

EXAMPLE - ARRAYLEN and ARRAYELEMENTAT Functions

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
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]

Transform:

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

```
derive type:single value:IF(ARRAYLEN(Scores) < 4,"incomplete","") as:'Error'
```

This test flags Cameron Charles only.

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

```
set column: Scores value: 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:

```
derive type:single value:ARRAYELEMENTAT(Scores,0) as:'highestScore'
```

```
derive type:single value:ARRAYELEMENTAT(Scores,3) as:'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:

```
derive type:single value:SUBTRACT(highestScore,lowestScore) as:'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