

## Homework 3

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# Chapter 1

## File Index

### 1.1 File List

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## Chapter 2

# File Documentation

### 2.1 hw3.cc File Reference

```
#include <iostream>
#include <vector>
#include <cmath>
```

#### Functions

- int [deviation](#) (int \*a, int n)

*This function calculates the standard deviation from a set of given numbers.*

#### 2.1.1 Function Documentation

##### 2.1.1.1 deviation()

```
int deviation (
    int * a,
    int n )
```

This function calculates the standard deviation from a set of given numbers.

#### Parameters

<i>int*</i>	a: A pointer to an int array
<i>int</i>	n: The number of entries in int* a

#### Returns

Returns the standard deviation (double)

Definition at line 19 of file hw3.cc.

```
20 {
21     vector<double> v; //Declare a vector
22
23     for (size_t i = 0; i <= n - 1; i++) //Fill vector with ints from int* a
24     {
25         v.push_back(a[i]);
26     }
27
28     double sum; //Holds the sum of the numbers
29
30     for(size_t i = 0; i <= v.size() - 1; i++) //Find the sum
31     {
32         sum += v[i];
33     }
34
35     double mean = sum /= v.size(); //Find the mean
36
37     double stddev = 0; //Initialize a double for the standard deviation
38
39     for(size_t i = 0; i <= v.size() - 1; i++) //Add every entry using the equation (v[i]-mean)^2
40     {
41         stddev = stddev + (v[i] - mean) * (v[i] - mean);
42     }
43
44     stddev = stddev / v.size(); //Divide the current stddev by the size of the vector
45
46     if(stddev == 0)
47         std::cout << "Sigma is zero." << std::endl;
48
49     return sqrt(stddev); //Return the square root of stddev, so returning the standard deviation
50 }
```



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