FREQUENCY COUNT OF ARRAY ELEMENTS

ITP Assignment-1

Kriti Shukla (IEC2021067)

Manya Agrawal (IEC2021068)

Aswitha Sai (IEC2021069)

Naman Suhane (IEC2021070)

Department of Electronics and Communication Engineering
Indian Instituteof Information Technology, Allahabad.

Abstract:In this paper we have devised an algorithm to count frequency of each element and print all. We have discussed time complexity of the algorithm.

1.INTRODUCTION

To count frequency of each element we require two loops. One outer loop to select an array element. Second inner loop to find first duplicate element of the currently selected array element by outer loop. Run an outer loop from 0 to size.

2.ALGORITHM

1.Declare and initialize an array arr.

2.Declare another array fr with the same size of array arr. It is used to store the frequencies of elements present in the array.

3.Variable visited will be initialized with the value -1. It is required to mark an element visited that is, help us to avoid counting the same element again.

4.The frequency of an element can be counted using two loops. One loop will be used to select an element from an array, and another loop will be used to compare the selected element with the rest of the array.

5.Initialize count to 1 in the first loop to maintain a count of each element. Increment its value if a duplicate element is found in the second loop. Since we have counted this element and didn't want to count it again. Mark this element as visited by setting fr[j]=visited. Store count of each element to fr.

6.Finally, print out the element along with its frequency.

3.PSEUDO CODE

STEP 1: Start

STEP 2:INITIALIZE arr []={1,2,2,1,3,3,5,3,1}

STEP 3: length=sizeof (arr)/sizeof (arr [0])

STEP 4: DEFINE fr[length].

STEP 5: SET visited =-1.

STEP 6: SET i= 0. REPEAT STEP 7 to 12 until i<length

.**STEP 7:** SET count =1

STEP 8: SET j=0.REPEAT STEP 9 and 10 until j<length.

STEP9:If(arr[i]==arr[j])then

Count++

fr[j]=visited

STEP 10: j=j+1

STEP 11: if(fr[i]!=visited)thenfr[i]=count

STEP 12: i=i+1

STEP 13: PRINT "----------"

STEP 14: PRINT "Element|Frequency"

STEP 15: PRINT "----------"

STEP 16: SET i=0. REPEAT STEP 17 and 18 until i<length

STEP 17: if(fr[i]! =visited)

Then print (“frequency of the “”element is “”)

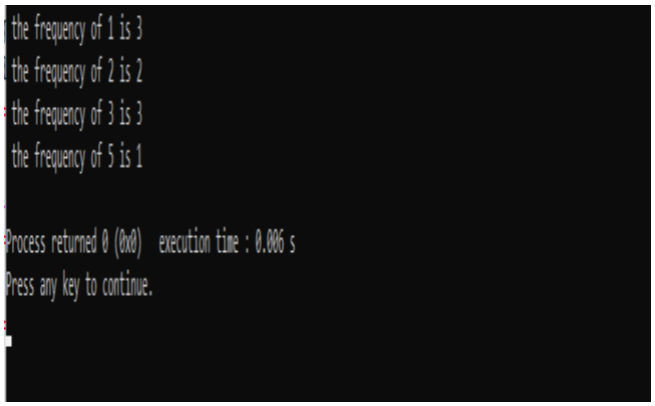
STEP 18: i= i+1.

STEP 19: PRINT “----------”

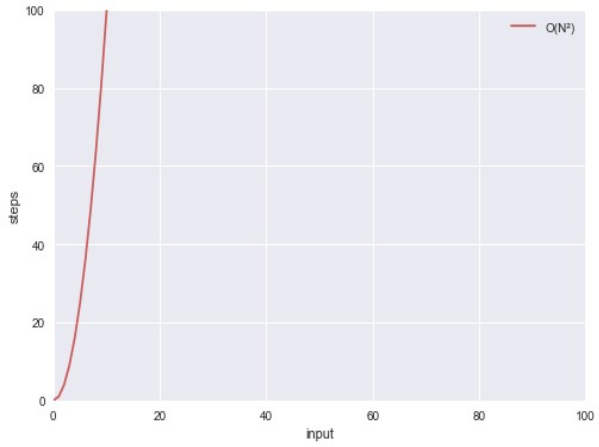
STEP 20: RETURN 0.

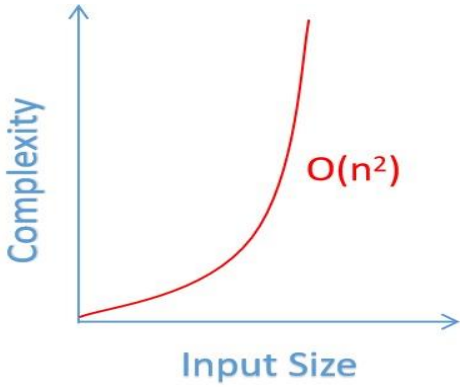
STEP 21: END

4. ***RESULTANT OUTPUT***:



5.TIME COMPLEXITY:





The time complexity of above deviced algorithm is $O(n^2)$.

6.CONCLUSIONS:

We conclude that ,using the above algorithm we can initialize a set of numbers in to the array and then know the frequency of each element by printing it .we assign the frequencies of duplicate elements to -1 to avoid counting it again.

7.REFERENCES:

https://www.geeksforgeeks.org/counting-frequencies-of-array-elements/

APPENDIX:

```c
#include <stdio.h>
int main () {
 // Write C code here
 int arr [] = {1,2,2,1,3,3,5,3,1};
 int length=sizeof(arr)/sizeof (arr [0]);
 int fr[length];
 int visited=-1;
 for (int i=0; i<length; i++)
 {
 int count=1;
 for (int j=i+1; j<length; j++)
    {
 if(arr[i]==arr[j])
  {
  count++;
  fr[j]=visited;
  }
 }
 if(fr[i] != visited)
 fr[i]=count;
  }
 for (int i=0; i<length; i++)
 {
 if(fr[i]!= visited)
 {
 printf (" the frequency of %d is %d\n" ,arr[i],fr[i]);
 }
 }
 return 0;
}
```