Cairo University
Faculty of Engineering
CMP103& CMPN103

Programming Techniques Assignment 1 – Basic C++ & Functions

Fall 2020

Requirements

In this assignment you are required to submit one cpp file including 3 functions as following:

1. MeanOfEvenValueOddIndex

Given integer Array A and size N, get the mean of values that are even and allocated in the odd indices of Array a. Hint: index starts with 0 not 1.

Examples

1 4 3 8 5 5 => output is equivalent to mean of 4, 8 => 6. Hint: the last 5 isn't included because it is odd.

2 4 3 1 6 5=> output is equivalent to mean of 4 => 4. Hint: the 6 isn't included because it is located in an even index 4.

1 3 4 5 6 9=> output is equivalent to 0. Hint: 3,5,9 aren't included because they are odd values. 4,6 aren't included because they are located in even indices.

2. GetAbsoluteValue

Given value x, if x is negative, make it positive and return true, otherwise, don't change it and return false.

Examples

x = -3.1 ⇒ x should become 3.1 and the function should return true
x = 1.2 ⇒ x shouldn't change 1.2 and the function should return false

3. Main

a. Print "Welcome to PT assignment"
b. Print "Please input operation character, m for mean or a for absolute".
c. Read char (c) from the user.
d. If the input is 'm'
    i. Print "You have chosen to get the mean"
    ii. Define an array A with size 6.
    iii. Print "Please enter the required values"
    iv. Read array values from the user.
    v. Call function MeanOfEvenValueOddIndex; pass the array and its size.

vi. Print “The mean is M” where M is the result value from the function.

e. If the input is ‘a’
   i. Print “You have chosen to get the absolute value”
   ii. Print “Please enter the required value x”
   iii. Read x value from the user.
   iv. Call function GetAbsoluteValue and pass the input value x.
   v. Print “The absolute value is X. It is Z” where X is the new value of x and Z is “changed” or “unchanged” depends on whether the value x has changed or not (the boolean value returned from GetAbsoluteValue function).
f. If the input isn’t a or m:
   i. Print “Invalid Input”
g. Print “Program ended”

I/O samples

Input	Output
a 12	Welcome to PT assignment Please input operation character, m for mean or a for absolute You have chosen to get the absolute value Please enter the required value x The absolute value is 12. It is unchanged Program ended
a -3.6	Welcome to PT assignment Please input operation character, m for mean or a for absolute You have chosen to get the absolute value Please enter the required value x The absolute value is 3.6. It is changed Program ended
a 3.6	Welcome to PT assignment Please input operation character, m for mean or a for absolute You have chosen to get the absolute value Please enter the required value x The absolute value is 3.6. It is unchanged Program ended
m 1 2 3 4 5 6	Welcome to PT assignment Please input operation character, m for mean or a for absolute You have chosen to get the mean Please enter the required values The mean is 4 Program ended
m 1 4 3 8 5 5	Welcome to PT assignment Please input operation character, m for mean or a for absolute You have chosen to get the mean Please enter the required values The mean is 6

	Program ended

Regulations & Hints

1. Unless mentioned otherwise, don't use cin or cout inside any function except main.
2. Each print should end with a new line.
3. **Code is corrected automatically, so you should pay attention to print the output in the same required format, in order not to lose marks. All printed outputs are case-sensitive. Compilation errors result in zero grade.**
4. Don't show the double quote, or single quote symbols (" or ') inside the output string.
5. For numeric values: float and integer are allowed. Single and double types aren't allowed.
6. Take care of corner cases.
7. You can pre-check it multiple times. Pre-checking means it will be executed against examples and will give you feedback whether your solution is correct or not for a small subset of test cases and hints to fix it.
8. **Check button means submission. The first 2 submissions are considered penalty free. Third submission will be penalized 50%. Fourth submissions and beyond will be zero graded.**
9. Cheating will cause zero grades in the assignment and deducting 5 grades from coursework grades for all involved students.
10. Random submissions may be chosen for discussions or re-evaluation.
11. Don't add system.pause(), cin.get() or anything that halt the execution at the end of your code.
12. Suggested steps:
    a. Start working locally on your machine until you are sure that the flow of your program is correct. You can test on the given examples.
    b. Precheck your code to make sure it works correctly on the platform.
    c. After finishing your work and being sure nothing else can be added, submit it.