**Worksheet - 3**

**Student Name:** Kanishk Soni **UID:** 20BCS9398

**Branch:** BE CSE **Section/Group:** 20BCS\_WM\_707-B

**Semester:** 5 **Date of Performance:** 23/08/2022

**Subject Name:** Design & Analysis of Algorithm **Subject Code:** 20CSP-312

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

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

**2. Algorithm/ Which logistics used:**

1. Input the number of elements of an array.
2. Input the array elements.
3. Create another array(count array) to store the frequency of elements.
4. Traverse the input array and update the count of the elements in the frequency array.
5. Print the frequency array which displays the frequency of all the elements of the array.

**3. Code:**

#include <bits/stdc++.h>

using namespace std;

int main() {

int n, x; cin>>n;

vector<int> a;

for(int i=0; i<n; i++){

cin>>x;

a.push\_back(x);

}

int nn = \*max\_element(a.begin(), a.end());

int c[nn+1];

for(int i=0; i<=nn; i++){

c[i] = 0;

}

for(int i=0; i<n; i++) {

c[a[i]]++;

}

for(int i=0, x=0; i<=nn; i++){

if(c[i] != 0) {

x++;

cout<<i<<": "<<c[i]<<endl;

}

if(x == n) {

break;

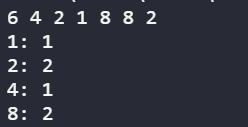
}

}

return 0;

}

**5. Result/Output:**



**Learning outcomes (What I have learnt):**

Understood the concept of counting array to find the frequencies of all elements of array.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |