I Love Marathon Contest

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	1024 megabytes

A marathon event will be held at a pond. The pond is circular and marked with $1, 2, \ldots, 2N$ at equal clockwise intervals along its perimeter. There are $2N$ participants in the marathon event; N people wear red hats and the remaining N people wear white hats.

The marathon event is run as follows:

- For each of the $2N$ marks, exactly one participant takes that position.
- The participant at the position marked with 1 takes the baton and starts running clockwise.
- The i-th ($1 \leq i \leq 2N - 1$) runner continues running until he/she reaches the position of the first person wearing a hat of a different color than his/hers. After reaching that position, he/she passes the baton to that person and leaves the pond. The person who is passed the baton starts running clockwise.
- The $2N$-th runner finishes the marathon by running to the position marked with 1.

If the length of one lap around the pond is 1, the sum of the distances run by $2N$ participants is an integer, which is L.

There are $(2N)!$ possible arrangements of $2N$ participants. Find the sum of L for all of them modulo 998244353.

Input

The input is given in the following format from standard input:

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N
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- All input numbers are integers.
- $1 \leq N \leq 10^6$

Output

Print the answer on a single line.

Examples

standard input	standard output
1	2
2	40
3	1656
4	112896
5	11750400

Note

For the first example, there are 2 possible arrangements, and $L = 1$ in both case.

For the second example, if the colors of hats worn by the participants who takes the position marked with $1, 2, 3, 4$ are:

- red, red, white, white, then $L = 2$.
- red, white, red, white, then $L = 1$.
- red, white, white, red, then $L = 2$.
- white, red, red, white, then $L = 2$.
- white, red, white, red, then $L = 1$.
- white, white, red, red, then $L = 2$.

There are 4 possible arrangements of participants for each of them. The sum of L for all of 24 arrangements is $(2 + 1 + 2 + 2 + 1 + 2) \times 4 = 40$.