

Problem

Result

### Code : Min Steps to 1 using DP

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Given a positive integer 'n', find and return the minimum number of steps that 'n' has to take to get reduced to 1. You can perform any one of the following 3 steps:

- 1.) Subtract 1 from it. ( $n = n - 1$ ),
- 2.) If n is divisible by 2, divide by 2. (if  $n \% 2 == 0$ , then  $n = n / 2$ ),
- 3.) If n is divisible by 3, divide by 3. (if  $n \% 3 == 0$ , then  $n = n / 3$ ).

#### Input format :

The first and the only line of input contains an integer value, 'n'.

#### Output format :

Print the minimum number of steps.

#### Constraints :

$1 \leq n \leq 10^6$

Time Limit: 1 sec

#### Sample Input 1 :

4

#### Sample Output 1 :

2

#### Explanation of Sample Output 1 :

For n = 4  
Step 1:  $n = 4 / 2 = 2$   
Step 2:  $n = 2 / 2 = 1$

#### Sample Input 2 :

7

#### Sample Output 2 :

3

#### Explanation of Sample Output 2 :

For n = 7  
Step 1:  $n = 7 - 1 = 6$   
Step 2:  $n = 6 / 3 = 2$   
Step 3:  $n = 2 / 2 = 1$

```
1
2 * #include<bits/stdc++.h>
3 * int countStepsTo1(int n){
4
5 *     /* Don't write main().
6 *     * Don't read input, it is passed as function argument.
7 *     * Return output and don't print it.
8 *     */
9     int *arr = new int[n+1];
10    arr[1]=0;
11
12    for(int i=2;i<=n;i++){
13        int x;
14        int y=INT_MAX,z=INT_MAX;
15        if(i%3==0){
16            z =arr[i/3]+1;
17        }
18        if(i%2==0){
19            y =arr[i/2]+1;
20        }
21        x = arr[i-1]+1;
22        arr[i]=min(x,min(y,z));
23    }
24    return arr[n];
25 }
26
27
```