

Problem D

How Many Trees?

Input: standard input

Output: standard output

Time Limit: 100 seconds

Memory Limit: 32 MB

A binary search tree is a binary tree with root **k** such that any node **v** reachable from its left has **label (v) < label (k)** and any node **w** reachable from its right has **label (v) > label (k)**. It is a search structure which can find a node with label **x** in **$O(n \log n)$** average time, where **n** is the size of the tree (number of vertices).

Given a number **n**, can you tell how many different binary search trees may be constructed with a **set** of numbers of size **n** such that each element of the set will be associated to the label of exactly one node in a binary search tree?

Input and Output

The input will contain a number **$1 \leq i \leq 300$** per line representing the number of elements of the set. You have to print a line in the output for each entry with the answer to the previous question.

Sample Input

1
2
3

Sample Output

1
2
5

(The Joint Effort Contest, Problem setter: Rodrigo Malta Schmidt)