

Experiment 3

Student Name: Jitesh Kumar

UID: 20BCS2334

Branch: CSE

Section/Group: 20BCS-WM-903/A

Semester: 5th

Subject Name: DAA Lab

Subject Code: 21-CSP-312

1. Aim/Overview of the practical:

Code to find frequency of elements in a given array in $O(n)$ time complexity.

2. Task to be done/ Which logistics used:

To find the frequency of element in array using for loop.

3. Algorithm/Flowchart (For programming based labs):

Step 1: Let us make an array of size n taken by user.

Step 2: Put the values in it.

Step 3: Make a variable $freq=1$ and $idx=1$ and $element=arr[0]$.

Step 4: Now run a while loop to compare $arr[idx-1]$ with $arr[idx]$ if they are equal then increment of $freq$ and idx by 1 is there else print frequency of the element..

Step 5: Run the while loop till $idx < n$.

4. Steps for experiment/practical/Code:

```
#include <iostream>
using namespace std;
```

```
int main()
{
    int n;
    cout<<"Enter the length of array: "<<endl;
    cin>>n;
    int arr[n];
    for(int i=0;i<n;i++)
    {
        cout<<"Enter the element of array: "<<endl;
        cin>>arr[i];
    }
    int freq = 1;
    int idx = 1;
    int element = arr[0];
    while (idx < n)
    {
```

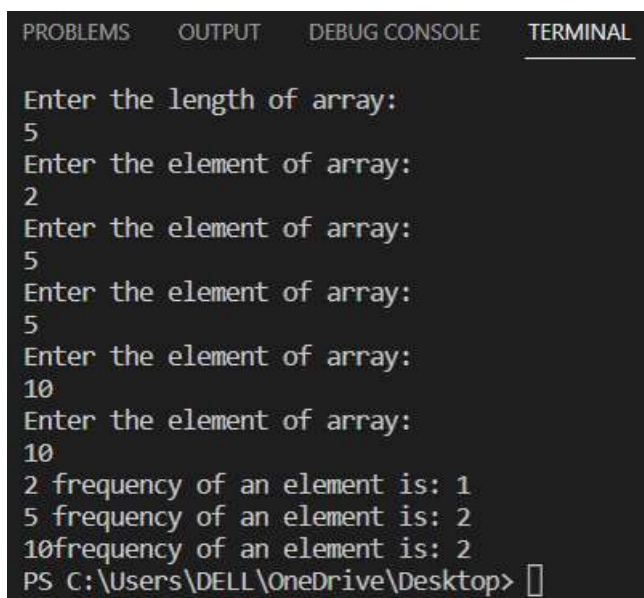
```
if (arr[idx - 1] == arr[idx])
{
    freq++;
    idx++;
}
else
{
    cout << element << " frequency of an element is: " << freq << endl;
    element = arr[idx];
    idx++;

    freq = 1;
}
}
cout << element << "frequency of an element is: " << freq << endl;
}
```

5. Observations/Discussions/ Complexity Analysis:

Time complexity of finding frequency of elements of an array is $O(n)$.

6. Result/Output/Writing Summary:



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

Enter the length of array:
5
Enter the element of array:
2
Enter the element of array:
5
Enter the element of array:
5
Enter the element of array:
10
Enter the element of array:
10
2 frequency of an element is: 1
5 frequency of an element is: 2
10 frequency of an element is: 2
PS C:\Users\DELL\OneDrive\Desktop>
```

Learning outcomes (What I have learnt):

1. To learn how to calculate the frequency of the elements of an array.
2. To learn how to use for loop in these cases.