650. 2 Keys Keyboard

- Difficulty:Medium
- Total Accepted:3.3K
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  4 Keys Keyboard

Initially on a notepad only one character 'A' is present. You can perform two operations on this notepad for each step:

1. `Copy All`: You can copy all the characters present on the notepad (partial copy is not allowed).
2. `Paste`: You can paste the characters which are copied **last time**.

Given a number n. You have to get **exactly** n 'A' on the notepad by performing the minimum number of steps permitted. Output the minimum number of steps to get n 'A'.

Example 1:

```
Input: 3

Output: 3

Explanation:

Intitally, we have one character 'A'.
```

In step 1, we use **Copy All** operation.

In step 2, we use **Paste** operation to get 'AA'.

In step 3, we use **Paste** operation to get 'AAA'.

Note:

1. The n will be in the range [1, 1000].

```cpp
class Solution {
public:
    int minSteps(int n) {
        vector<int> dp(n+1,0);
        if(n==1) return 0;
        for(int i=1;i<=n;i++)
        {
            dp[i] = i;
        }
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<i;j++)
            {
                if(i%j==0 && j!=1)
                dp[i] = dp[j] + i/j;
            }
        }
        return dp[n];
    }
};
```