Problem I
Deliberating Independence

A sequence is **deliberately independent** if and only if it is possible to mark zero or more of its elements such that the following two conditions are satisfied:

- **Independent.** No two adjacent elements are both marked.
- **Liberated.** All unmarked elements have the same value.

Given two integers N and M, calculate the number of deliberately independent sequences of length N whose elements are between 1 and M (inclusive) modulo $998\,244\,353$.

Input

Two space-separated integers N and M ($2 \leq N \leq 100\,000$, $1 \leq M \leq 100\,000$), denoting the length of the sequence and the maximum allowed element value.

Output

Output a single integer denoting the number of deliberately independent sequences of length N whose elements are between 1 and M (inclusive) modulo $998\,244\,353$.

Sample 1

Sample Input	Sample Output
5 3	123

Explanation of Sample 1: One deliberately independent sequence that satisfies the conditions is $(3, 1, 3, 3, 2)$. We can mark the second and fifth elements. No two adjacent elements are marked and the unmarked elements are all 3.

In contrast, the sequence $(1, 3, 1, 2, 3)$ is not deliberately independent.

Sample 2

Sample Input	Sample Output
2 4	16

Sample 3

Sample Input	Sample Output
23 4	264685559

Explanation of Sample 3: There are $1\,262\,929\,912$ deliberately independent sequences. Therefore, the output is $1\,262\,929\,912$ modulo $998\,244\,353$, which is $264\,685\,559$.

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