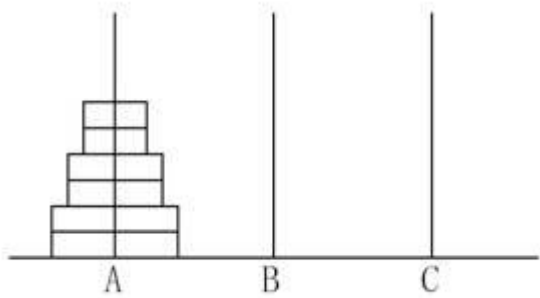


## Hanoi Twin Towers

### Problem description

Given three thin pillars of sufficient length, A, B, and C, place  $2n$  disks with holes in the middle on pillar A. These disks have  $n$  different sizes, each size has two identical disks. Note that the two disks are not discriminated (The figure below is for  $n=3$ ).



These disks are now to be moved to the pillar C, which can be temporarily stored on the pillar B during the movement. Requirements :

- (1) Only allowed to move one disk at a time;
- (2) The disks on A, B, C three pillars must maintain the order of small to large;

Task: let  $A_n$  be the minimum number of moves required by moving  $2n$  disks to complete the above task, for the input  $n$ , output  $A_n$ .

### Input

The input file contains a positive integer  $n$ , indicating that  $2n$  disks are placed on pillar A.

### Output

The output file contains a positive integer as the minimum number of moves  $A_n$  required to complete the above task.

#### Sample Input 1

1

#### Sample Output 1

2

#### Sample Input 2

2

#### Sample Output 2

6

**Restriction**

For 50% of the data,  $1 \leq n \leq 25$

for 100% of the data,  $1 \leq n \leq 200$

**Hint**

Try to establish the recursive relation between  $A_n$  and  $A_{n-1}$ .