

**CHANDIGARH UNIVERSITY  
UNIVERSITY INSTITUTE OF NGINEERING  
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**



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<b>Subject Name</b>	Design and Analysis of Algorithm Lab		
<b>Subject Code</b>	20CSP-312		
<b>Branch</b>	Computer Science and Engineering		
<b>Semester</b>	5 <sup>th</sup>		

## Experiment - 3

**Student Name: Vivek Kumar**

**Branch: BE-CSE(LEET)**

**Semester: 5<sup>th</sup>**

**Subject Name: DAA Lab**

**UID: 21BCS8129**

**Section/Group: 20BCS-WM-616/A**

**Date of Performance: 16/08/2022**

**Subject Code: 20CSP-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. Requirements (For programming-based labs):

- Laptop or PC.
- Operation system (Mac, Windows, Linux, or any)
- Vs-Code with MinGw or any C++ Compiler

### 4. 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 their else print frequency of the element.

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

Step 6: Finish.

### 5. Steps for experiment/practical/Code:

```
#include <bits/stdc++.h>
using namespace std;
void countFreq(int arr[], int n)
{
    vector<bool> visited(n, false);

    for (int i = 0; i < n; i++)
    {
        if (visited[i] == true)
            continue;
        int count = 1;
        for (int j = i + 1; j < n; j++)
        {
            if (arr[i] == arr[j])
            {
                visited[j] = true;
                count++;
            }
        }
    }
}
```

```

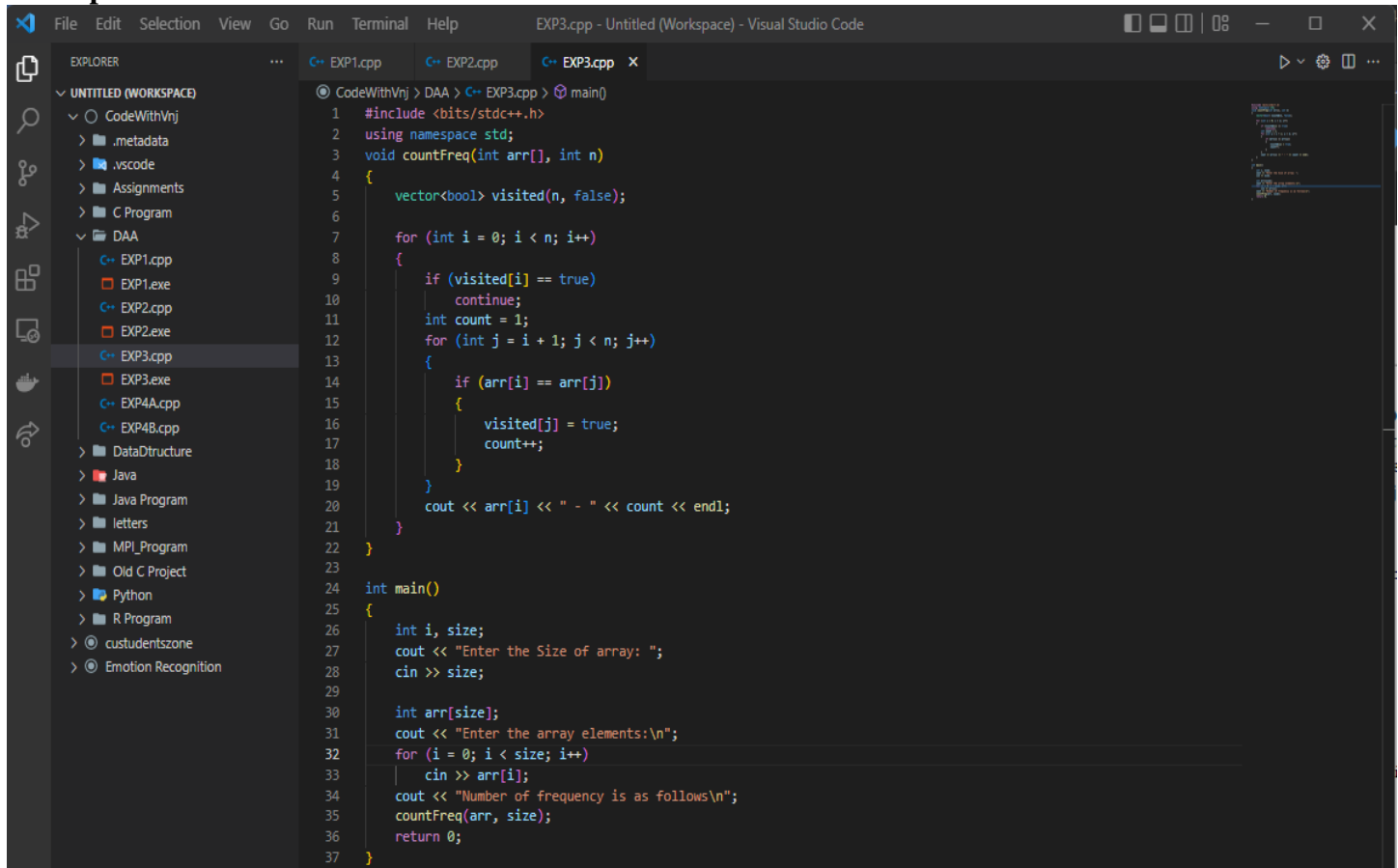
    }
}
cout << arr[i] << " - " << count << endl;
}
}

int main()
{
    int i, size;
    cout << "Enter the Size of array: ";
    cin >> size;

    int arr[size];
    cout << "Enter the array elements:\n";
    for (i = 0; i < size; i++)
        cin >> arr[i];
    cout << "Number of frequency is as follows\n";
    countFreq(arr, size);
    return 0;
}

```

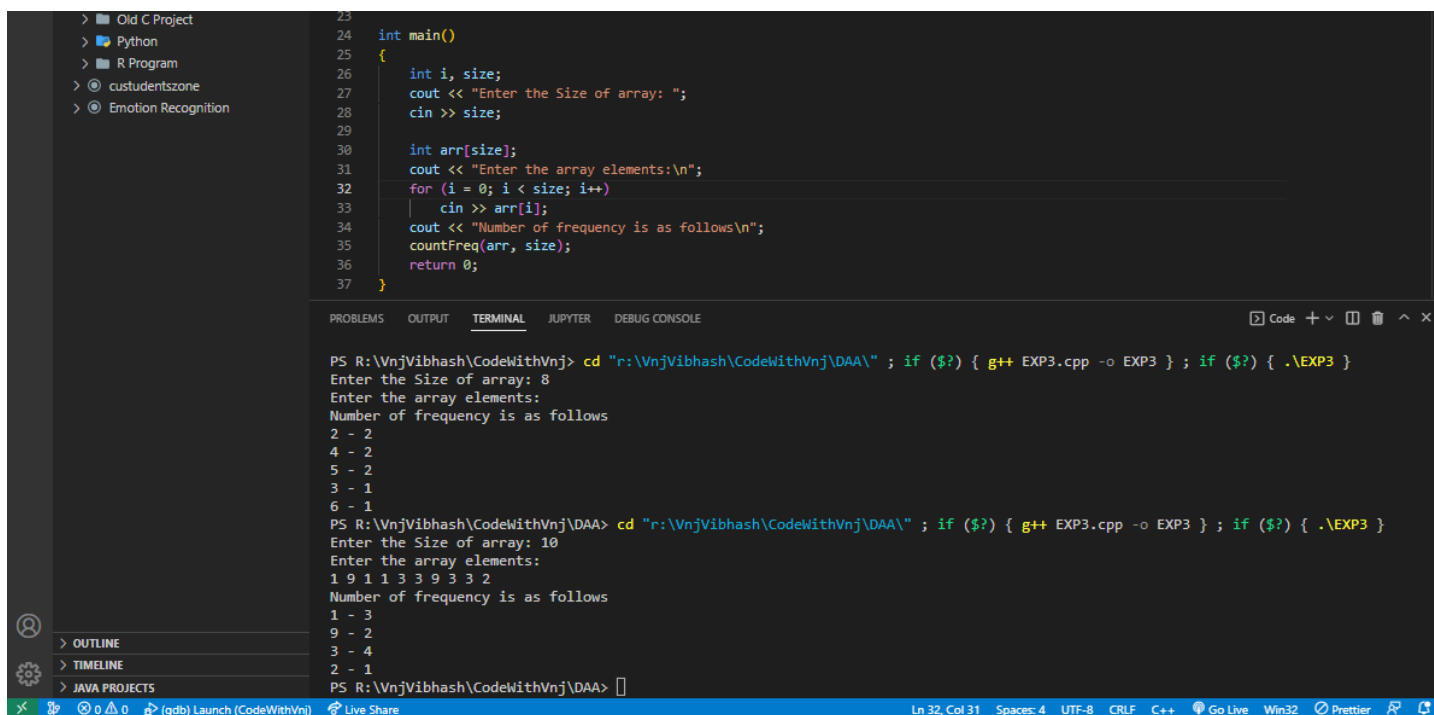
## 6. Output:



```

EXP3.cpp - Untitled (Workspace) - Visual Studio Code
1  #include <bits/stdc++.h>
2  using namespace std;
3  void countFreq(int arr[], int n)
4  {
5      vector<bool> visited(n, false);
6
7      for (int i = 0; i < n; i++)
8      {
9          if (visited[i] == true)
10             continue;
11             int count = 1;
12             for (int j = i + 1; j < n; j++)
13             {
14                 if (arr[i] == arr[j])
15                 {
16                     visited[j] = true;
17                     count++;
18                 }
19             }
20             cout << arr[i] << " - " << count << endl;
21         }
22     }
23
24     int main()
25     {
26         int i, size;
27         cout << "Enter the Size of array: ";
28         cin >> size;
29
30         int arr[size];
31         cout << "Enter the array elements:\n";
32         for (i = 0; i < size; i++)
33             cin >> arr[i];
34         cout << "Number of frequency is as follows\n";
35         countFreq(arr, size);
36         return 0;
37     }

```



```

23
24 int main()
25 {
26     int i, size;
27     cout << "Enter the Size of array: ";
28     cin >> size;
29
30     int arr[size];
31     cout << "Enter the array elements:\n";
32     for (i = 0; i < size; i++)
33     {
34         cin >> arr[i];
35     }
36     cout << "Number of frequency is as follows\n";
37     countFreq(arr, size);
38     return 0;
39 }

```

PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE

PS R:\VnjVibhash\CodeWithVnj> cd "r:\VnjVibhash\CodeWithVnj\DAA\" ; if (\$?) { g++ EXP3.cpp -o EXP3 } ; if (\$?) { .\EXP3 }

Enter the Size of array: 8

Enter the array elements:

Number of frequency is as follows

2 - 2

4 - 2

5 - 2

3 - 1

6 - 1

PS R:\VnjVibhash\CodeWithVnj\DAA> cd "r:\VnjVibhash\CodeWithVnj\DAA\" ; if (\$?) { g++ EXP3.cpp -o EXP3 } ; if (\$?) { .\EXP3 }

Enter the Size of array: 10

Enter the array elements:

1 9 1 1 3 3 9 3 3 2

Number of frequency is as follows

1 - 3

9 - 2

3 - 4

2 - 1

PS R:\VnjVibhash\CodeWithVnj\DAA>

## Learning outcomes (What I have learnt):

1. How to Enter the elements in an Array.
2. How to use for loop.
3. How to find the frequency of a number in given Array.

## Evaluation Grid (To be created per the faculty's SOP and Assessment guidelines):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		
2.	Post-Lab Quiz Result.		
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		
	Signature of Faculty (with Date):	Total Marks Obtained:	