2.c. Finding Complexity using Counter Method

Aim: Convert the following algorithm into a program and find its time complexity using counter method.

```
Factor(num) {
{
   for (i = 1; i <= num;++i)
   {
    if (num % i== 0)
       {
         printf("%d ", i);
       }
    }
  }
}
```

Note: No need of counter increment for declarations and scanf() and counter variable printf() statement.

Input:
 A positive Integer n
Output:
Print the value of the counter variable

Algorithm:

function Factor(num) {

   initialize count to 0

   // loop from 1 to num

   for each i from 1 to num {

     increment count by 1

     // check if i is a factor of num

     if num modulo i equals 0 {

       increment count by 1

       // simulate printing i (e.g., printf("%d ", i);)

     }

increment count by 1 // end of inner if-statement

    }

    increment count by 1 // after loop completion

    print count

}

Program:

```c
#include<stdio.h>
void Factor(int num)
{ int count=0;
    for (int i = 1; i <= num;++i)
    {
        count++;
        if (num % i== 0)
        {
            count++;
            //printf("%d ", i);
        }
        count++;
    }
    count++;
    printf("%d",count);
}


int main(){
```

```
    int n;

    scanf("%d",&n);

    Factor(n);
}
```

Output:

	Input	Expected	Got	
✔	12	31	31	✔
✔	25	54	54	✔
✔	4	12	12	✔