This exercise sheet is related to the Week 5 and previous lectures, so please consult the lecture notes when attempting the exercises. Please also download the example code. All can be found on BREO under “Guided Learning → Week 5”. And do not forget to read Chapter 6 of the Savitch book “Absolute Java”, which discusses arrays.

# Arrays

Consider the following tabulated data consisting of 3 data points (Order ID, Order Size and Lead Time).

**Order ID**

**Order Size**

**(rolls)**

**Lead**

**Time**

**(weeks)**

OR\_1

6

2

OR\_2

6

2

OR\_3

8

5

OR\_4

5

3

OR\_5

2

1

OR\_6

11

2

OR\_7

6

3

OR\_8

5

2

OR\_9

10

4

OR\_10

24

5

Please write a Java class Orders to manage this data.

1. Your class should be able to hold each data point in a separate array (i.e. one array for each data point – which underlying data type makes sense?).
2. Write some methods **getOrderSizeMean, getOrderSizeStandardDeviation, getLeadTimeMean** and **getLeadTimeStandardDeviation** to calculate the mean and standard deviation of the Order Size and the Lead Time, respectively.  
     
   The *mean* is calculated using the following formula:

The *standard deviation* uses the mean and is computed as follows:

*n* is the number of data items (10 in the above example). To compute the square root, use **Math.sqrt**. For instance, **Math.sqrt(2)** computes . See also <http://docs.oracle.com/javase/tutorial/essential/io/examples/Root2.java>.

1. Write an orchestrating class that reads in all 3 data points (Order ID, Order Size and Lead Time, 10 rows as above but could be variable) with the keyboard and passes them to an instance of the Orders class. You need to implement an appropriate method of this class to take the data, for instance **addRow(String orderID, int orderSize, int leadTime**). Your orchestrating class should also print the mean and the standard deviation of the Order Size and Lead Time, by calling the methods implemented in 2.

To provide a solution for this exercise, you need to work with arrays, loops and the **Scanner** class.