EXAMPLE - ARRAYLEN and ARRAYELEMENTAT Functions

This example illustrates how to return n-based number of elements in an array.

Functions:

Item	Description
ARRAYLEN Function	Computes the number of elements in the arrays in the specified column, array literal, or function that returns an array.
ARRAYELEMENTAT Function	Computes the 0-based index value for an array element in the specified column, array literal, or function that returns an array.
ARRAYSORT Function	Sorts array values in the specified column, array literal, or function that returns an array in ascending or descending order.

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
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:

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

This test flags Cameron Charles only.

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

Transformation Name	Edit column with formula
Parameter: Columns	Scores
Parameter: Formula	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:

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

Transformation Name	`New formula`
Parameter: Formula type	`Single row formula`
Parameter: Formula	`ARRAYELEMENTAT(Scores,3)`
Parameter: New column name	`'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:

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

Results:

LastName	FirstName	Scores	Error	lowestScore	highestScore	Score_range
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