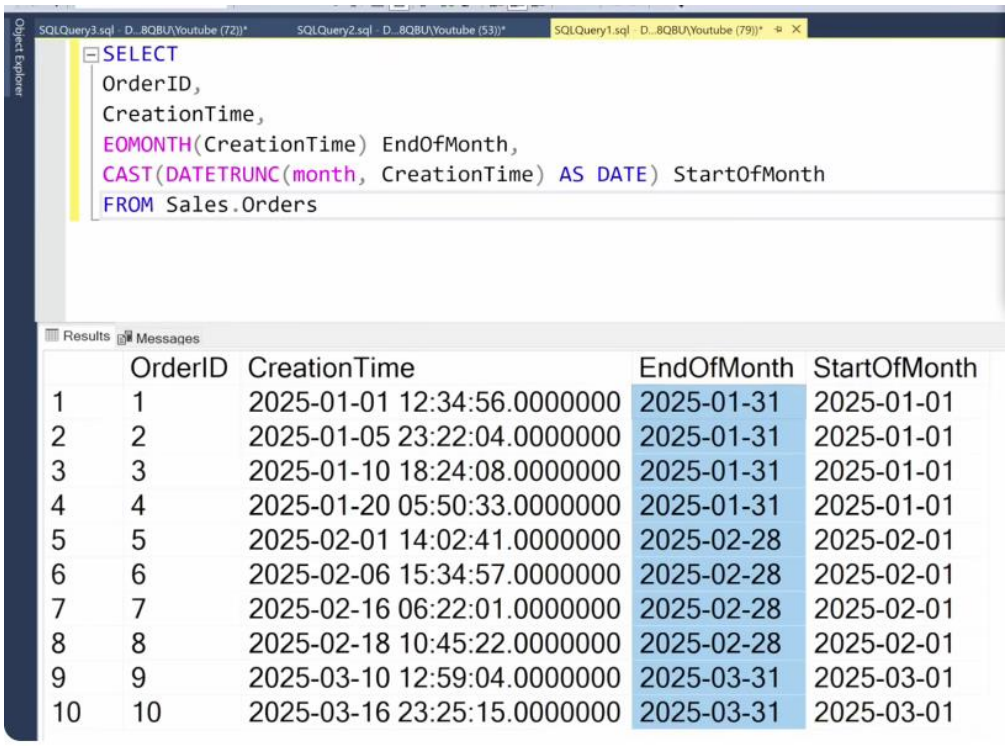
EOMONTH:



```
SELECT
OrderID,
CreationTime,
EOMONTH(CreationTime) EndOfMonth
FROM Sales.Orders
```

Results Messages

	OrderID	CreationTime	EndOfMonth
1	1	2025-01-01 12:34:56.0000000	2025-01-31
2	2	2025-01-05 23:22:04.0000000	2025-01-31
3	3	2025-01-10 18:24:08.0000000	2025-01-31
4	4	2025-01-20 05:50:33.0000000	2025-01-31
5	5	2025-02-01 14:02:41.0000000	2025-02-28
6	6	2025-02-06 15:34:57.0000000	2025-02-28
7	7	2025-02-16 06:22:01.0000000	2025-02-28
8	8	2025-02-18 10:45:22.0000000	2025-02-28
9	9	2025-03-10 12:59:04.0000000	2025-03-31
10	10	2025-03-16 23:25:15.0000000	2025-03-31



```
SELECT
OrderID,
CreationTime,
EOMONTH(CreationTime) EndOfMonth,
CAST(DATETRUNC(month, CreationTime) AS DATE) StartOfMonth
FROM Sales.Orders
```

Results Messages

	OrderID	CreationTime	EndOfMonth	StartOfMonth
1	1	2025-01-01 12:34:56.0000000	2025-01-31	2025-01-01
2	2	2025-01-05 23:22:04.0000000	2025-01-31	2025-01-01
3	3	2025-01-10 18:24:08.0000000	2025-01-31	2025-01-01
4	4	2025-01-20 05:50:33.0000000	2025-01-31	2025-01-01
5	5	2025-02-01 14:02:41.0000000	2025-02-28	2025-02-01
6	6	2025-02-06 15:34:57.0000000	2025-02-28	2025-02-01
7	7	2025-02-16 06:22:01.0000000	2025-02-28	2025-02-01
8	8	2025-02-18 10:45:22.0000000	2025-02-28	2025-02-01
9	9	2025-03-10 12:59:04.0000000	2025-03-31	2025-03-01
10	10	2025-03-16 23:25:15.0000000	2025-03-31	2025-03-01

Part Extraction USE CASE:

QUERY 1: How many orders were placed every year.

```
SELECT
YEAR(OrderDate) AS Year,
COUNT(*) AS No_of_Orders
FROM Sales.Orders
GROUP BY YEAR(OrderDate)
```

	Year	No_of_Orders
1	2025	10

QUERY 2: How many orders placed each month.

```
SELECT
MONTH(OrderDate) AS Month,
COUNT(*) AS No_of_Orders
FROM Sales.Orders
GROUP BY MONTH(OrderDate)
```

	Month	No_of_Orders
1	1	4
2	2	4
3	3	2

If we want the month name instead of numbers we use DATENAME

```
SELECT
DATENAME(MONTH,OrderDate) AS Month,
COUNT(*) AS No_of_Orders
FROM Sales.Orders
GROUP BY DATENAME(MONTH,OrderDate)
```

	Month	No_of_Orders
1	February	4
2	January	4
3	March	2

Used for Data Filtering:

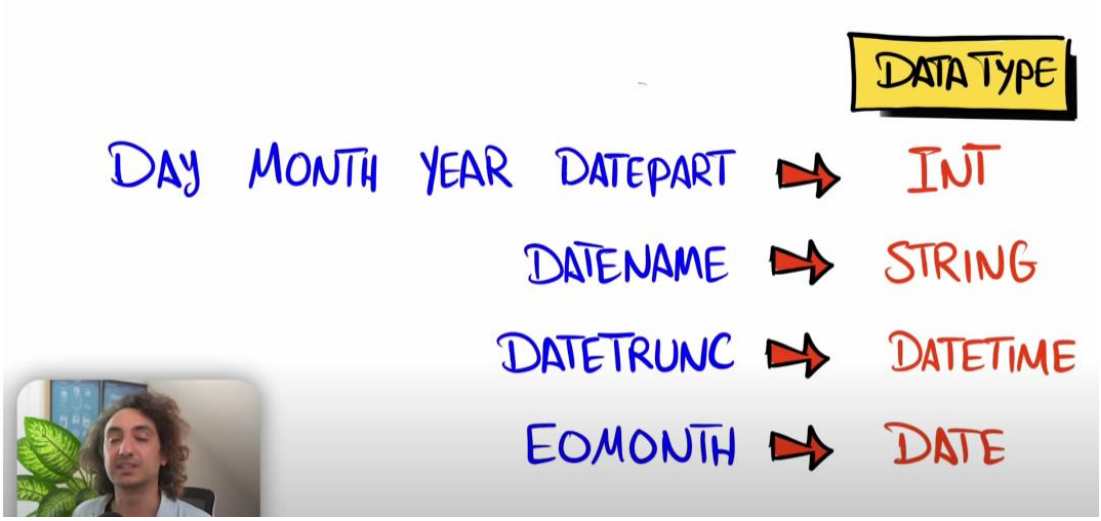
QUERY 1: Show all the orders placed during the month of February.

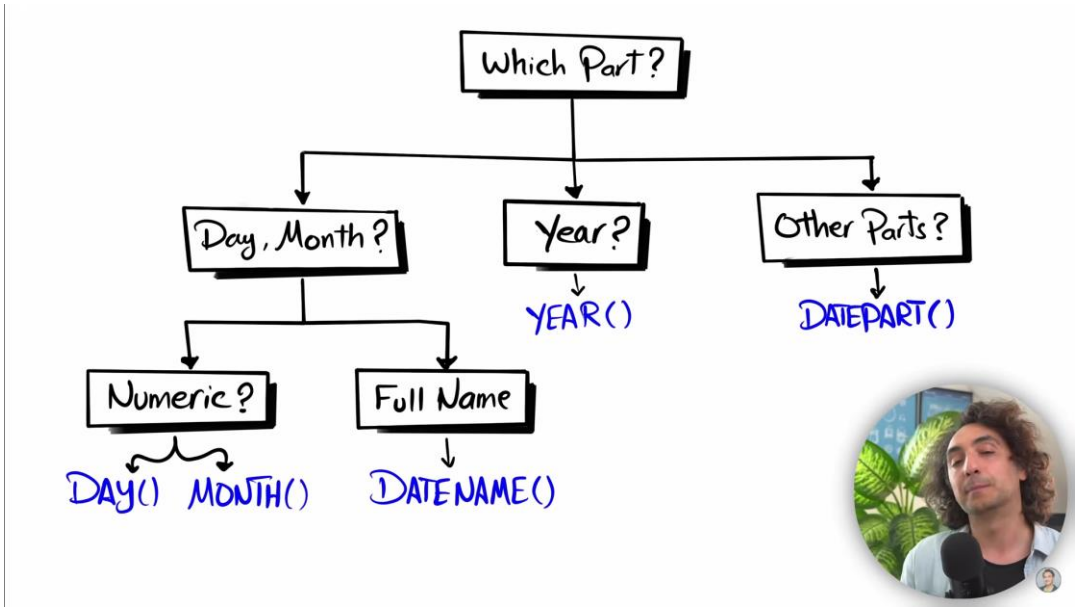
```
SELECT *
FROM Sales.Orders
WHERE MONTH(OrderDate) = 2
```

	OrderID	ProductID	CustomerID	SalesPersonID	OrderDate	ShipDate	OrderStatus	ShipAddress	BillAddress	Quantity	Sales	CreationTime
1	5	104	2	5	2025-02-01	2025-02-05	Delivered	NULL	NULL	1	25	2025-02-01 14:02:41.0000000
2	6	104	3	5	2025-02-05	2025-02-10	Delivered	1792 Belmont Rd.	NULL	2	50	2025-02-06 15:34:57.0000000
3	7	102	1	1	2025-02-15	2025-02-27	Delivered	136 Balboa Court		2	30	2025-02-16 06:22:01.0000000
4	8	101	4	3	2025-02-18	2025-02-27	Shipped	2947 Vine Lane	4311 Clay Rd	3	90	2025-02-18 10:45:22.0000000

BEST PRACTICE : FILTERING DATA USING AN INTEGER IS FASTER THAN USING A STRING.

AVOID USING DATENMAE, INSTEAD USE DATEPART.





2025-08-20
09:38:54.840

Date Parts

DATEPART

DATENAME

DATETUNC

Part	Abbre.	INT DATEPART	String DATENMAME	Datetime2 DATETRUNC
year	yy, yyyy	2025	2025	2025-01-01 00:00:00
quarter	qq,q	3	3	2025-07-01 00:00:00
month	mm,m	8	August	2025-08-01 00:00:00
dayofyear	dy,y	232	232	2025-08-20 00:00:00
day	dd, d	20	20	2025-08-20 00:00:00
weekday	dw	4	Wednesday	Not supported
week	wk,ww	34	34	2025-08-17 00:00:00
iso_week	ns	34	34	2025-08-18 00:00:00
hour	hh	9	9	2025-08-20 09:00:00
minute	mi,n	45	45	2025-08-20 09:45:00
second	ss,s	21	21	2025-08-20 09:45:21
millisecond	ms	0	0	2025-08-20 09:45:21
microsecond	msc	0	0	2025-08-20 09:45:21
nanosecond	ns	0	0	Not supported
iso_week	isowk, isoww	0	+00:00	Not supported