

## Programming Fundamentals Lab



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**Course Code: CL1002**

**Lab # 10 (Week 10)**

### **Array:**

Array is a collection of multiple elements. Elements can be integer, float or character. Array will have fixed size such as 5 or 10.

### **Why To Use Array:**

Basically, a variable can store single value, but in real-life we store a lot of data about. For example, there will be many users for banking application. There are many students register in university. Multiple books are available in the library.

Declaration of Array:

```
Int arr [5];      // This array can store five integers number of int data
```

### **Initializing Array:**

```
Int arr[5] = {10,20,30,40,50};
```

How to access Multiple elements of the Array:

### **Use Loop:**

```
For (int I = 0; i<5;i++)  
{  
    Cout<<arr[i]<<endl;  
}
```

We can also initialize arrays without specifying any size and by just specifying the elements.

This is done as shown below:

```
int myarray[] = {1, 2, 3, 4, 5};
```

In this case, when the size of an array is not specified, the compiler assigns the size equal to a number of elements with which the array is initialized. Thus, in the above case, the size of myarray will be 5.

### **Find the Sum of Array Elements:**

```
int main() {  
  
    int size = 5; // size of array  
    int sum = 0; // initialize  
    int arr[size] = {10,20,30,40,50}; // array elements  
  
    for(int i=0;i<size;i++)  
    {  
        sum = sum+arr[i]; // updating sum in every iteration  
    }  
  
    cout<<"The sum of array elements is: "<<sum;  
}
```

### **How to Search Element in Array:**

```

int main() {

    int size = 5; // size of array

    int search_element = 500; // initialize

    int arr[size]= {10,20,30,40,50}; // array elements

    bool is_search = false;
    for(int i=0;i<size;i++)
    {
        if(search_element==arr[i])
        {
            is_search = true;
        }
    }

    if(is_search)
        cout<<"Search element was found in array";
    else
        cout<<"Not found";
}

```

### How to find the occurrence of elements in array:

```

int temp = 0;
int count = 0;
int c = 0;

int arr[8] = {1,2,1,1,1,2,2,2}, test[10];
bool is_one_time = false;
for(int i=0; i<8; i++)
{
    temp = arr[i]; //1
    count = 0;
    is_one_time = true;
    for(int j=0; j<8; j++)
    {
        if(temp==arr[j])
        {
            count++;
        }
    }
    for(int j=0; j<c; j++)
    {
        if(test[j]==temp){

            is_one_time = false;

        }
    }

    if(is_one_time){

        cout<<arr[i];
        cout<<"value checked: "<<temp<<": time"<<count<<endl;
        test[c] = temp;
        c++;
    }
}

```

## **Lab Tasks:**

1. Find the different (outliers) number in the series.

Case 1: For example [ 10,20,30,40,50, 1000].

Solution: 1000 is different number in the series

Case 2: For example [0,1,2,3,4,5].

Solution: No different or outlier element is found in array.

Case 3: For example [ 5,10,15,20,-1].

Solution: -1 is different number in the series

2. Find the maximum occurrence of the element in the array.

Case 1: For example [ 10,20,20,30,30,30].

Solution: 30 is number in array which repeated most of the time.

Case 2: For example [ 10,20,20,30,30,30,10,10,10].

Solution: 10 is number in array which repeated most of the time.

3. Create a Guess Game. First store 26 characters in the array alphabets using Loop. Then Show to user "Do you want to start". E or e for exit, otherwise program will be started. Game will ask user "how many times do you want to play". User will enter any number. Then Game will generate random character between [10 to 99]. If random character matches with alphabets which are stored already. Then increase the reward of computer, otherwise increase the reward of User. At the last, show that user win or computer win.

```
Do you want to start e/E Exit:y
how many time2
For Attempt No 1
▲: is guess Not by computer
Win by me
```

```
=====
For Attempt No 1
P: is guess Not by computer
Win by me
```

```
=====
For Attempt No 1
1: is guess Not by computer
Win by me
```

```
=====
For Attempt No 1
?: is guess Not by computer
Win by me
```

```
=====
For Attempt No 2
A: is guess Not by computer
Win by me
```

```
=====
For Attempt No 2
§: is guess Not by computer
Win by me
```

```
=====
Do you want to start:e
You Win
```

```
-----
Process exited after 15.16 seconds with return value 3221225477
Press any key to continue . . .
```

