Assignment no :- 13 SYCOA104

Aim :- Write a c++ program to print all the repeated numbers with their frequency in an array in minimum time complexity.

Theory;

1] Introduction :-
Using array data structure we are storing the numbers. Using loops we are calculating the frequency count of a particular digit. We have made the project menu driven and as we are accepting a number as input from user the time complexity is O(n).

2] Discuss different searching techniques;
→ There are two main searching techniques :-
1] Linear search
2] Binary search

1] Linear search :-
The key to be searched is compared with every ~~data structure present in the~~ member present in that particular data structure. This technique works effectively on linear data structure.

2] Binary search :-
It use "divide and conquer" to search a key. In this method the linear data structure is repeatedly divided in the half and the key element is searched.

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5] Explain time complexity and related terms.

→ Time complexity is the amount of time taken by an algorithm to run, as a function of the length of the input. It measures the time taken by each statement in the code to get executed.

order of magnitude :- This representation is used while showing time complexity.

constant time complexity :- it is shown as O(1).

linear time complexity : represented as O(n).

4] Conclusion :-

We have succesfully implemented a program to print the frequency count of the element of an array.

CODE:

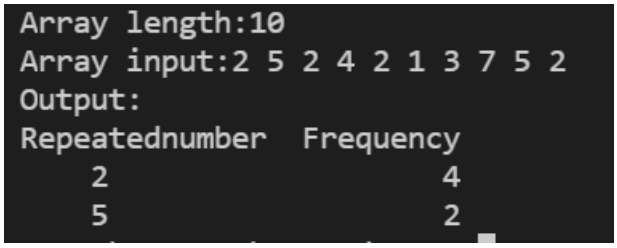
```
#include <bits/stdc++.h>
using namespace std;
int main()
{
    int i, j, n, count;

    cout << "Array length:";
    cin >> n;

    int set[100];
    cout << "Array input:";
    for (i = 0; i < n; i++)
    {
        cin >> set[i];
    }

    int flag[100] = {0};
    cout << "Output: "<<endl<<"Repeatednumber  Frequency"<<endl;
    for (i = n-1; i >=0; i--)
    {
        count = 0;
        if (flag[i] != 1)
        {
            for (j = n-1; j >=0; j--)
            {
                if (set[i] == set[j])
                {
                    count++;
                    flag[j] = 1;
                }
            }
            if (count > 1)
            {
                cout <<"    "<< set[i]<<"\t\t\t" << count<<endl;
            }
        }
    }
    return 0;
}
```

OUTPUT:


Array length:10
Array input:2 5 2 4 2 1 3 7 5 2
Output:
Repeatednumber Frequency
2 4
5 2