

# ARRAYELEMENTAT Function

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Computes the 0-based index value for an array element in the specified column, array literal, or function that returns an array.

- This function calculates based on the outer layer of an array. If your array is nested, the count of inner elements is not factored.
- If a row contains a missing array, the returned value is 0. If it contains a value that is not recognized as an array, the returned value is null.

**Wrangle vs. SQL:** This function is part of Wrangle , a proprietary data transformation language. Wrangle is not SQL. For more information, see *Wrangle Language*.

## Basic Usage

### Array literal reference example:

```
arrayelementat([A,B,C,D],2)
```

**Output:** Returns the third value in the array, which is C.

### Column reference example:

```
arrayelementat(myArrays,9)
```

**Output:** Returns the tenth element of the arrays listed in the `myArrays` column.

### Array function example:

```
arrayelementat(concat([colA,colB]),3)
```

**Output:** Returns the fourth element of the concatenated array.

## Syntax and Arguments

```
arrayelementat(array_ref,int_index_ref)
```

Argument	Required?	Data Type	Description
array_ref	Y	string	Name of Array column, Array literal, or function returning an Array to apply to the function

int_index_ref	Y	integer (non-negative)	Index value for the array element to return. Value can be Integer literal, column containing Integer values, or function returning an Integer.
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For more information on syntax standards, see *Language Documentation Syntax Notes*.

### array\_ref

Name of the array column, array literal, or function returning an array whose elements you want to return.

- Multiple columns and wildcards are not supported.

#### Usage Notes:

Required?	Data Type	Example Value
Yes	String (column reference or function) or array literal	myArray1

### int\_index\_ref

Non-negative integer value representing the index value of the array element to return. Value can be Integer literal, column containing Integer values, or function returning an Integer.

- Value must a non-negative integer. If the value is 0, then the first element of the array is returned.
- If this value is greater than the length of the string, then a null value is returned.

#### Usage Notes:

Required?	Data Type	Example Value
Yes	Integer (non-negative)	5

## Examples

**Tip:** For additional examples, see *Common Tasks*.

### Example - Student progress across tests

This example covers the following functions:

- ARRAYLEN - Returns 1-based number of elements in an array. See *ARRAYLEN Function*.
- ARRAYELEMENTAT - Returns array element based on 0-based index parameter. See *ARRAYELEMENTAT Function*.
- ARRAYSORT - Returns array sorted in ascending or descending order. See *ARRAYSORT Function*.

#### Source:

Here are some student test scores. Individual scores are stored in the `Scores` column. You want to:

1. Flag the students who have not taken four tests.
2. Compute the range in scores for each student.

LastName	FirstName	Scores
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Allen	Amanda	[79, 83,87,81]
Bell	Bobby	[85, 92, 94, 98]
Charles	Cameron	[88,81,85]
Dudley	Danny	[82,88,81,77]
Ellis	Evan	[91,93,87,93]

**Transformation:**

First, you want to flag the students who did not take all four tests:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	IF(ARRAYLEN(Scores) < 4,"incomplete","")
<b>Parameter: New column name</b>	'Error'

This test flags Cameron Charles only.

The following transform sorts the array values in highest to lowest score:

<b>Transformation Name</b>	Edit column with formula
<b>Parameter: Columns</b>	Scores
<b>Parameter: Formula</b>	ARRAYSORT(Scores, 'descending')

The following transforms extracts the first (highest) and last (lowest) value in each student's test scores, provided that they took four tests:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	ARRAYELEMENTAT(Scores,0)
<b>Parameter: New column name</b>	'highestScore'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	ARRAYELEMENTAT(Scores,3)
<b>Parameter: New column name</b>	'lowestScore'

**Tip:** You could also generate the Error column when the Scores4 column contains a null value. If no value exists in the array for the ARRAYELEMENTAT function, a null value is returned, which would indicate in this case an insufficient number of elements (test scores).

You can now track change in test scores:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	SUBTRACT(highestScore,lowestScore)
<b>Parameter: New column name</b>	'Score_range'

**Results:**

<b>LastName</b>	<b>FirstName</b>	<b>Scores</b>	<b>Error</b>	<b>lowestScore</b>	<b>highestScore</b>	<b>Score_range</b>
Allen	Amanda	[87,83,81,79]		79	87	8
Bell	Bobby	[98,94,92,85]		85	98	13
Charles	Cameron	[88,85,81]	incomplete		88	
Dudley	Danny	[88,82,81,77]		77	88	11
Ellis	Evan	[93,93,91,87]		87	93	6