```
Script started on 2021-04-15 18:26:03-0500
m_sadaf1@ares:~$ pwd
/home/students/m_sadaf1
m_sadaf1@ares:~$ cat round.info
Name: Madiha Sadaf
Class: CSC122 W01

Lab: Round 'em Up!

Level: 1.5

Description:

This program calculates basic statistics for a set of
numbers stored in a file.

m_sadaf1@ares:~$ cat round.tpq
Thought Provoking Questions:

1) No, because the program ignores the spaces.

2) No, since the program counts the amount of integers
   inside the file and records the min, max, avg, and
   std dev.

3) Yes, the program has to have integers otherwise the
   program will crash.

4) No, it is almost impossible for my program to tun out
   of space as the array is set to hold upto 300 numbers.

5) The assumed smallest/largest values are the values of
   any particular data type that is being used in the
   program.

m_sadaf1@ares:~$ cat round.cpp
#include <iostream>
#include <cmath>
#include <fstream>

using namespace std;

double Data(int numbers[], int count)
{
    int min = numbers [0];
    int max = numbers[0];
    double total = 0;

    // For each value in the array.
    for(int i = 0; i < count; i++)
    {
        if(numbers[i] < min) // Updates the min if required.
            min = numbers[i] + 1;
        if(numbers[i] > max) // Updates the max if required.
            max = numbers[i];
        total += numbers[i]; // Adds the no. to total
    }

    cout << "Count: " << count;
    cout << "Minimum: " << min;
    cout << "Average: " << total/count;
    cout << "Maximum: " << max;

    return total / count;
}

void StandardDeviation(int numbers[], int count,
        double average)
{
    double stdDev = 0;
    for(int i = 0; i < count; i++)
    {
        stdDev += pow((numbers[i] - average), 2);
        // Total of (number - average) whole square.
    }

    stdDev = sqrt(1/(double)count * stdDev);

    cout << "StdDev: " << stdDev;
```

```
}

int main()
{
    string fileName;
    int numbers[300];
    int count = 0;
    cout << "\t\tWelcome to the Number Statistics Program!"
         "!!";
    cout << "Please enter the name of your data file: ";
    cin >> fileName;
    ifstream file;
    file.open(fileName);
    while(!file.is_open())
    {
        cout << "I'm sorry, I could not open "
             << fileName << ".Please enter "
             " another name: ";
        cin >> fileName;
        file.open(fileName);
    }

    cout << "File " << fileName <<
         " opened successfully!";
    cout << "Reading data from " << fileName << "...";

    while(!file.eof())
    {
        file >> numbers[count++];
        file >> ws;
        file.peek();
    }

    cout << "Calculating...";
    cout << "Done, processing data!";
    cout << "For your data, the statistics are as "
         " follows:";

    double average = Data(numbers, count);
    StandardDeviation(numbers, count, average);
}

m_sadaf1@ares:~$ cat round.txt
1 2 3 4
5 6 7 8

9 10

m_sadaf1@ares:~$ CPP round
round.cpp***
round.cpp: In function ‘void
StandardDeviation(int*, int, double)’:
round.cpp:41:29: warning: use of
old-style cast [-Wold-style-cast]
     stdDev = sqrt(1/(double)count * stdDev);
                             ^~~~~


m_sadaf1@ares:~$ exit
exit

Script done on 2021-04-15 18:27:15-0500
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