Frequency Count of Array Element

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ITP Assignment - 1

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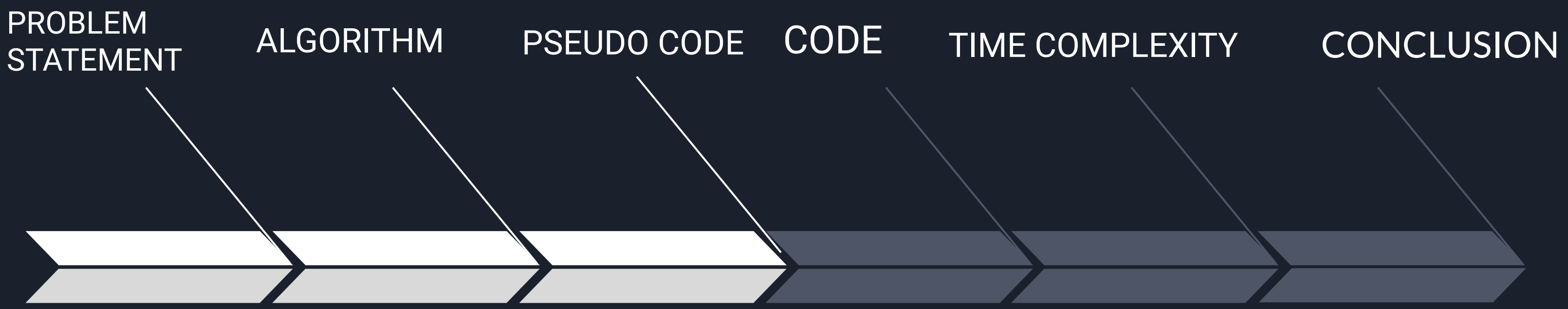

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PROBLEM STATEMENT

Write a C progarm to count the frequency of each element and print all

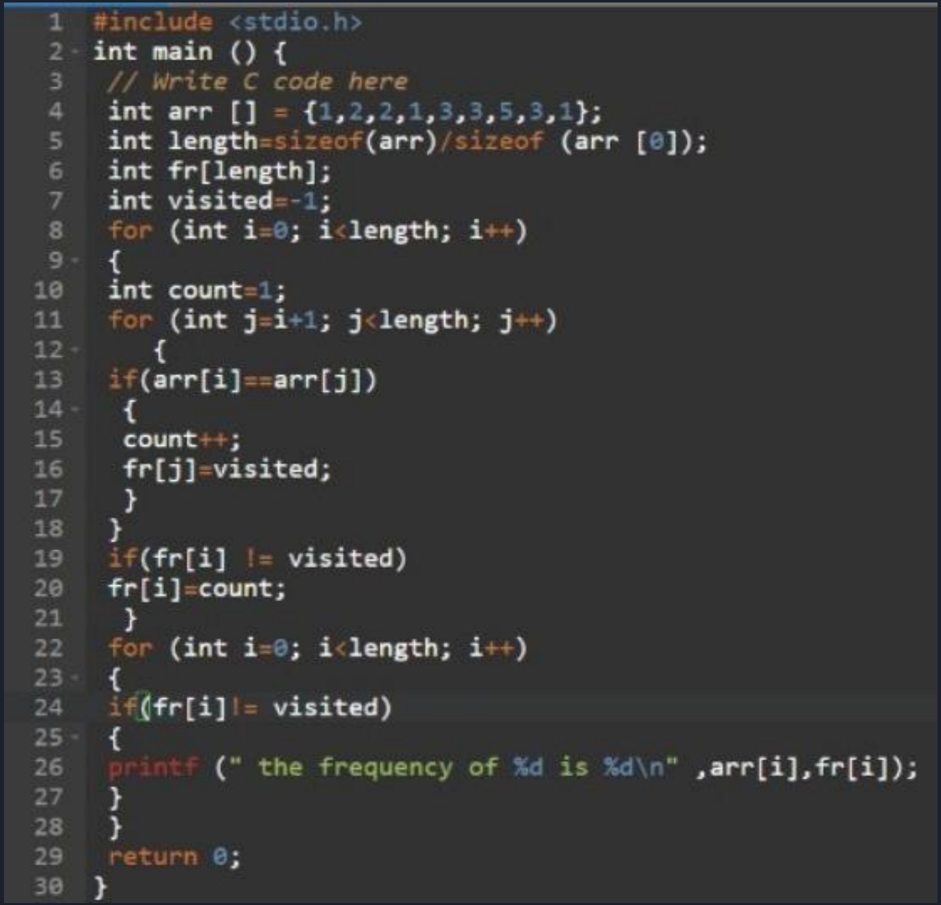
ALGORITHM

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, which 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 the elements in the array along with their frequencies .

PSEUDO CODE

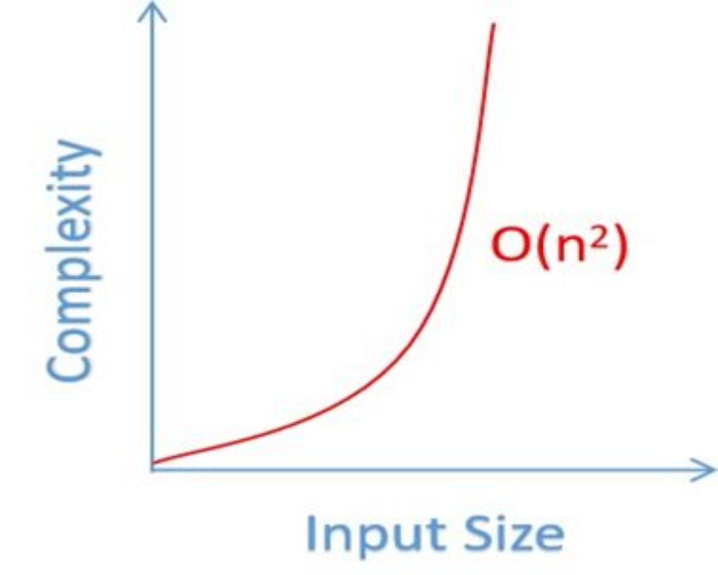
```
STEP 1: Start
STEP 2: INITIALIZE arr[]={1,2,2,1,3,3,5,3,1}
STEP 3: length=sizeof (arr)/sizeof (arr [0])
STEP 4: DEFINE fr[length].
STEP 5: SET visited =-1.
STEP 6: SET i= 0. REPEAT STEP 7 to 12 until i<length
STEP 7: SET count =1
STEP 8: SET j=0.REPEAT STEP 9 and 10 until j<length.
STEP 9:If(arr[i]==arr[j])then
        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
```

CODE



```
#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;
}
```

TIME COMPLEXITY



- In the above algorithm to find the frequency of an element we used two nested for loops.

- One loop to select an element from an array, and another to compare the selected element with the rest of the array.

- This resulted in the time complexity of ***O(n^2)***.

CONCLUSIONS

We can conclude that, using the above algorithm we can take a set of numbers from the user and know the frequency of every element.