Lab Assignment 02

Total Marks 100

Question:1

Calculate Sum

You have given a series, 1+2+3-4-5-6+7+8+9-10-11-12+.....N . Your task to print the sum of the **Nth** element.

Sample Input 1

10

Sample Output 1

5

Sample Input 2

20

Sample Output 2

12

Explanation of Sample Input 2:

1+2+3-4-5-6+7+8+9-10-11-12+13+14+15-16-17-18+19+20 = 12. Sum up to the 20th of this series.

Question:02

Sort Again

You have given a string. Now your task is to sort this string in descending order. Implement this using function.

Sample Input 1

abddccss

Sample Output 1

ssddccba

Question:03

Print it !!

Problem Statement:

Write a c program that asks the user to enter integers as inputs to be stored in the variables 'x' & 'y' respectively. There are also two integer pointers named ptrX & ptrY. Assign the values of 'x' and 'y' to ptrX and ptrY respectively, and display them.

Sample Input

5 10

Sample Output

5 10

Tag: Pointer

Question:04

Consecutive Even Numbers

The Problem Statement:

Make a simple program that reads one variable named N which is the summation of 4 consecutive even numbers. Print the 4 consecutive even numbers whose summation is N.

12 + 14 + 16 + 18 = 60

Input Format

- The first line contains an integer T ($1 \leq T \leq 3$).
- The Second line contains one integer number N (N<=5000).

Output Format
Output will show the 4 consecutive even integer numbers separated by space in a separate line.

Note: Implement it using function.

Sample Input	**Sample Output**
3 **100** **812** **4052**	**22 24 26 28** **200 202 204 206** **1010 1012 1014 1016**
2 **452** **508**	**110 112 114 116** **124 126 128 130**

Question:05

Sum of Odd Odd, Even Even

Problem Statement
You are given a positive integer n .The second line will contain n positive integers**.**
Write a function that will take an integer array as an argument and return the sum in the following way.
>> If the index is odd and at the same time the value is odd then you can add the index and values
>> If the index is even and at the same time the value is even then you can add the index and values

Return the total sum from the function. If there is no such value which is mentioned in the above then return 0 from the function.

See the sample input ,output and explanation for more clarification.

Constraints-
1<=n<=100
Values of array will be given between 1-1000

Sample Input 1:	**Sample Output 1:**
6 12 19 3 1 6 10	22
Sample Input 2:	**Sample Output 2:**
8 12 6 1 3 4 2 2 3	20

Explanation -
In sample input -1
3rd index means index = 3 and the value is 3 , index+value=3+3=6
6the index means index = 6 and the value is 10 , index+value=6+10=16
Total = 22

Question:06

Divisible 3 or Divisible by 5 ?

Problem Statement

You are given an array of size n . And the next line will contain n positive integers. Now you need to tell how many numbers are divisible by 3 and divisible by 5. For this you need to write two functions , First one is for finding whether a number is divisible by 3 or not and the second one is for finding whether a number is divisible by 5 or not. See the sample input/output and explanation for more clarification.

Print the total count of how many numbers are divisible by 3 and divisible by 5 if there are no such numbers then return -1 from the functions,and that time print -1 only once(see the sample input and output)

Note - if a number is divisible by both 3 and 5,then consider it only once.

Constraints-
1<=n<=100
Values of array will be given between 1-1000

Sample Input 1-
5
10 1 13 3 9
Sample Input 2-
7
13 9 9 25 6 17 30
Sample Input 3-
2
2 11

Sample Output 1-
3
Sample Output 2-
5
Sample Output 3-
-1

Explanation -
In sample input 1 -
10 is divisible by 5
3 and 9 is divisible by 3
Total count = 3

In sample input 2 -
9 is divisible by 3 , there are two 9 exist
6 is divisible by 3
25 is divisible by 5
30 is divisible by both 3 and 5 , so you must consider it only once.
Total count = 5

Question:07
Swap

Problem Statement:
You are given a positive integer n .The second line will contain n positive integers.And the third line will contain a value Q.The next line will contain Q

queries,every query will contain two values L and R.Now,You need to swap two values by the following way-

>> Swap the values of index L with R .

And lastly print the modified array.

Note - You must swap the values using a function with pointers.And Consider the array as 1 base index.

See the sample input output for more clarification.

Constraints-
2<=n<=100
Values of array will be given between 1-1000
1<=L,R<=100 and L!=R

Sample Input :

```
7
9 1 17 3 5 2 7
4
1 3
2 4
5 3
4 6
```

Sample Output :

```
17 3 5 2 9 1 7
```

Explanation -
1st query - swap 1st index value with 3rd index value then the array will be - 17 1 9 3 5 2 7

Question:08
Broken keyboard

Problem Statement:
Your keyboard is worn out after playing games for a long time. Now when you press the keys of the keyboard, the first character you press is pressed once, then the key you press is pressed twice, then the third character will be pressed once again, and the fourth character will be pressed twice and so on. Implement it using function.

See the sample input-output for more clarification.

Sample Input-
---
abcd

Sample Output-
---
abbcdd

Question-9
Mixed Array

Problem Statement
You are given an array of size n. And the next line will contain n positive integers. Find the number of prime numbers in the array and find the average of all even integers in the array. Implement it using two functions(one is for prime and second one is for finding the average) and traverse the array using pointers.

See the sample input-output for more clarification.

Sample Input-

5
2 5 9 11 14

Sample Output-

Prime numbers: 3
Average of all even integers: 8.00

Question-10

Beautiful Array

Problem Statement:

You are given an array of size n. And the next line will contain n positive integers. Your favourite number is 7. The array will be nice if half or more of the numbers in the array have 7 digits. Implement it using a function and traverse the array using pointers.

See the sample input-output for more clarification.

Note - If the array size is odd that time consider the ceil value as half, for example n=5, that means n/2 = 5/2 = 3

Sample Input- 1

6
33 1 17 171 88 734

Sample Output- 1

Beautiful

Sample Input- 2

5
33 1 17 11 88

Sample Output- 2

Ugly

Explanation -
In sample input 1 -
17 have the last digit 7
171 have the middle digit 7
734 has the first digit 7