Problem 4: Finding Complexity using Counter Method

Aim:

Convert the following algorithm into a program and find its time

complexity using counter method.  
              
void function(int n)  
{  
    int c= 0;  
    for(int i=n/2; i<n; i++)  
        for(int j=1; j<n; j = 2 \* j)  
            for(int k=1; k<n; k = k \* 2)  
                c++;  
}  
   
**Note:** No need of counter increment for declarations and scanf() and  count variable printf() statements.  
  
**Input:** A positive Integer n  
**Output:**Print the value of the counter variable

algorithm:

1. Read integer n, initialize count and c to 0, and increment count in nested loops with specific conditions on i, j, and k, updating c in the innermost loop.
2. Print the final value of count.

code:

#include <stdio.h>

int main()

{

int n,count=0;

scanf("%d",&n);

int c= 0;

count++;

for(int i=n/2; i<n; i++)

{

count++;

for(int j=1; j<n; j = 2 \* j)

{

count++;

for(int k=1; k<n; k = k \* 2)

{

count++;

c++;

count++;

}

count++;

}

count++;

}

count++;

printf("%d",count);

}

Output:

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 4 | 30 | 30 |  |
|  | 10 | 212 | 212 |  |

Passed all tests!

**Correct**

Marks for this submission: 1.00/1.00.

Result:

The expected output is obtained.