5   Ryan's Doodles

Time Limit: 1.0s
Memory Limit: 128MB

5.1   Problem Description

Unfortunately, Jiahai does not have enough budget for 10 million employees. To keep his job, Ryan the smurfy has decided to ask Jiahai to give him a test, a test that can prove Ryan's worth to Potato Farm Pte. Ltd.

Jiahai is evil. Jiahai wants Ryan to suffer. Jiahai decides he will give Ryan an integer N. He will bully Ryan into doodling a random tree based on the following algorithm:

> Begin with 1 node. While the tree has $K \leq N$ nodes, we add node $K+1$ and draw an edge from node $K+1$ to a random node between 1 and K.

Ryan is feeling bored and sad. He wants to stick to mugging for IOI, however he is stuck with this miserable task. Since we all love doing Floyd-Warshall on a tree, Ryan wants to find the sum of the all pairs shortest paths (APSP) across all nodes. In other words, given 2 distinct nodes i, j such that $i \leq j$, Ryan adds the distance from node i to node j to his sum.

As he has been cursed for eternity, Ryan wants to find what the total value of this APSP is, summed across all possible trees. As this number may be large, Ryan would like this modulo $10^9 + 7$. Can you help Ryan solve his problem, so that he can be released from Jiahai's torture?

5.2   Input Format

The input format is as follows:

- The only line of input contains 1 integer N.

5.3   Output Format

The output format is as follows:

- The only line of output consists of 1 integer, the total value of this APSP across all possible trees.

5.4 Subtasks

For all test cases, it is guaranteed that $1 \le N \le 10^6$.

Subtask	Score	N
1	12	$1 \le N \le 9$
2	15	$1 \le N \le 200$
3	23	$1 \le N \le 5000$
4	50	-
5	0	Sample Testcases

5.5 Sample Testcase

standard input	standard output
3	8
4	58