

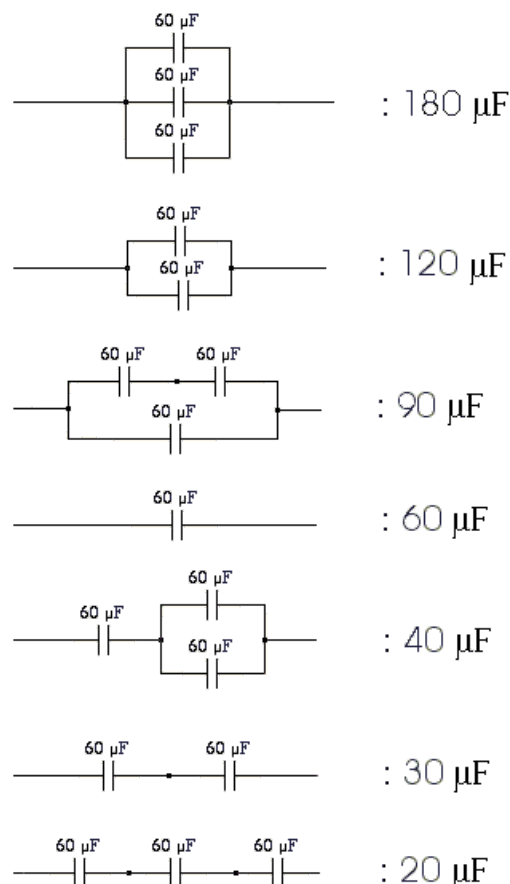
Project Euler #155: Counting Capacitor Circuits.

This problem is a programming version of [Problem 155](#) from [projecteuler.net](#)

An electric circuit uses exclusively identical capacitors of the same value C .

The capacitors can be connected in series or in parallel to form sub-units, which can then be connected in series or in parallel with other capacitors or other sub-units to form larger sub-units, and so on up to a final circuit.

Using this simple procedure and up to n identical capacitors, we can make circuits having a range of different total capacitances. For example, using up to $n = 3$ capacitors of $60\mu F$ each, we can obtain the following 7 distinct total capacitance values:



If we denote by $D(n)$ the number of distinct total capacitance values we can obtain when using up to n equal-valued capacitors and the simple procedure described above, we have:

$$D(1) = 1, D(2) = 3, D(3) = 7 \dots$$

Find $D(n)$.

Reminder : When connecting capacitors C_1, C_2 etc in parallel, the total capacitance is $C_T = C_1 + C_2 + \dots$, whereas when connecting them in series, the overall capacitance is given by:

$$\frac{1}{c_T} = \frac{1}{C_1} + \frac{1}{C_2} + \dots$$

Input Format

Each test file contains a single integer n .

Constraints

- $1 \leq n \leq 18$

Output Format

Output a single number i.e. $D(n)$

Sample Input

3

Sample Output

7