**ICE 4/25 – Due on or before Sunday 4/28, 2019 –**

**Objectives:** Single Dimensional Array

Your name:

|  |
| --- |
| **Important instructions:**   * *All programs must include comments at the top of your program: your name,* the class name (CSIT 575)*, program name and* ***the program description (purpose of the program).*** * *Copy and paste your* ***program code*** *and* ***output*** *in Part B of each program. Note: Use snipping tool to* ***snip the output****.* * *Once it is done, save and submit this word file via Canvas.* |

**1. AnalyzeNumbers.cpp**

Write a program that calculates the sum, average, positive and negative numbers of a size-5 array entered by users.

**Sample run:**

You can enter 5 integer numbers.

Enter a new number: 5

Enter a new number: -16

Enter a new number: 25

Enter a new number: -3

Enter a new number: 30

Sum is 41

Average is 8.2

Number of negative: 2

Number of positive: 3

**Part B: Copy and paste your program (source) code and the outputs after this line**

**+++++++++++++++++++++++++++++++++++++++++++++++++**

/\*Erik Gonzalez

CO SCI 575

AnalyzeNumbers.cpp

calculates the sum, average, positive and negative numbers of a size-5 array entered by users. \*/

#include <iostream>

#include <string>

using namespace std;

int main()

{

const int FIVE\_NUMS = 5;

double num[FIVE\_NUMS];

cout << "You can enter 5 integer numbers." << endl;

//input

for (int i = 0; i <= FIVE\_NUMS - 1; i++)

{

cout << "Enter a new number: ";

cin >> num[i];

}

//proccessing

int sum = num[0] + num[1] + num[2] + num[3] + num[4];

cout << "Sum is " << sum << endl;

double average = (num[0] + num[1] + num[2] + num[3] + num[4]) / 5;

cout << "Average is " << average << endl;;

int positive = 0;

int negative = 0;

for (int o = 0; o <= FIVE\_NUMS; o++)

{

if (num[o] > 0)

positive++;

else

{

negative++;

}

}

//outputs

cout << "Number of negative: " << negative - 1 << endl;

cout << "Number of positive: " << positive << endl;

system("pause");

return 0;

}

**OUTPUT 1:**

**You can enter 5 integer numbers.**

**Enter a new number: 5**

**Enter a new number: -16**

**Enter a new number: 25**

**Enter a new number: -3**

**Enter a new number: 30**

**Sum is 41**

**Average is 8.2**

**Number of negative: 2**

**Number of positive: 3**

**Press any key to continue . . .**

**OUTPUT 2:**

**You can enter 5 integer numbers.**

**Enter a new number: -69**

**Enter a new number: -4**

**Enter a new number: -42**

**Enter a new number: 56**

**Enter a new number: 87**

**Sum is 28**

**Average is 5.6**

**Number of negative: 3**

**Number of positive: 2**

**I did this incorrectly, despite trying to look back at the lecture slides I still couldn’t figure out how to work “**int countLarger(int[], int, int);**” Completely my fault for not figuring it out, but I still wrote the code to work with what the assignment says should output.**

**2. LargerThanN.cpp**

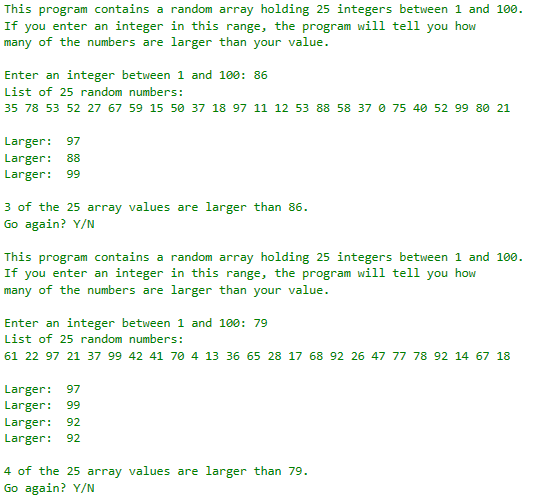
Write a program contains a random array holding 25 integers between 1 and 100. The program takes an integer from a user in this range, the program will display how many of the numbers are larger than the user-entered value.

Given function prototype and constant array SIZE

int countLarger(int[], int, int);

const int SIZE = 25;

**Sample run:**



**Part B: Copy and paste your program (source) code and the outputs after this line**

**+++++++++++++++++++++++++++++++++++++++++++++++++**

/\*Erik Gonzalez

CO SCI 575

LargerThanN.cpp

program contains a random array holding 25 integers between 1 and 100. The program takes an integer from a user in this range,

the program will display how many of the numbers are larger than the user-entered value.\*/

#include <iostream>

#include <string>

using namespace std;

void header();

int countLarger(int [], int, int);

void largerThanN(int[], int, int);

int main()

{

int n; //number inputted by user

const int SIZE = 25;

int array[SIZE];

string again;

header();

cout << "\nEnter an integer between 1 and 100: ";

cin >> n;

if (n > 100)

{

cout << "Invalid number. Please enter a number between 1 and 100: ";

cin >> n;

}

if (n < 0)

{

cout << "Invalid number. Please enter a number between 1 and 100: ";

cin >> n;

}

for (int i = 0; i <= SIZE - 1; i++)

{

array[i] = rand() % 100 + 1;

}

for (int o = 0; o <= SIZE - 1; o++)

{

cout << array[o] << " ";

}

cout << endl;

largerThanN(array, SIZE, n);

cout << countLarger(array, SIZE, n) << " out of the 25 array values are larger than " << n << "." << endl;

cout << "\nGo again? Y\N: ";

cin >> again;

//loop

while (again == "Y" || again == "y" || again == "Yes" || again == "yes")

{

cout << endl;

header();

cout << "\nEnter an integer between 1 and 100: ";

cin >> n;

if (n > 100)

{

cout << "Invalid number. Please enter a number between 1 and 100: ";

cin >> n;

}

if (n < 0)

{

cout << "Invalid number. Please enter a number between 1 and 100: ";

cin >> n;

}

for (int i = 0; i <= SIZE - 1; i++)

{

array[i] = rand() % 100 + 1;

}

for (int o = 0; o <= SIZE - 1; o++)

{

cout << array[o] << " ";

}

cout << endl;

largerThanN(array, SIZE, n);

cout << countLarger(array, SIZE, n) << " out of the 25 array values are larger than " << n << "." << endl;

cout << "\nGo again? Y\N: ";

cin >> again;

}

//Checks if the user does not want to continue

if (again == "N" || again == "n" || again == "No" || again == "no")

{

system("pause");

return 0;

}

}

//Outputs the header of the program

void header()

{

cout << "This program contains a random array of holding 25 integers betweeen 1 and 100.";

cout << "\nIf you went an integer in this range, the program will tell you how";

cout << "\nmany of the numbers are larger than your value." << endl;

}

//Function that finds which numbers are bigger than the one inputted by the user and outputs each one

void largerThanN(int array[], int SIZE, int n)

{

int c = 0;

cout << endl;

for (int count = 0; count < SIZE; count++)

{

if (array[count] > n)

{

cout << "Larger: " << array[count] << endl;

}

}

cout << endl;

}

//Counts how many numbers are bigger than the number inputted than the user

int countLarger(int array[], int SIZE, int n)

{

int c = 0;

for (int count = 0; count < SIZE; count++)

{

if (array[count] > n)

{

c++;

}

}

return c;

}

**OUPUT:**

**This program contains a random array of holding 25 integers betweeen 1 and 100.**

**If you went an integer in this range, the program will tell you how**

**many of the numbers are larger than your value.**

**Enter an integer between 1 and 100: 45**

**42 68 35 1 70 25 79 59 63 65 6 46 82 28 62 92 96 43 28 37 92 5 3 54 93**

**Larger: 68**

**Larger: 70**

**Larger: 79**

**Larger: 59**

**Larger: 63**

**Larger: 65**

**Larger: 46**

**Larger: 82**

**Larger: 62**

**Larger: 92**

**Larger: 96**

**Larger: 92**

**Larger: 54**

**Larger: 93**

**14 out of the 25 arrary values are larger than 45.**

**Go again? YN: Y**

**This program contains a random array of holding 25 integers betweeen 1 and 100.**

**If you went an integer in this range, the program will tell you how**

**many of the numbers are larger than your value.**

**Enter an integer between 1 and 100: 45**

**83 22 17 19 96 48 27 72 39 70 13 68 100 36 95 4 12 23 34 74 65 42 12 54 69**

**Larger: 83**

**Larger: 96**

**Larger: 48**

**Larger: 72**

**Larger: 70**

**Larger: 68**

**Larger: 100**

**Larger: 95**

**Larger: 74**

**Larger: 65**

**Larger: 54**

**Larger: 69**

**12 out of the 25 array values are larger than 45.**

**Go again? YN: Y**

**This program contains a random array of holding 25 integers betweeen 1 and 100.**

**If you went an integer in this range, the program will tell you how**

**many of the numbers are larger than your value.**

**Enter an integer between 1 and 100: 99**

**48 45 63 58 38 60 24 42 30 79 17 36 91 43 89 7 41 43 65 49 47 6 91 30 71**

**0 out of the 25 array values are larger than 99.**

**Go again? YN: n**

**Press any key to continue . . .**

**This program contains a random array of holding 25 integers betweeen 1 and 100.**

**If you went an integer in this range, the program will tell you how**

**many of the numbers are larger than your value.**

**Enter an integer between 1 and 100: 89**

**42 68 35 1 70 25 79 59 63 65 6 46 82 28 62 92 96 43 28 37 92 5 3 54 93**

**Larger: 92**

**Larger: 96**

**Larger: 92**

**Larger: 93**

**4 out of the 25 array values are larger than 89.**

**Go again? YN: yes**

**This program contains a random array of holding 25 integers betweeen 1 and 100.**

**If you went an integer in this range, the program will tell you how**

**many of the numbers are larger than your value.**

**Enter an integer between 1 and 100: 54**

**83 22 17 19 96 48 27 72 39 70 13 68 100 36 95 4 12 23 34 74 65 42 12 54 69**

**Larger: 83**

**Larger: 96**

**Larger: 72**

**Larger: 70**

**Larger: 68**

**Larger: 100**

**Larger: 95**

**Larger: 74**

**Larger: 65**

**Larger: 69**

**10 out of the 25 array values are larger than 54.**

**Go again? YN: no**

**Press any key to continue . . .**