# Date & Time

# ◢ Date/time data types

**before 2008**

| Data Type | Bytes | Range | Precision |
|---|---|---|---|
| **datetime** | 8 | 1 Jan 1753 - 31 Dec 9999 | rounded to increments of .000, .003 of .007 sec. |
| **smalldatetime** | 4 | 1 Jan 1900 - 6 Jun 2079 | 1 minute |

**per 2008**

| | | | |
|---|---|---|---|
| **datetime2** | 6-8 | 1 Jan 0001 - 31 Dec 9999 | 100 nano sec. |
| **date** | 3 | 1 Jan 0001 - 31 Dec 9999 | 1 dag |
| **time** | 3-5 | only time | 100 nano sec. |

**https://docs.microsoft.com**/en-us/sql/t-sql/functions/date-and-time-data-types-and-functions-transact-sql

# ◄ Now

**current date & time**

```sql
SELECT CURRENT_TIMESTAMP;  -- 🐱 dinosaur: no braces
SELECT GETDATE();
```
**both return a datetime**

```sql
SELECT SYSDATETIME();
```
**return a datetime2**

# Date in WHERE clause (1)

💡 Use 'YYYYMMDD' to be as neutral as possible!

```sql
-- without time info
SELECT * FROM Sales.Orders
WHERE orderdate > '20060601';




-- with time info
SELECT * FROM Sales.Orders
WHERE orderdate < '20060601 23:59:59.999';
```

# Date in WHERE clause (2)

💡 Don't use BETWEEN with dates

```sql
-- don't do this
SELECT * FROM Sales.Orders
WHERE orderdate BETWEEN '20060101' AND '20061231
23:59:59.999';
```
**rounded by SQL to '20070101 00:00:00.000'** ↰

```sql
-- but use: >= AND <
-- example: >= 1st of monthX AND < 1st of monthY
SELECT * FROM Sales.Orders
WHERE orderdate >= '20060101' AND orderdate < '20070101';
```

# Date functions (1)

**parts of date/time**

```sql
SELECT DATENAME(month, SYSDATETIME());  -- returns NVARCHAR
SELECT DAY(SYSDATETIME());              -- returns INT
SELECT MONTH(SYSDATETIME());            -- returns INT
SELECT YEAR(SYSDATETIME());                    -- returns INT

SELECT DATEPART(month, SYSDATETIME());  -- returns INT
```

**choose your unit: month, hour, quarter, week etc…**

**dates/times by using units**

```sql
SELECT DATETIME2FROMPARTS(1999, 12, 31, 23, 59, 59, 499, 3) --
y,m,d,h,min,s,frac,prec
```

# ◣ Date functions (2)

**length between 2 moments**

```sql
SELECT DATEDIFF(hour, '20171201 12:33:41', '20171202 18:45:00'); -- returns INT
```
⤷ **choose your unit**

**change date/time**

**positief number = addition,  negative number = subtraction**

```sql
SELECT DATEADD(minute, 1440, '20171201 00:00');
```
⤷ **choose your unit**

# ◄ Warning!

💡 Don't use abbreviations for units!

```
-- Christmas 2017 is on a Monday. Pick your answer: a, b or c ?
SELECT DATEPART(w, '20171225');  -- (a) 53    (b) 2       (c) 1
SELECT DATEPART(y, '20171225');  -- (a) 17    (b) 2017    (c) 359
```

**abbreviation**

# ◄ Report on previous month data?

**EOMONTH()**

```sql
SELECT EOMONTH(SYSDATETIME());    -- last day of this month
SELECT EOMONTH(SYSDATETIME(), 0); -- last day of this month
SELECT EOMONTH(SYSDATETIME(), -1);        -- last day of previous month
```

💡 Select data of the previous month:

```sql
WHERE orderdate >= DATEADD(DAY, 1, EOMONTH(SYSDATETIME(), -2))
AND orderdate < DATEADD(DAY, 1, EOMONTH(SYSDATETIME(), -1));
```