Functions for positions

SQL SERVER FUNCTIONS FOR MANIPULATING DATA

Ana Voicu
Data Engineer

Position functions

- LEN()
- CHARINDEX()
- PATINDEX()

LEN()

Definition

- Returns the number of characters of the provided string.

Syntax

```
LEN(character_expression)
```

LEN() example - constant parameter

```
SELECT LEN('Do you know the length of this sentence?') AS length
```

```
|length|
|------|
|40    |
```

LEN() example - table column parameter

```
SELECT DISTINCT TOP 5
    bean_origin,
    LEN(bean_origin) AS length
FROM ratings;
```

The result represents the length of each string stored in this column.

```
|bean_origin              |length|
|-------------------------|------|
|Toscano Black            |13    |
|Trinite                  |7     |
|Ocumare- Puerto Cabello  |23    |
|Maracaibo- El Rosario    |21    |
|Madagascar               |10    |
```

CHARINDEX()

Definition

- Looks for a character expression in a given string.
- Returns its starting position.

Syntax

```
CHARINDEX (expression_to_find, expression_to_search [, start_location])
```

CHARINDEX() example

```
SELECT
 CHARINDEX('chocolate', 'White chocolate is not real chocolate'),
 CHARINDEX('chocolate', 'White chocolate is not real chocolate',10),
 CHARINDEX('chocolates', 'White chocolate is not real chocolate');
```

The search of the word “chocolate” will start after the first 10 characters.

```
|position beginning|position in string|position of non-existing exp|
|------------------|------------------|---------------------------|
|7                 |29                |0                          |
```

PATINDEX()

Definition

- Similar to CHARINDEX()
- Returns the starting position of a pattern in an expression

Syntax

```
PATINDEX ('%pattern%', expression, [location ])
```

Wildcard characters

Wildcard	Explanation
%	Match any string of any length (including zero length)
_	Match on a single character
[ ]	Match on any character in the [ ] brackets (for example, [abc] would match on a, b, or c characters)

PATINDEX() example

```
SELECT
  PATINDEX('%chocolate%', 'White chocolate is not real chocolate') AS position1,
  PATINDEX('%ch_c%', 'White chocolate is not real chocolate') AS position2;
```

```
|position1|position2|
|---------|---------|
|7        |7        |
```

Let's practice!

SQL SERVER FUNCTIONS FOR MANIPULATING DATA

Functions for string transformation

SQL SERVER FUNCTIONS FOR MANIPULATING DATA

Ana Voicu
Data Engineer

LOWER() and UPPER()

```
LOWER(character_expression)
```

- Converts all characters from a string to lowercase.

```
UPPER(character_expression)
```

- Converts all characters from a string to uppercase.

LOWER() and UPPER() example

```
SELECT
    country,
    LOWER(country) AS country_lowercase,
    UPPER(country) AS country_uppercase
FROM voters;
```

```
| country | country_lowercase | country_uppercase |
|---------|-------------------|-------------------|
| Denmark | denmark           | DENMARK           |
| France  | france            | FRANCE            |
| Belgium | belgium           | BELGIUM           |
```

LEFT() and RIGHT()

```
LEFT(character_expression, number_of_characters)
```

- Returns the specified number of characters from the beginning of the string

```
RIGHT(character_expression, number_of_characters)
```

- Returns the specified number of characters from the end of the string

LEFT() and RIGHT() example

```
SELECT
    country,
    LEFT(country, 3) AS country_prefix,
    email,
    RIGHT(email, 4) AS email_domain
FROM voters;
```

```
| country | country_prefix | email               | email_domain |
|---------|----------------|---------------------|--------------|
| Denmark | Den            | carol8@yahoo.com    | .com         |
| France  | Fra            | ana0@gmail.com      | .com         |
| Belgium | Bel            | angela23@gmail.com  | .com         |
```

LTRIM(), RTRIM(), and TRIM()

```
LTRIM(character_expression)
```

- Returns a string after removing the leading blanks.

```
RTRIM(character_expression)
```

- Returns a string after removing the trailing blanks.

```
TRIM([characters FROM] character_expression)
```

- Returns a string after removing the blanks or other specified characters.

REPLACE()

```
REPLACE(character_expression, searched_expression, replacement_expression)
```

- Returns a string where all occurrences of an expression are replaced with another one.

```
SELECT REPLACE('I like apples, apples are good.', 'apple', 'orange') AS result;
```

```
| result                              |
|-------------------------------------|
|I like oranges, oranges are good.|
```

SUBSTRING()

`SUBSTRING(character_expression, start, number_of_characters)`

- Returns part of a string.

```
SELECT SUBSTRING('123456789', 5, 3) AS result;
```

```
| result |
|--------|
| 567    |
```

Let's practice!

SQL SERVER FUNCTIONS FOR MANIPULATING DATA

Functions manipulating groups of strings

SQL SERVER FUNCTIONS FOR MANIPULATING DATA

Ana Voicu
Data Engineer

CONCAT() and CONCAT_WS()

```
CONCAT(string1, string2 [, stringN ])
```

```
CONCAT_WS(separator, string1, string2 [, stringN ])
```

Keep in mind: concatenating data with functions is better than using the "+" operator.

You can concatenate all data types, not only strings.

CONCAT() and CONCAT_WS() example

```
SELECT
    CONCAT('Apples', 'and', 'oranges') AS result_concat,
    CONCAT_WS(' ', 'Apples', 'and', 'oranges') AS result_concat_ws,
    CONCAT_WS('***', 'Apples', 'and', 'oranges') AS result_concat_ws2;
```

```
| result_concat    | result_concat_ws   | result_concat_ws2       |
|------------------|--------------------|-------------------------|
| Applesandoranges | Apples and oranges | Apples***and***oranges |
```

STRING_AGG()

```
STRING_AGG(expression, separator) [ <order_clause> ]
```

- Concatenates the values of string expressions and places separator values between them.

STRING_AGG() example

```
SELECT
    STRING_AGG(first_name, ',') AS list_of_names
FROM voters;
```

```
| list_of_names                          |
|----------------------------------------|
| Carol,Ana,Melissa,Angela,Grace,Melody... |
```

```
SELECT
    STRING_AGG(CONCAT(first_name, ' ', last_name, ' (', first_vote_date, ')'), CHAR(13))  AS list_of_names
FROM voters;
```

CHAR(13) is the carriage return character.

```
| list_of_names                   |
|---------------------------------|
| Carol Rai (2015-03-09)          |
| Ana Price (2015-01-17) ...      |
```

STRING_AGG() with GROUP BY

```
SELECT
    YEAR(first_vote_date) AS voting_year,
    STRING_AGG(first_name, ', ') AS voters
FROM voters
GROUP BY YEAR(first_vote_date);
```

```
| voting_year | voters                              |
|-------------|-------------------------------------|
| 2013        | Melody, Clinton, Kaylee,...         |
| 2014        | Brett, Joe, April, Mackenzie,...    |
| 2015        | Cedric, Julie, Sandra,...           |
| 2016        | Isabella, Vincent, Haley,...        |
```

STRING_AGG() with the optional <order_clause>

```
SELECT
    YEAR(first_vote_date) AS voting_year,
    STRING_AGG(first_name, ', ') WITHIN GROUP (ORDER BY first_name ASC) AS voters
FROM voters
GROUP BY YEAR(first_vote_date);
```

```
| voting_year | voters                          |
|-------------|---------------------------------|
| 2013        | Amanda, Anthony, Caroline,...   |
| 2014        | April, Brett, Bruce, Carl, ...  |
| 2015        | Abigail, Alberto, Alexa,...     |
| 2016        | Barbara, Haley, Isabella,...    |
```

STRING_SPLIT()

```
STRING_SPLIT(string, separator)
```

- Divides a string into smaller pieces, based on a separator.
- Returns a single column table.

```
SELECT *
FROM STRING_SPLIT('1,2,3,4', ',')
```

You can only use it in the FROM clause, just like a normal table.

```
| value |
|-------|
| 1     |
| 2     |
| 3     |
| 4     |
```

Let's practice!

SQL SERVER FUNCTIONS FOR MANIPULATING DATA