Problem C. Counting Sequence

Input file:	*standard input*
Output file:	*standard output*
Time limit:	16 seconds
Memory limit:	1024 mebibytes

We are given integers n and c.

A sequence $a_1, a_2, \ldots, a_m$ is *good* if and only if:

- $a_i > 0$ for all $1 \le i \le m$,
- $|a_{i+1} - a_i| = 1$ for all $1 \le i \le m - 1$,
- $\sum_{i=1}^{m} a_i = n$.

For a good integer sequence $a_1, a_2, \ldots, a_m$, let us define

$$f(a) = \sum_{i=1}^{m-1} [a_i > a_{i+1}].$$

That is, $f(a)$ denotes the number of indices i that satisfy $a_i > a_{i+1}$ among all $1 \le i \le m - 1$. We define the *weight* of the sequence a as the value of $c^{f(a)}$.

Your task is to calculate the sum of the weights of all good sequences, modulo 998 244 353.

Input

The first line contains two integers n and c ($1 \le n \le 3 \cdot 10^5$, $0 \le c < 998\,244\,353$).

Output

Output the answer modulo 998 244 353.

Examples

standard input	standard output
5 3	8
1 0	1
2022 39	273239559

Note

In the first example, all good sequences are as follows:

a	$f(a)$	$c^{f(a)}$
$[5]$	0	1
$[2, 3]$	0	1
$[3, 2]$	1	3
$[2, 1, 2]$	1	3

So the answer is $1 + 1 + 3 + 3 = 8$.