

# CL1002 – Programming Fundamentals Lab

## Exercise # 08

### Note:

- Submit a pdf file containing all of your C code with all possible screenshots of every task outputs on Google Classroom.
- Copied task will be awarded **zero** marks.
- Note that these lab task marks could be graded through a viva in lab.
- Please submit your file with this naming convention (roll-no-name) i.e (22P-8743-Zain.pdf).

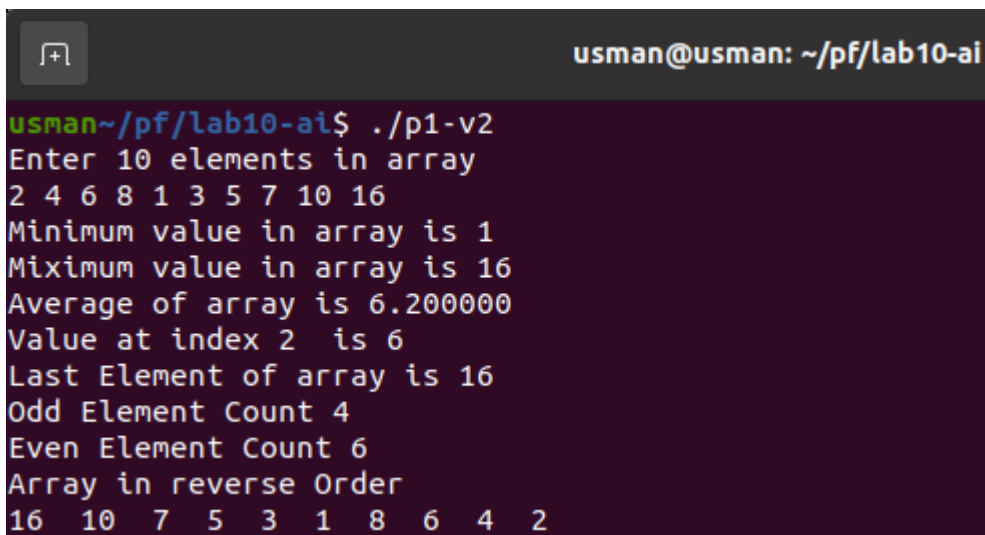
### Problem: 1 | Array 1 Dimensional

Write a program to declare an array of size 10 and initialize the array with the user provided values.

Answer the following:

1. Find the minimum value in the array.
2. Find the maximum value in the array.
3. Find the average/mean value of the array.
4. Display the last element of array.
5. Display the value at index 2.
6. Count Even and Odd Elements in array.
7. Print numbers in reverse order.

### Sample Output:



```
usman@usman: ~/pf/lab10-ai
usman~/pf/lab10-ai$ ./p1-v2
Enter 10 elements in array
2 4 6 8 1 3 5 7 10 16
Minimum value in array is 1
Maximum value in array is 16
Average of array is 6.200000
Value at index 2 is 6
Last Element of array is 16
Odd Element Count 4
Even Element Count 6
Array in reverse Order
16 10 7 5 3 1 8 6 4 2
```

## Problem: 2 | Array 1 Dimensional

Write a C program that declares an array alpha of 60 components of type int. Initialize the array so that the first 20 components are equal to the square of the index variable, and the next 20 components are equal to three times the index variable. Last 20 elements are the sum of first 20 and last 20 indices variables.

**Note:**

Output the array so that 10 elements per line are printed.

**Sample Output:**

```
usman@usman: ~/pf/lab10-ai
usman~/pf/lab10-ai$ gcc p2.c -o p2
usman~/pf/lab10-ai$ ./p2
0      1      4      9      16     25     36     49     64     81
100    121    144    169    196    225    256    289    324    361
8000   9261   10648  12167  13824  15625  17576  19683  21952  24389
27000  29791  32768  35937  39304  42875  46656  50653  54872  59319
40     42     44     46     48     50     52     54     56     58
60     62     64     66     68     70     72     74     76     78
```

## Problem: 3 | Array 1 Dimensional, Searching

Write a C program to find an element from an array. Each element will be checked. If searched element exists multiple time, then its count will also be shown.

**Sample Output**

```
usman~/pf/lab10-ai$ ./p3-search
Enter element to search in array
[1 2 3 4 4 5 6 7 8 4]:4
Element 4 found 3 times
usman~/pf/lab10-ai$ ./p3-search
Enter element to search in array
[1 2 3 4 4 5 6 7 8 4]:9
Element Not Found
usman~/pf/lab10-ai$ ./p3-search
Enter element to search in array
[1 2 3 4 4 5 6 7 8 4]:8
Element 8 found 1 times
```

## Additional Task

### **Problem: 4 | Array 1 Dimensional, Duplicate Elimination**

Use a one-dimensional array to solve the following problem. Read in 25 numbers, each of which is between 10 and 100, inclusive. As each number is read, validate it and store it in the array only if it isn't a duplicate of a number already read. After reading all the values, display only the unique values that the user entered.