Lab Project: Statistics

For this project, write the following six functions to compute statistics for an array of integers named `array` of length `n` that is sorted in ascending order:

- `int minimum(int array[], int n);`

  Returns the minimum value in the array.

- `int maximum(int array[], int n);`

  Returns the maximum value in the array.

- `int range(int array[], int n);`

  Returns the range of the values in the array (maximum value - minimum value).

- `double average(int array[], int n);`

  Returns the average of the values in the array. Instructions on how to calculate this value (and a calculator to check your output) can be found on the following web page:

  https://www.calculatorsoup.com/calculators/statistics/mean-median-mode.php

- `double median(int array[], int n);`

  Returns the median value of the array. Instructions on how to calculate this value (and a calculator to check your output) can be found on the following web page:

  https://www.calculatorsoup.com/calculators/statistics/mean-median-mode.php

- `double stddev(int array[], int n);`

  Returns the standard deviation of the values in the array. The formula to calculate the standard deviation of an array of n elements that represents a complete population is:

  $$\text{Population standard deviation } (\sigma) = \sqrt{\frac{\sum_{i=0}^{n-1}(x_i - \mu)^2}{n}}$$

  where x is the array, n is the number of elements in the array, and μ is the average or mean of the elements of the array.

  A more detailed description of how to calculate the standard deviation (and a calculator to check your work) can be found on the following web page:

  https://www.calculatorsoup.com/calculators/statistics/variance-calculator.php

Files We Give You: A `makefile` and a sample main program (`stats.cpp`) to test your solution. The executable file created by a successful build will be named `stats`.

File You Must Submit: Place your solution code in a file named `solution.cpp`. This will be the only file you submit.

Examples

Input: `array[] = {66, 68, 70, 72, 75, 84, 86, 86, 89, 92}, n = 10`

Output:

```
Count:              10
Minimum Value:      66
Maximum Value:      92
Range:              26
Average:            78.80
Median:             79.50
Standard Deviation: 9.10
```