

startofday()

Article • 02/06/2023

Returns the start of the day containing the date, shifted by an offset, if provided.

Syntax

```
startofday( date [, offset ] )
```

Parameters

Name	Type	Required	Description
<i>date</i>	datetime	✓	The date for which to find the start.
<i>offset</i>	int		The number of days to offset from the input date. The default is 0.

Returns

A datetime representing the start of the day for the given *date* value, with the offset, if specified.

Example

Run the query

Kusto

```
range offset from -1 to 1 step 1
| project dayStart = startofday(datetime(2017-01-01 10:10:17), offset)
```

Output

dayStart

2016-12-31 00:00:00.0000000

2017-01-01 00:00:00.0000000

dayStart

2017-01-02 00:00:00.0000000

Feedback

Was this page helpful?

 Yes

 No

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startofmonth()

Article • 02/06/2023

Returns the start of the month containing the date, shifted by an offset, if provided.

Syntax

```
startofmonth(date [, offset ])
```

Parameters

Name	Type	Required	Description
<i>date</i>	datetime	✓	The date for which to find the start of month.
<i>offset</i>	int		The number of months to offset from the input date. The default is 0.

Returns

A datetime representing the start of the month for the given *date* value, with the offset, if specified.

Example

Run the query

Kusto

```
range offset from -1 to 1 step 1
| project monthStart = startofmonth(datetime(2017-01-01 10:10:17), offset)
```

Output

monthStart

2016-12-01 00:00:00.0000000

2017-01-01 00:00:00.0000000

monthStart

2017-02-01 00:00:00.0000000

Feedback

Was this page helpful?

 Yes

 No

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startofweek()

Article • 02/06/2023

Returns the start of the week containing the date, shifted by an offset, if provided.

Start of the week is considered to be a Sunday.

Syntax

```
startofweek(date [, offset ])
```

Parameters

Name	Type	Required	Description
<i>date</i>	datetime	✓	The date for which to find the start of week.
<i>offset</i>	int		The number of weeks to offset from the input date. The default is 0.

Returns

A datetime representing the start of the week for the given *date* value, with the offset, if specified.

Example

Run the query

Kusto

```
range offset from -1 to 1 step 1
| project weekStart = startofweek(datetime(2017-01-01 10:10:17), offset)
```

Output

weekStart
2016-12-25 00:00:00.0000000

weekStart

2017-01-01 00:00:00.0000000

2017-01-08 00:00:00.0000000

Feedback

Was this page helpful?

 Yes

 No

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startofyear()

Article • 02/06/2023

Returns the start of the year containing the date, shifted by an offset, if provided.

Syntax

```
startofyear(date [, offset ])
```

Parameters

Name	Type	Required	Description
<i>date</i>	datetime	✓	The date for which to find the start of the year.
<i>offset</i>	int		The number of years to offset from the input date. The default is 0.

Returns

A datetime representing the start of the year for the given *date* value, with the offset, if specified.

Example

Run the query

Kusto

```
range offset from -1 to 1 step 1
| project yearStart = startofyear(datetime(2017-01-01 10:10:17), offset)
```

Output

yearStart

2016-01-01 00:00:00.0000000

2017-01-01 00:00:00.0000000

yearStart

2018-01-01 00:00:00.0000000

Feedback

Was this page helpful?

 Yes

 No

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strcat()

Article • 02/06/2023

Concatenates between 1 and 64 arguments.

Syntax

```
strcat(argument1, argument2 [, argument3 ... ])
```

Parameters

Name	Type	Required	Description
<i>argument1</i> ... <i>argumentN</i>	scalar	✓	The expressions to concatenate.

ⓘ Note

If the arguments aren't of string type, they'll be forcibly converted to string.

Returns

The arguments concatenated to a single string.

Examples

Run the query

```
Kusto
```

```
print str = strcat("hello", " ", "world")
```

Output

```
str
```

```
hello world
```

Feedback

Was this page helpful?

 Yes

 No

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strcat_array()

Article • 02/06/2023

Creates a concatenated string of array values using a specified delimiter.

Syntax

```
strcat_array(array, delimiter)
```

Parameters

Name	Type	Required	Description
<i>array</i>	dynamic	✓	An array of values to be concatenated.
<i>delimiter</i>	string	✓	The value used to concatenate the values in <i>array</i> .

Returns

The input *array* values concatenated to a single string with the specified *delimiter*.

Examples

Run the query

Kusto

```
print str = strcat_array(dynamic([1, 2, 3]), "->")
```

Output

str

1->2->3

Feedback

Was this page helpful?

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strcat_delim()

Article • 02/06/2023

Concatenates between 2 and 64 arguments, using a specified delimiter as the first argument.

Syntax

```
strcat_delim( delimiter, argument1, argument2[ , argumentN] )
```

Parameters

Name	Type	Required	Description
<i>delimiter</i>	string	✓	The string to be used as separator in the concatenation.
<i>argument1</i> ...	scalar	✓	The expressions to concatenate.
<i>argumentN</i>			

ⓘ Note

If the arguments aren't of string type, they'll be forcibly converted to string.

Returns

The arguments concatenated to a single string with *delimiter*.

Example

Run the query

```
Kusto
```

```
print st = strcat_delim('-', 1, '2', 'A', 1s)
```

Output

st

1-2-A-00:00:01

Feedback

Was this page helpful?

 Yes

 No

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strcmp()

Article • 02/20/2023

Compares two strings.

The function starts comparing the first character of each string. If they're equal to each other, it continues with the following pairs until the characters differ or until the end of shorter string is reached.

Syntax

```
strcmp(string1, string2)
```

Parameters

Name	Type	Required	Description
<i>string1</i>	string	✓	The first input string for comparison.
<i>string2</i>	string	✓	The second input string for comparison.

Returns

Returns an integer value indicating the relationship between the strings:

- *<0* - the first character that doesn't match has a lower value in *string1* than in *string2*
- *0* - the contents of both strings are equal
- *>0* - the first character that doesn't match has a greater value in *string1* than in *string2*

Example

Run the query

Kusto

```
datatable(string1:string, string2:string) [
    "ABC", "ABC",
    "abc", "ABC",
```

```
"ABC", "abc",
"abcde", "abc"
]
| extend result = strcmp(string1,string2)
```

Output

string1	string2	result
ABC	ABC	0
abc	ABC	1
ABC	abc	-1
abcde	abc	1

Feedback

Was this page helpful?  Yes  No

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string_size()

Article • 02/20/2023

Returns the size, in bytes, of the input string.

Syntax

```
string_size(source)
```

Parameters

Name	Type	Required	Description
<i>source</i>	string	✓	The string for which to return the byte size.

Returns

Returns the length, in bytes, of the input string.

Examples

String of letters

Run the query

```
Kusto  
print size = string_size("hello")
```

Output

size
5

String of letters and symbols

Run the query

Kusto

```
print size = string_size("(k)(u)(s)(t)(o)")
```

Output

size
15

Feedback

Was this page helpful?

 Yes

 No

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strlen()

Article • 02/20/2023

Returns the length, in characters, of the input string.

ⓘ Note

This function counts Unicode code points[↗].

Syntax

```
strlen(source)
```

Parameters

Name	Type	Required	Description
<i>source</i>	string	✓	The string for which to return the length.

Returns

Returns the length, in characters, of the input string.

Examples

String of letters

Run the query

```
Kusto
```

```
print length = strlen("hello")
```

Output

```
length
```

length

5

String of letters and symbols

Run the query

Kusto

```
print length = strlen("(k)(u)(s)(t)(o)")
```

Output

length

5

String with grapheme

Run the query

Kusto

```
print strlen('Ҫedilla') // the first character is a grapheme cluster  
                      // that requires 2 code points to represent
```

Output

length

8

Feedback

Was this page helpful?

 Yes

 No

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strrep()

Article • 02/20/2023

Replicates a string the number of times specified.

Syntax

```
strrep(value, multiplier, [delimiter])
```

Parameters

Name	Type	Required	Description
<i>value</i>	string	✓	The string to replicate.
<i>multiplier</i>	int	✓	The amount of times to replicate the string. Must be a value from 1 to 1024.
<i>delimiter</i>	string		The delimiter used to separate the string replications. The default delimiter is an empty string.

⚠ Note

If *value* or *delimiter* isn't a string, they'll be forcibly converted to string.

Returns

The *value* string repeated the number of times as specified by *multiplier*, concatenated with *delimiter*.

If *multiplier* is more than the maximal allowed value of 1024, the input string will be repeated 1024 times.

Example

Run the query

Kusto

```
print from_str = strrep('ABC', 2), from_int = strrep(123,3,'.'), from_time =  
strrep(3s,2,' ')
```

Output

from_str	from_int	from_time
ABCABC	123.123.123	00:00:03 00:00:03

Feedback

Was this page helpful?

 Yes

 No

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substring()

Article • 02/20/2023

Extracts a substring from the source string starting from some index to the end of the string.

Optionally, the length of the requested substring can be specified.

Syntax

```
substring(source, startingIndex [, length])
```

Parameters

Name	Type	Required	Description
<i>source</i>	string	✓	The string from which to take the substring.
<i>startingIndex</i>	int	✓	The zero-based starting character position of the requested substring. If a negative number, the substring will be retrieved from the end of the source string.
<i>length</i>	int		The requested number of characters in the substring. The default behavior is to take from <i>startingIndex</i> to the end of the <i>source</i> string.

Returns

A substring from the given string. The substring starts at *startingIndex* (zero-based) character position and continues to the end of the string or *length* characters if specified.

Examples

Kusto

```
substring("123456", 1)      // 23456
substring("123456", 2, 2)    // 34
substring("ABCD", 0, 2)      // AB
substring("123456", -2, 2)   // 56
```

Feedback

Was this page helpful?

 Yes

 No

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tan()

Article • 02/23/2023

Returns the tangent value of the specified number.

Syntax

```
tan(x)
```

Parameters

Name	Type	Required	Description
x	real	✓	The number for which to calculate the tangent.

Returns

The result of `tan(x)`

Feedback

Was this page helpful?



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tobool()

Article • 02/20/2023

Convert inputs to boolean (signed 8-bit) representation.

The `tobool()` and `toboolean()` functions are equivalent

Syntax

```
tobool(value)
```

Parameters

Name	Type	Required	Description
<code>value</code>	string	✓	The value to convert to boolean.

Returns

If conversion is successful, result will be a boolean. If conversion isn't successful, result will be `null`.

Example

```
Kusto

tobool("true") == true
tobool("false") == false
tobool(1) == true
tobool(123) == true
```

Feedback

Was this page helpful?

 Yes

 No

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todatetime()

Article • 02/23/2023

Converts the input to a datetime scalar value.

! Note

Prefer using `datetime()` when possible.

Syntax

```
todatetime(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	scalar	✓	The value to convert to datetime.

Returns

If the conversion is successful, the result will be a datetime value. Else, the result will be `null`.

Example

Run the query

Kusto

```
print todatetime('12-02-2022') == datetime('12-02-2022')
```

Output

`print_0`

true

Feedback

Was this page helpful?

 Yes

 No

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todecimal()

Article • 02/23/2023

Converts the input to a decimal number representation.

ⓘ Note

Prefer using `real()` when possible.

Syntax

```
todecimal(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	scalar	✓	The value to convert to a decimal.

Returns

If conversion is successful, result will be a decimal number. If conversion isn't successful, result will be `null`.

Example

Run the query

Kusto

```
print todecimal("123.45678") == decimal(123.45678)
```

Output

```
print_0
```

```
true
```

Feedback

Was this page helpful?

 Yes

 No

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todouble()

Article • 02/22/2023

Converts the input expression to a value of type `real`.

The `todouble()` and `toreal()` functions are equivalent

Syntax

```
todouble(Expr)
```

Parameters

Name	Type	Required	Description
<code>value</code>	scalar	✓	The value to convert to real.

Returns

If conversion is successful, the result is a value of type `real`. Otherwise, the returned value will be `real(null)`.

Example

```
Kusto  
todouble("123.4") == 123.4
```

ⓘ Note

Use `double()` or `real()` when possible.

Feedback

Was this page helpful?

Yes

No

toguid()

Article • 02/23/2023

Converts a string to a guid scalar.

ⓘ Note

If you have a hard-coded guid, we recommend using `guid()`.

Syntax

```
toguid(value)
```

Parameters

Name	Type	Required	Description
<code>value</code>	scalar	✓	The value to convert to guid.

Returns

The conversion process takes the first 32 characters of the input, ignoring properly located hyphens, validates that the characters are between 0-9 or a-f, and then converts the string into a guid scalar. The rest of the string is ignored.

If the conversion is successful, the result will be a guid scalar. Otherwise, the result will be `null`.

Example

Run the query

Kusto

```
datatable(str: string)
[
    "0123456789abcdef0123456789abcdef",
    "0123456789ab-cdef-0123-456789abcdef",
    "a string that is not a guid"
```

```
]  
| extend guid = toguid(str)
```

Output

str	guid
0123456789abcdef0123456789abcdef	01234567-89ab-cdef-0123-456789abcdef
0123456789ab-cdef-0123-456789abcdef	01234567-89ab-cdef-0123-456789abcdef
a string that isn't a guid	

Feedback

Was this page helpful?

 Yes

 No

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tohex()

Article • 02/23/2023

Converts input to a hexadecimal string.

Syntax

```
tohex(value [, minLength])
```

Parameters

Name	Type	Required	Description
<i>value</i>	int or long	✓	The value that will be converted to a hex string.
<i>minLength</i>	int		The value representing the number of leading characters to include in the output. Values between 1 and 16 are supported. Values greater than 16 will be truncated to 16. If the string is longer than <i>minLength</i> without leading characters, then <i>minLength</i> is effectively ignored. Negative numbers may only be represented at minimum by their underlying data size, so for an integer (32-bit) the <i>minLength</i> will be at minimum 8, for a long (64-bit) it will be at minimum 16.

Returns

If conversion is successful, result will be a string value. If conversion is not successful, result will be `null`.

Example

Run the query

Kusto

```
print
    tohex(256) == '100',
    tohex(-256) == 'fffffffffffff00', // 64-bit 2's complement of -256
    tohex(toint(-256), 8) == 'ffffff00', // 32-bit 2's complement of -256
```

```
tohex(256, 8) == '00000100',
tohex(256, 2) == '100' // Exceeds min length of 2, so min length is
ignored.
```

Output

print_0	print_1	print_2	print_3	print_04
true	true	true	true	true

Feedback

Was this page helpful?

 Yes

 No

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toint()

Article • 02/23/2023

Converts the input to an integer value (signed 32-bit) number representation.

ⓘ Note

Prefer using `int()` when possible.

Syntax

```
toint(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	scalar	✓	The value to convert to an integer.

Returns

If the conversion is successful, the result will be an integer. Otherwise, the result will be `null`.

Example

Run the query

Kusto

```
print toint("123") == 123
```

Output

```
print_0
```

```
true
```

Feedback

Was this page helpful?

 Yes

 No

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tolong()

Article • 02/27/2023

Converts the input value to a long (signed 64-bit) number representation.

ⓘ Note

Prefer using `long()` when possible.

Syntax

```
tolong(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	scalar	✓	The value to convert to a long.

Returns

If conversion is successful, the result is a long number. If conversion isn't successful, the result is `null`.

Example

Run the query

Kusto

```
tolong("123") == 123
```

Feedback

Was this page helpful?

👍 Yes

👎 No

tolower()

Article • 02/27/2023

Converts the input string to lower case.

Syntax

```
tolower(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	string	✓	The value to convert to a lowercase string.

Returns

If conversion is successful, result is a lowercase string. If conversion isn't successful, result is `null`.

Example

Run the query

Kusto

```
tolower("Hello") == "hello"
```

Feedback

Was this page helpful?

Yes

No

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tostring()

Article • 02/27/2023

Converts the input to a string representation.

Syntax

```
tostring(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	scalar	✓	The value to convert to a string.

Returns

If *value* is non-null, the result is a string representation of *value*. If *value* is null, the result is an empty string.

Example

Run the query

Kusto

```
tostring(123) == "123"
```

Feedback

Was this page helpful?

 Yes

 No

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totimespan()

Article • 02/27/2023

Converts the input to a timespan scalar value.

Deprecated aliases: totime()

Syntax

```
totimespan(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	string	✓	The value to convert to a timespan.

Returns

If conversion is successful, result will be a timespan value. Else, result will be null.

Example

Run the query

Kusto

```
totimespan("0.00:01:00") == time(1min)
```

Feedback

Was this page helpful?

Yes

No

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toupper()

Article • 02/27/2023

Converts a string to upper case.

Syntax

```
toupper(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	string	✓	The value to convert to an uppercase string.

Returns

If conversion is successful, result is an uppercase string. If conversion isn't successful, result is `null`.

Example

Run the query

Kusto

```
toupper("hello") == "HELLO"
```

Feedback

Was this page helpful?

 Yes

 No

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translate()

Article • 02/28/2023

Replaces a set of characters ('searchList') with another set of characters ('replacementList') in a given a string. The function searches for characters in the 'searchList' and replaces them with the corresponding characters in 'replacementList'

Syntax

```
translate(searchList, replacementList, source)
```

Parameters

Name	Type	Required	Description
<i>searchList</i>	string	✓	The list of characters that should be replaced.
<i>replacementList</i>	string	✓	The list of characters that should replace the characters in <i>searchList</i> .
<i>source</i>	string	✓	A string to search.

Returns

source after replacing all occurrences of characters in 'replacementList' with the corresponding characters in 'searchList'

Examples

Input	Output
<code>translate("abc", "x", "abc")</code>	"xxx"
<code>translate("abc", "", "ab")</code>	" "
<code>translate("krasp", "otsku", "spark")</code>	"kusto"

Feedback

Was this page helpful?

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treepath()

Article • 02/27/2023

Enumerates all the path expressions that identify leaves in a dynamic object.

Syntax

```
treepath(object)
```

Parameters

Name	Type	Required	Description
<i>object</i>	dynamic	✓	A dynamic property bag object for which to enumerate the path expressions.

Returns

An array of path expressions.

Examples

Expression	Evaluates to
<code>treepath(parse_json('{"a":"b", "c":123}'))</code>	<code>[["['a']","['c']"]]</code>
<code>treepath(parse_json('{"prop1":[1,2,3,4], "prop2":"value2"}'))</code>	<code>[["['prop1']","['prop1'][0]","['prop2']]</code>
<code>treepath(parse_json('{"listProperty": [100,200,300,"abcde", {"x":"y"}]}'))</code>	<code>[["['listProperty']","['listProperty'][0]","['listProperty'][0]['x']]</code>

Feedback

Was this page helpful?

 Yes

 No

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trim()

Article • 02/28/2023

Removes all leading and trailing matches of the specified regular expression.

Syntax

```
trim(regex, source)
```

Parameters

Name	Type	Required	Description
<i>regex</i>	string	✓	The string or regular expression to be trimmed from <i>source</i> .
<i>source</i>	string	✓	The source string from which to trim <i>regex</i> .

Returns

source after trimming matches of *regex* found in the beginning and/or the end of *source*.

Example

The following statement trims *substring* from the start and the end of the *string_to_trim*.

[Run the query](#)

```
Kusto

let string_to_trim = @"--https://bing.com--";
let substring = "--";
print string_to_trim = string_to_trim, trimmed_string =
trim(substring,string_to_trim)
```

Output

string_to_trim	trimmed_string
--https://bing.com--	https://bing.com

The next statement trims all non-word characters from start and end of the string.

Run the query

Kusto

```
range x from 1 to 5 step 1
| project str = strcat("- ", "Te st", x, "@// $")
| extend trimmed_str = trim(@"[^\w]+", str)
```

Output

str	trimmed_str
- Te st1// \$	Te st1
- Te st2// \$	Te st2
- Te st3// \$	Te st3
- Te st4// \$	Te st4
- Te st5// \$	Te st5

Feedback

Was this page helpful?



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trim_end()

Article • 02/28/2023

Removes trailing match of the specified regular expression.

Syntax

```
trim_end(regex, source)
```

Parameters

Name	Type	Required	Description
<i>regex</i>	string	✓	The string or regular expression to be trimmed from the end of <i>source</i> .
<i>source</i>	string	✓	The source string from which to trim <i>regex</i> .

Returns

source after trimming matches of *regex* found in the end of *source*.

Examples

The following statement trims *substring* from the end of *string_to_trim*.

[Run the query](#)

Kusto

```
let string_to_trim = @"bing.com";
let substring = ".com";
print string_to_trim = string_to_trim,trimmed_string =
    trim_end(substring,string_to_trim)
```

Output

string_to_trim	trimmed_string
bing.com	bing

The next statement trims all non-word characters from the end of the string.

Run the query

Kusto

```
print str = strcat("- ", "Te st", x, "@// $")
| extend trimmed_str = trim_end(@"[^\w]+", str)
```

Output

str	trimmed_str
- Te st1// \$	- Te st1
- Te st2// \$	- Te st2
- Te st3// \$	- Te st3
- Te st4// \$	- Te st4
- Te st5// \$	- Te st5

Feedback

Was this page helpful?

 Yes

 No

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trim_start()

Article • 02/28/2023

Removes leading match of the specified regular expression.

Syntax

```
trim_start(regex, source)
```

Parameters

Name	Type	Required	Description
<i>regex</i>	string	✓	The string or regular expression to be trimmed from the beginning of <i>source</i> .
<i>source</i>	string	✓	The source string from which to trim <i>regex</i> .

Returns

source after trimming match of *regex* found in the beginning of *source*.

Examples

The following statement trims *substring* from the start of *string_to_trim*.

Run the query

Kusto

```
let string_to_trim = @"https://bing.com";
let substring = "https://";
print string_to_trim = string_to_trim,trimmed_string =
trim_start(substring,string_to_trim)
```

Output

string_to_trim	trimmed_string
https://bing.com	bing.com

The next statement trims all non-word characters from the beginning of the string.

[Run the query](#)

Kusto

```
range x from 1 to 5 step 1
| project str = strcat("- ", "Te st", x, "@// $")
| extend trimmed_str = trim_start(@"[^\w]+", str)
```

Output

str	trimmed_str
- Te st1// \$	Te st1// \$
- Te st2// \$	Te st2// \$
- Te st3// \$	Te st3// \$
- Te st4// \$	Te st4// \$
- Te st5// \$	Te st5// \$

Feedback

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unicode_codepoints_from_string()

Article • 02/28/2023

Returns a dynamic array of the Unicode codepoints of the input string. This function is the inverse operation of `unicode_codepoints_to_string()` function.

Deprecated aliases: `to_utf8()`

Syntax

```
unicode_codepoints_from_string(value)
```

Parameters

Name	Type	Required	Description
<i>value</i>	string	✓	The source string to convert.

Returns

Returns a dynamic array of the Unicode codepoints of the characters that make up the string provided to this function. See `unicode_codepoints_to_string()`

Examples

Run the query

```
Kusto
```

```
print arr = unicode_codepoints_from_string("(k)(u)(s)(t)o")
```

Output

```
arr
```

```
[9382, 9392, 9390, 9391, 9386]
```

Run the query

Kusto

```
print arr = unicode_codepoints_from_string("ਕੁਸਟੋ - Kusto")
```

Output

arr

```
[1511, 1493, 1505, 1496, 1493, 32, 45, 32, 75, 117, 115, 116, 111]
```

Run the query

Kusto

```
print str =
unicode_codepoints_to_string(unicode_codepoints_from_string("Kusto"))
```

Output

str

```
Kusto
```

Feedback

Was this page helpful?

 Yes

 No

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unicode_codepoints_to_string()

Article • 02/28/2023

Returns the string represented by the Unicode codepoints. This function is the inverse operation of `unicode_codepoints_from_string()` function.

Deprecated aliases: `make_string()`

Syntax

```
unicode_codepoints_to_string (values)
```

Parameters

Name	Type	Required	Description
<code>values</code>	int, long, or dynamic	✓	One or more comma-separated values to convert. The values may also be a dynamic array.

ⓘ Note

This function receives up to 64 arguments.

Returns

Returns the string made of the UTF characters whose Unicode codepoint value is provided by the arguments to this function. The input must consist of valid Unicode codepoints. If any argument isn't a valid Unicode codepoint, the function returns `null`.

Examples

Run the query

Kusto

```
print str = unicode_codepoints_to_string(75, 117, 115, 116, 111)
```

Output

str

Kusto

Run the query

Kusto

```
print str = unicode_codepoints_to_string(dynamic([75, 117, 115, 116, 111]))
```

Output

str

Kusto

Run the query

Kusto

```
print str = unicode_codepoints_to_string(dynamic([75, 117, 115]), 116, 111)
```

Output

str

Kusto

Run the query

Kusto

```
print str = unicode_codepoints_to_string(75, 10, 117, 10, 115, 10, 116, 10, 111)
```

Output

str

K
u
s
t
o

Run the query

Kusto

```
print str = unicode_codepoints_to_string(range(48,57), range(65,90),
range(97,122))
```

Output

str
0123456789ABCDEFGHIJKLMNPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz

Feedback

Was this page helpful?

 Yes

 No

Provide product feedback  | Get help at Microsoft Q&A

unixtime_microseconds_todatetime()

Article • 02/28/2023

Converts unix-epoch microseconds to UTC datetime.

Syntax

```
unixtime_microseconds_todatetime( microseconds )
```

Parameters

Name	Type	Required	Description
<i>microseconds</i>	real	✓	The epoch timestamp in microseconds. A <code>datetime</code> value that occurs before the epoch time (1970-01-01 00:00:00) has a negative timestamp value.

Returns

If the conversion is successful, the result is a datetime value. Otherwise, the result is null.

Example

Run the query

Kusto

```
print date_time = unixtime_microseconds_todatetime(1546300800000000)
```

Output

`date_time`

```
2019-01-01 00:00:00.0000000
```

See also

- Convert unix-epoch seconds to UTC datetime using `unixtime_seconds_todatetime()`.
 - Convert unix-epoch milliseconds to UTC datetime using `unixtime_milliseconds_todatetime()`.
 - Convert unix-epoch nanoseconds to UTC datetime using `unixtime_nanoseconds_todatetime()`.
-

Feedback

Was this page helpful?

 Yes

 No

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unixtime_milliseconds_todatetime()

Article • 02/28/2023

Converts unix-epoch milliseconds to UTC datetime.

Syntax

```
unixtime_milliseconds_todatetime(milliseconds)
```

Parameters

Name	Type	Required	Description
<i>milliseconds</i>	real	✓	The epoch timestamp in microseconds. A <code>datetime</code> value that occurs before the epoch time (1970-01-01 00:00:00) has a negative timestamp value.

Returns

If the conversion is successful, the result is a datetime value. Otherwise, the result is null.

Example

Run the query

Kusto

```
print date_time = unixtime_milliseconds_todatetime(1546300800000)
```

Output

`date_time`

```
2019-01-01 00:00:00.0000000
```

See also

- Convert unix-epoch seconds to UTC datetime using `unixtime_seconds_todatetime()`.
 - Convert unix-epoch microseconds to UTC datetime using `unixtime_microseconds_todatetime()`.
 - Convert unix-epoch nanoseconds to UTC datetime using `unixtime_nanoseconds_todatetime()`.
-

Feedback

Was this page helpful?

 Yes

 No

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unixtime_nanoseconds_todatetime()

Article • 02/28/2023

Converts unix-epoch nanoseconds to UTC datetime.

Syntax

```
unixtime_nanoseconds_todatetime(nanoseconds)
```

Parameters

Name	Type	Required	Description
<i>nanoseconds</i>	real	✓	The epoch timestamp in nanoseconds. A <code>datetime</code> value that occurs before the epoch time (1970-01-01 00:00:00) has a negative timestamp value.

Returns

If the conversion is successful, the result is a datetime value. Otherwise, the result is null.

Example

Run the query

Kusto

```
print date_time = unixtime_nanoseconds_todatetime(1546300800000000000)
```

Output

`date_time`

```
2019-01-01 00:00:00.0000000
```

See also

- Convert unix-epoch seconds to UTC datetime using `unixtime_seconds_todatetime()`.
 - Convert unix-epoch milliseconds to UTC datetime using `unixtime_milliseconds_todatetime()`.
 - Convert unix-epoch microseconds to UTC datetime using `unixtime_microseconds_todatetime()`.
-

Feedback

Was this page helpful?

 Yes

 No

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unixtime_seconds_todatetime()

Article • 02/28/2023

Converts unix-epoch seconds to UTC datetime.

Syntax

```
unixtime_seconds_todatetime( seconds )
```

Parameters

Name	Type	Required	Description
<i>seconds</i>	real	✓	The epoch timestamp in seconds. A <code>datetime</code> value that occurs before the epoch time (1970-01-01 00:00:00) has a negative timestamp value.

Returns

If the conversion is successful, the result is a datetime value. Otherwise, the result is null.

Example

Run the query

Kusto

```
print date_time = unixtime_seconds_todatetime(1546300800)
```

Output

`date_time`

```
2019-01-01 00:00:00.0000000
```

See also

- Convert unix-epoch milliseconds to UTC datetime using `unixtime_milliseconds_todatetime()`.
 - Convert unix-epoch microseconds to UTC datetime using `unixtime_microseconds_todatetime()`.
 - Convert unix-epoch nanoseconds to UTC datetime using `unixtime_nanoseconds_todatetime()`.
-

Feedback

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 Yes

 No

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url_decode()

Article • 03/02/2023

The function converts an encoded URL into a regular URL representation.

For more information about URL encoding and decoding, see Percent-encoding [↗](#).

Syntax

```
url_decode(encoded_url)
```

Parameters

Name	Type	Required	Description
<i>encoded_url</i>	string	✓	The encoded URL to decode.

Returns

URL (string) in a regular representation.

Example

[Run the query](#)

Kusto

```
let url = @'https%3a%2f%2fwww.bing.com%2f';
print original = url, decoded = url_decode(url)
```

Output

original	decoded
https%3a%2f%2fwww.bing.com%2f	https://www.bing.com/

Feedback

Was this page helpful?

 Yes

 No

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url_encode()

Article • 03/12/2023

The function converts characters of the input URL into a format that can be transmitted over the internet. Differs from `url_encode_component` by encoding spaces as '+' and not as '%20' (see application/x-www-form-urlencoded here [↗](#)).

For more information about URL encoding and decoding, see [Percent-encoding ↗](#).

Syntax

```
url_encode(url)
```

Parameters

Name	Type	Required	Parameters
<i>url</i>	string	✓	The URL to encode.

Returns

URL (string) converted into a format that can be transmitted over the Internet.

Examples

[Run the query](#)

Kusto

```
let url = @"https://www.bing.com/hello world";
print original = url, encoded = url_encode(url)
```

Output

original	encoded
https://www.bing.com/hello world/	https%3a%2f%2fwww.bing.com%2fhello+world

Feedback

Was this page helpful?



Yes



No

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url_encode_component()

Article • 03/02/2023

The function converts characters of the input URL into a format that can be transmitted over the internet. Differs from `url_encode` by encoding spaces as '%20' and not as '+'.

For more information about URL encoding and decoding, see [Percent-encoding](#).

Syntax

```
url_encode_component(url)
```

Parameters

Name	Type	Required	Description
<i>url</i>	string	✓	The URL to encode.

Returns

URL (string) converted into a format that can be transmitted over the Internet.

Example

Run the query

Kusto

```
let url = @"https://www.bing.com/hello world/";
print original = url, encoded = url_encode_component(url)
```

Output

original	encoded
https://www.bing.com/hello world/	https%3a%2fwww.bing.com%2fhello%20world

Feedback

Was this page helpful?

 Yes

 No

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week_of_year()

Article • 03/02/2023

Returns an integer that represents the week number. The week number is calculated from the first week of a year, which is the one that includes the first Thursday, according to ISO 8601 ↴.

Deprecated aliases: weekofyear()

ⓘ Note

weekofyear() wasn't ISO 8601 compliant; the first week of a year was defined as the week with the year's first Wednesday in it.

Syntax

```
week_of_year(date)
```

Parameters

Name	Type	Required	Description
<i>date</i>	datetime	✓	The date for which to return the week of the year.

Returns

`week_number` - The week number that contains the given date.

Examples

Input	Output
<code>week_of_year(datetime(2020-12-31))</code>	53
<code>week_of_year(datetime(2020-06-15))</code>	25
<code>week_of_year(datetime(1970-01-01))</code>	1
<code>week_of_year(datetime(2000-01-01))</code>	52

 **Note**

`weekofyear()` is an obsolete variant of this function. `weekofyear()` was not ISO 8601 compliant; the first week of a year was defined as the week with the year's first Wednesday in it. The current version of this function, `week_of_year()`, is ISO 8601 compliant; the first week of a year is defined as the week with the year's first Thursday in it.

Feedback

Was this page helpful?

 Yes

 No

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welch_test()

Article • 03/02/2023

Computes the p_value of the Welch-test function ↗

Syntax

```
welch_test(mean1, variance1, count1, mean2, variance2, count2)
```

Parameters

Name	Type	Required	Description
mean1	real or long	✓	The mean (average) value of the first series.
variance1	real or long	✓	The variance value of the first series.
count1	real or long	✓	The count of values in the first series.
mean2	real or long	✓	The mean (average) value of the second series.
variance2	real or long	✓	The variance value of the second series.
count2	real or long	✓	The count of values in the second series.

Returns

From Wikipedia ↗:

In statistics, Welch's t-test is a two-sample location test that's used to test the hypothesis that two populations have equal means. Welch's t-test is an adaptation of Student's t-test, and is more reliable when the two samples have unequal variances and unequal sample sizes. These tests are often referred to as "unpaired" or "independent samples" t-tests. The tests are typically applied when the statistical units underlying the two samples being compared are non-overlapping. Welch's t-test is less popular than Student's t-test, and may be less familiar to readers. The test is also called "Welch's unequal variances t-test", or "unequal variances t-test".

Example

Run the query

Kusto

```
// s1, s2 values are from https://en.wikipedia.org/wiki/Welch%27s_t-test
print
    s1 = dynamic([27.5, 21.0, 19.0, 23.6, 17.0, 17.9, 16.9, 20.1, 21.9,
22.6, 23.1, 19.6, 19.0, 21.7, 21.4]),
    s2 = dynamic([27.1, 22.0, 20.8, 23.4, 23.4, 23.5, 25.8, 22.0, 24.8,
20.2, 21.9, 22.1, 22.9, 20.5, 24.4])
| mv-expand s1 to typeof(double), s2 to typeof(double)
| summarize m1=avg(s1), v1=variance(s1), c1=count(), m2=avg(s2),
v2=variance(s2), c2=count()
| extend pValue=welch_test(m1,v1,c1,m2,v2,c2)
// pValue = 0.021
```

Feedback

Was this page helpful?



Yes



No

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zip()

Article • 02/20/2023

The `zip` function accepts any number of `dynamic` arrays, and returns an array whose elements are each an array holding the elements of the input arrays of the same index.

Syntax

```
zip(arrays)
```

Parameters

Name	Type	Required	Description
<code>arrays</code>	<code>dynamic</code>	✓	The dynamic array values to zip. The function accepts between 2-16 arrays.

Examples

Run the query

Kusto

```
print zip(dynamic([1,3,5]), dynamic([2,4,6]))
```

Output

`print_0`

```
[[1,2],[3,4],[5,6]]
```

Run the query

Kusto

```
print zip(dynamic(["A", 1, 1.5]), dynamic([{}, "B"]))
```

Output

print_0

```
[[{"A":{}}, [1,"B"], [1.5, null]]
```

Run the query

Kusto

```
datatable(a:int, b:string) [1,"one",2,"two",3,"three"]  
| summarize a = make_list(a), b = make_list(b)  
| project zip(a, b)
```

Output

print_0

```
[[1,"one"],[2,"two"],[3,"three"]]
```

Feedback

Was this page helpful?

 Yes

 No

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zlib_compress_to_base64_string()

Article • 02/20/2023

Performs zlib compression and encodes the result to base64.

ⓘ Note

The only supported windows size is 15.

Syntax

```
zlib_compress_to_base64_string(string)
```

Parameters

Name	Type	Required	Description
<i>string</i>	string	✓	The string to be compressed and base64 encoded.

Returns

- Returns a `string` that represents zlib-compressed and base64-encoded original string.
- Returns an empty result if compression or encoding failed.

Example

Using Kusto Query Language

Run the query

Kusto

```
print zcomp = zlib_compress_to_base64_string("1234567890qwertyuiop")
```

Output

```
zcomp
```

```
"eAEBFADr/zEyMzQ1Njc4OTBxd2VydHI1aW9wOAkGdw=="
```

Using Python

Compression can be done using other tools, for example Python.

```
Python
```

```
print(base64.b64encode(zlib.compress(b'<original_string>')))
```

Next steps

Use `zlib_decompress_from_base64_string()` to retrieve the original uncompressed string.

Feedback

Was this page helpful?

 Yes

 No

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zlib_decompress_from_base64_string()

Article • 02/20/2023

Decodes the input string from base64 and performs zlib decompression.

ⓘ Note

The only supported windows size is 15.

Syntax

```
zlib_decompress_from_base64_string(string)
```

Parameters

Name	Type	Required	Description
<i>string</i>	string	✓	The string to decode. The string should have been compressed with zlib and then base64-encoded.

Returns

- Returns a `string` that represents the original string.
- Returns an empty result if decompression or decoding failed.
 - For example, invalid zlib-compressed and base 64-encoded strings will return an empty output.

Examples

Valid input

Run the query

Kusto

```
print zcomp =
zlib_decompress_from_base64_string("eJwLSS0uUSguKcrMS1cwNDIGACxqBQ4=")
```