Built-in Functions
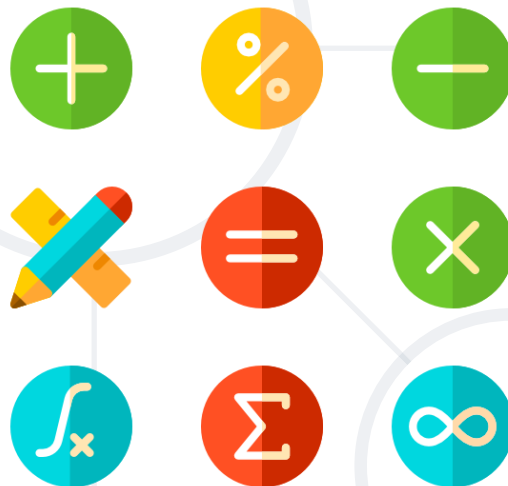
Other Functions and Wildcards in SQL Server

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GETDATE, DATEDIFF, DATEPART, Etc.

Date Functions (1)

- **DATEPART** – extract a segment from a date as an integer
  - Part can be any part and format of date or time

```
DATEPART(Part, Date)
```

year, yyyy, yy	YEAR(Date)
month, mm, m	MONTH(Date)
day, dd, d	DAY(Date)

- For a full list, take a look at the **official documentation**

Problem: Quarterly Report

- Prepare sales data for aggregation by displaying yearly quarter, month, year and day of sale

InvoiceId	InvoiceDate	Total
1	2009-01-01 00:00:00.000	1.98
2	2009-01-02 00:00:00.000	3.96
3	2009-01-03 00:00:00.000	5.94
4	2009-01-06 00:00:00.000	8.91

InvoiceId	Total	Quarter	Month	Year	Day
1	1.98	1	1	2009	1
2	3.96	1	1	2009	2
3	5.94	1	1	2009	3
4	8.91	1	1	2009	6

Solution: Quarterly Report

- Use **DATEPART** to get the relevant parts of the date

```
SELECT InvoiceId, Total,
       DATEPART(QUARTER, InvoiceDate) AS Quarter,
       DATEPART(MONTH, InvoiceDate) AS Month,
       DATEPART(YEAR, InvoiceDate) AS Year,
       DATEPART(DAY, InvoiceDate) AS Day
  FROM Invoice
```

- This statement might be useful as a View

Date Functions (2)

- **DATEDIFF** – finds the difference between two dates
  - **Part** can be **any part** and **format** of date or time

```
DATEDIFF(Part, FirstDate, SecondDate)
```

- Example: Show employee experience

```
SELECT ID, FirstName, LastName,
       DATEDIFF(YEAR, HireDate, '2017/01/25')
   AS [Years In Service]
FROM Employees
```

Date Functions (3)

- **DATENAME** – gets a string representation of a date's part

```
DATENAME(Part, Date)
```

```
SELECT DATENAME(weekday, '2017/01/27')
```

- **DATEADD** – performs date arithmetic

  - **Part** can be **any part** and **format** of date or time

```
DATEADD(Part, Number, Date)
```

- **GETDATE** – obtains the current date and time

```
SELECT GETDATE()
```

- **EOMONTH** – returns the last day of the month

Other Functions

CAST, CONVERT, OFFSET, FETCH

Other Functions (1)

- **CAST** & **CONVERT** – conversion between data types

CAST(Data AS NewType)
CONVERT(NewType, Data)

- **ISNULL** – swaps **NULL** values with a specified **default value**

ISNULL(Data, DefaultValue)

- Example: Display "Not Finished" for projects with no EndDate

```
SELECT ProjectID, Name,
       ISNULL(CAST(EndDate AS varchar), 'Not Finished')
  FROM Projects
```

- **COALESCE** – evaluates the arguments in order and returns the current value of the first expression that initially does not evaluate to **NULL**

```sql
SELECT COALESCE(NULL, NULL, 'third_value',
'fourth_value');

// third_value
```

Other Functions (3)

- **OFFSET** & **FETCH** – get only specific rows from the result set
  - Used in combination with **ORDER BY** for pagination

```
SELECT ID, FirstName, LastName
    FROM Employees
ORDER BY ID
    OFFSET 10 ROWS
    FETCH NEXT 5 ROWS ONLY
```

Rows to skip

Rows to include

Ranking Functions

- **ROW_NUMBER** – always generate unique values without any gaps, even if there are ties

- **RANK** – can have gaps in its sequence and when values are the same, they get the same rank

- **DENSE_RANK** – returns the same rank for ties, but it doesn't have any gaps in the sequence

- **NTILE** – Distributes the rows in an ordered partition into a specified number of groups

Wildcards

Selecting Results by Partial Match

Using WHERE … LIKE

- **Wildcards** are used with **WHERE** for partial filtration

- Similar to **Regular Expressions**, but **less capable**

- Example: Find all employees who's first name **starts with "Ro"**

```
SELECT ID, FirstName, LastName
  FROM Employees
 WHERE FirstName LIKE 'Ro%'
```

Wildcard symbol

Wildcard Characters

- Supported characters include:

```
%     -- any string, including zero-length
_     -- any single character
[…]   -- any character within range
[^…] -- any character not in the range
```
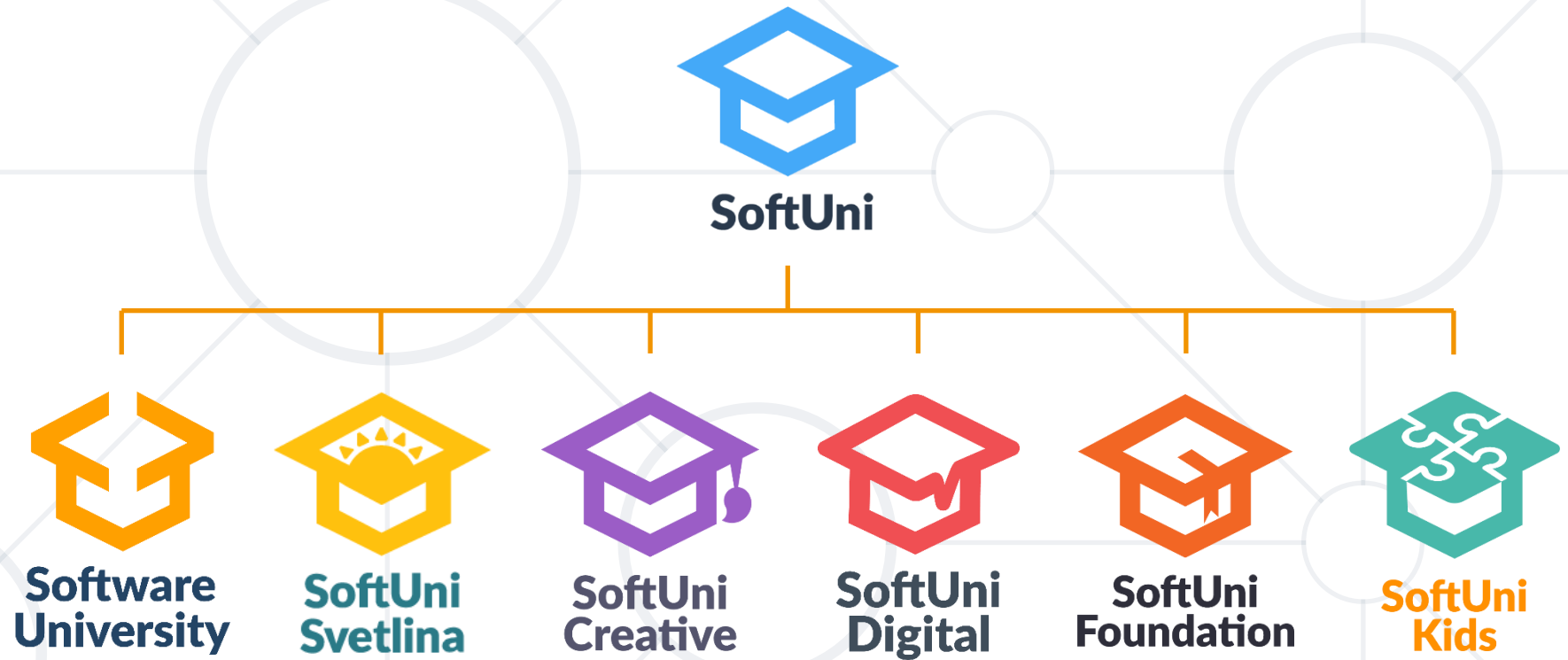
- **ESCAPE** – specify a prefix to treat special characters as normal

```
SELECT ID, Name
  FROM Tracks
 WHERE Name LIKE '%max!%' ESCAPE '!'
```

Summary

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- Date functions - **DATEPART**, **DATEDIFF**, **GETDATE**, etc.
- Using **Wildcards**, we can obtain results by partial string matches

Questions?

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