

## Experiment 3

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**Subject Name: Design and Analysis of Algorithms**

**Subject Code: 20CSP-312**

### 1. Aim/Overview of the practical:

**Counting frequencies of array elements.**

### 2. Task to be done/ Which logistics used:

Given an array which may contain duplicates, print all elements and their frequencies.

Input : arr[] = {10, 20, 20, 10, 10, 20, 5, 20}

Output : 10 3

20 4

5 1

Input : arr[] = {10, 20, 20}

Output : 10 1

20 2

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

```
#include <bits/stdc++.h>
using namespace std;
int frequency(int arr[], int size) {
    bool check[size];
    for(int i=0;i<size;i++) {
        check[i] = 0;
    }
    for(int i=0; i<size; i++) {
        if(check[i]== 1) {
            continue;
        }
        int count = 1;
        for(int j = i+1; j<size; j++) {
            if (arr[i] == arr[j]) {
                check[j] = 1;
                count++;
            }
        }
        cout<<"Frequency of "<<arr[i]<<" is: " << count << endl;
    }
}
int main() {
    int arr[] = {10, 20, 20, 10, 10, 20, 5, 20};
    int size = sizeof(arr) / sizeof(arr[0]);
    frequency(arr, size);
    return 0;
}
```

#### 4. Observations/Discussions/ Complexity Analysis:

The screenshot displays a C++ IDE with the following code in `frequency.cpp`:

```

1 #include <bits/stdc++.h>
2 using namespace std;
3 int frequency(int arr, int size) {
4     bool check[size];
5     for(int i=0; i<size; i++)
6         check[i] = 0;
7
8     for(int i=0; i<size; i++) {
9         if(check[i] == 1)
10            continue;
11
12         int count = 1;
13         for(int j = i+1; j<size; j++) {
14             if (arr[i] == arr[j]) {
15                 check[j] = 1;
16                 count++;
17             }
18         }
19         cout<<"Frequency of " << arr[i] << " is: " << count << endl;
20     }
21 }
22 int main() {
    int arr[] = {10, 20, 5, 10, 20, 5, 10, 20, 5, 10};
    int size = sizeof(arr)/sizeof(arr[0]);
    frequency(arr, size);
    return 0;
}

```

The console output shows:

```

Frequency of 10 is: 3
Frequency of 20 is: 4
Frequency of 5 is: 1
-----
Process exited after 0.04464 seconds with return value 0
Press any key to continue . . .

```