



Luxor University

Faculty of computers and information

Programming Fundamentals

Lab Sheet #6

Objectives:

Learn how to think on paper before coding.

Learn how to construct your program step by step in detail (Algorithm).

Learn how to present your program algorithm in an efficient and organized way. Start your first C console programs.

Learn how to solve problems using (array).

Problems:

- 1- Reverse order.
- 2- Sum of elements.
- 3- Calculate Average.
- 4- Minimum value.
- 5- Copy array.
- 6- Assign grades.
- 7- Sorting array
- 8- Distinct numbers.
- 9- Vowels and Constant.
- 10- Linear Search.
- 11- odd and even.
- 12- Insert new element.

Reverse order

Problem statement:

Write a C program that prints the data of an array in reverse order.

* initialize array using the values: {1,2,3,4,5,6,7,8,9}.

Output:

Reverse order of array.

Example 1:

Output

9 , 8 , 7 , 6 , 5 , 4 , 3 , 2 , 1

Sum of elements

Problem statement:

Write a program in C to find the sum of all elements of the array.

Input:

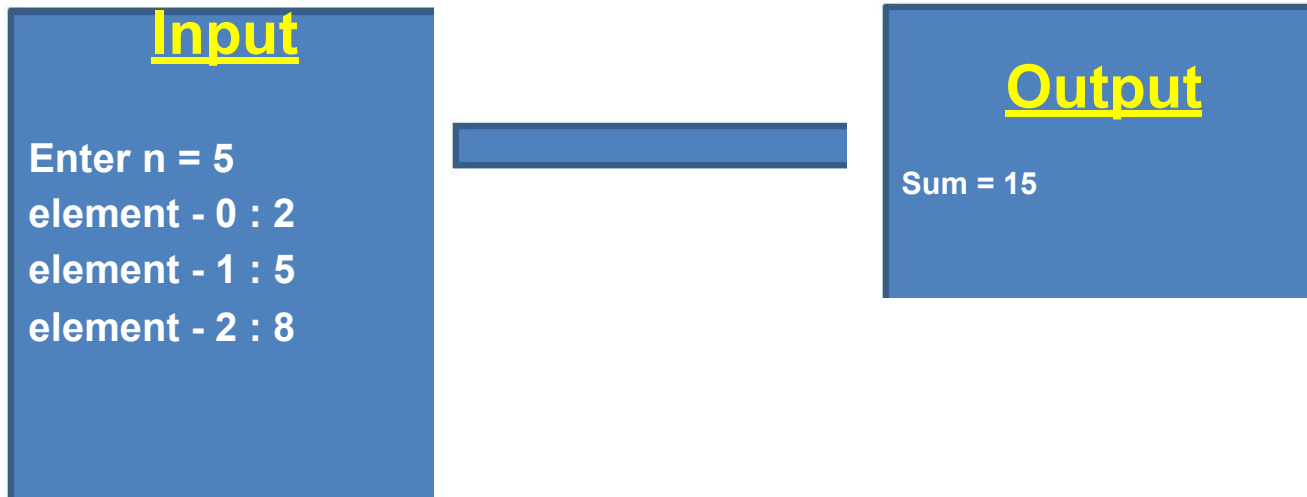
Size of array.

Integer numbers.

Output:

Sum.

Example 1:



Calculate Average

Problem statement:

Write a C program that takes the size of array and its elements then return the average of the elements.

Input:

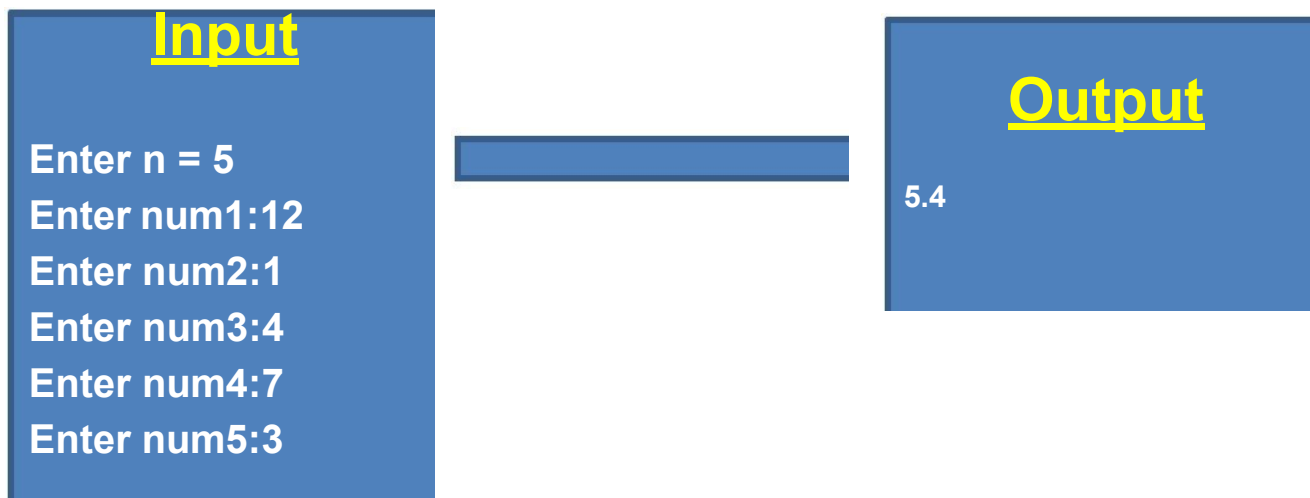
Size of array.

Integer numbers.

Output:

Average

Example 1:



Minimum value

Problem statement:

Write a C program that takes an integer array and the array size is 5 and returns the smallest element of it.

Input:

Array of size 5.

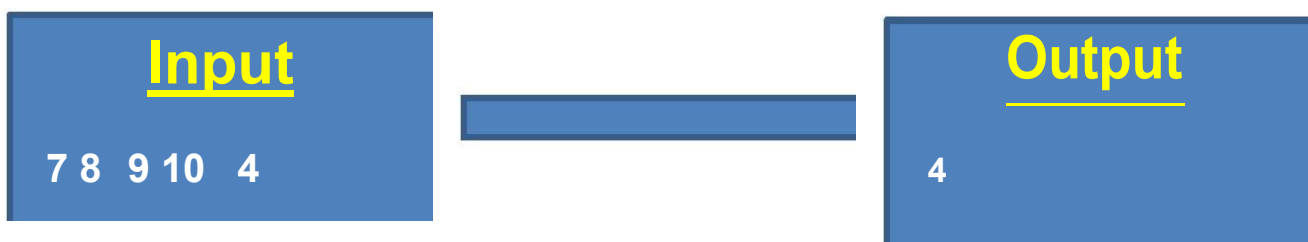
Output:

Minimum element

Example 1:



Example 2:



Copy array

Problem statement:

Write a program in C to copy the 5 elements of one array into another array.

Input:

Int array with 5 values

Output:

The elements stored in the first array are :

n1 n2 n3 n4 n5

The elements copied into the second array are :

n1 n2 n3 n4 n5

Assign grades

Problem statement:

Write a program that reads student scores, and then assigns grades based on the following scheme:

- 1) Grade is A if score is ≥ 90
- 2) Grade is B if score is ≥ 80
- 3) Grade is C if score is ≥ 70
- 4) Grade is D if score is ≥ 60
- 5) Grade is F otherwise.

The program prompts the user to enter the total number of students, then prompts the user to enter all of the scores, and concludes by displaying the grades.

Input:

Number of student.

Grades of the student.

Output:

displaying the grades(A,B,C,D,F)

Example 1:



Sorting array

Problem statement:

Write a program that take 6 elements in the user and sorting it in descending order using array.

Input:

Elements of array

Output:

displaying sorting array

Example 1:



Distinct numbers

Problem statement:

Write a program that reads in 10 numbers and displays distinct numbers (i.e., if a number appears multiple times, it is displayed only once). (Hint: Read a number and store it to an array if it is new. If the number is already in the array, discard it. After the input, the array contains the distinct numbers.)

Input:

Int array with 10 values

Output:

Array with distinct values.

Example 1:



Vowels and Constant

Problem statement:

Write a program that reads an unspecified number of uppercase or lowercase alphabets, and determines how many of them are vowels and how many are consonants. Enter zero to signify the end of the input.

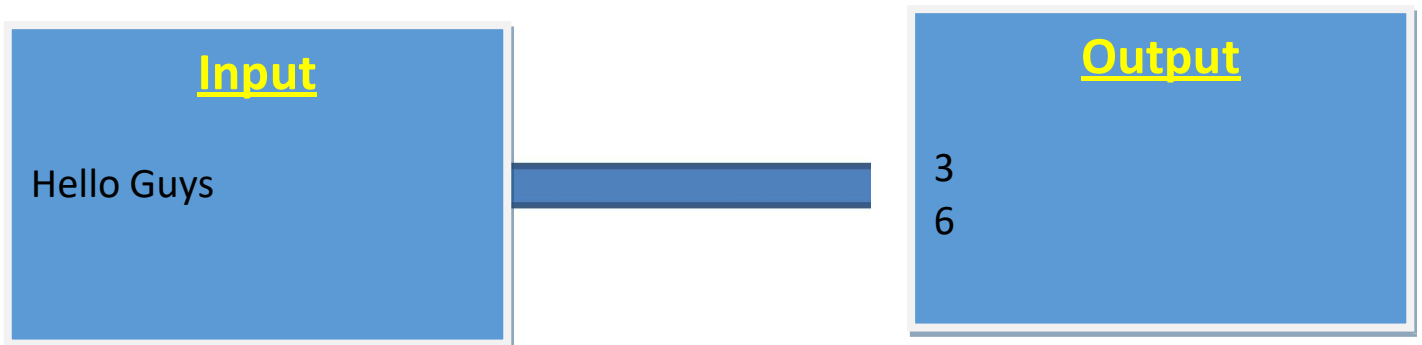
Input:

array of character

Output:

Number of vowels and consonants char.

Example 1:



Linear Search

Problem statement:

Write a linear Search function to perform the linear search of the array. The function should receive an integer array and the size of the array is 10. If the search key is found, return the Index of the key; otherwise, return -1.

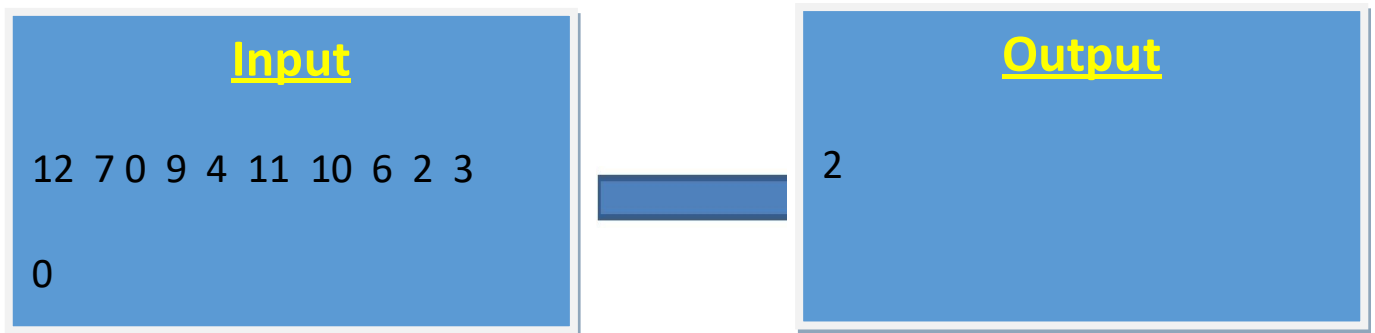
Input:

- Elements of the array
- Search element

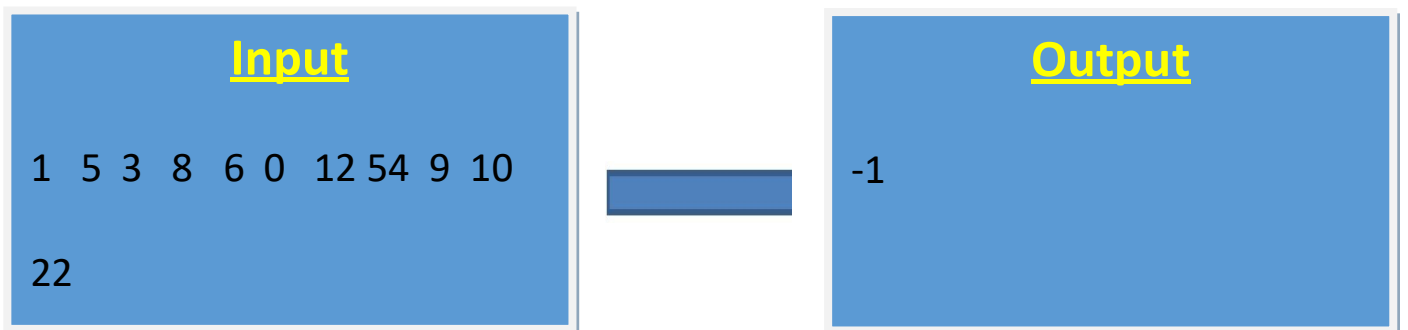
Output:

Index of the key or -1 if it not found.

Example 1:



Example 2:



odd & even

Problem statement:

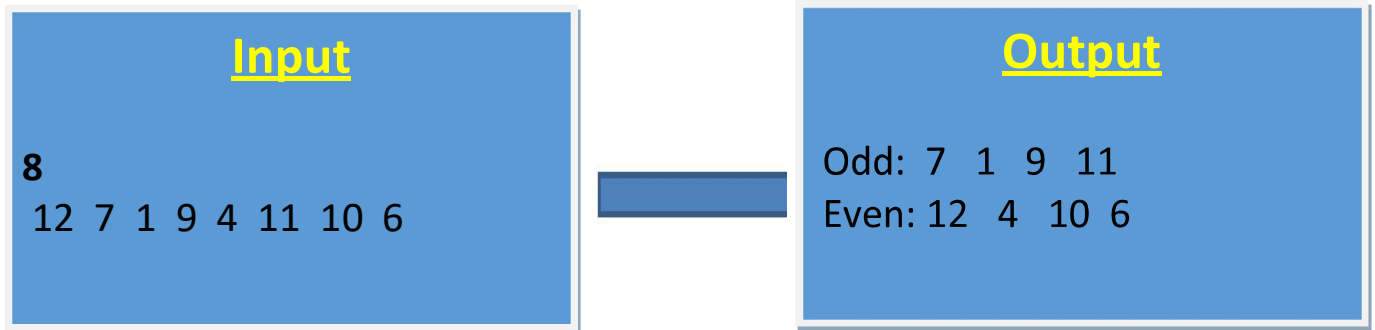
Write a program in C to separate odd and even integers in separate arrays.

Input:

Size of array

Elements.

Example 1:



Insert new element

Problem statement:

Write a program in C to insert New value in the array (unsorted list)

INPUT:

Input the size of array

Input elements in the array in ascending order:

Input the value to be inserted