Magical Tower Sequences

**Time Limit:** 2.0s  **Memory Limit:** 256M

Yusuf is a mighty wizard and he gets his power from magical tower sequences. A magical tower sequence is a sequence of \( n \) magical towers in a row.

Let's assume that the height of the \( i \)-th tower is \( A_i \). Let's say that tower \( j \) is visible from tower \( i \) if tower \( j \) is strictly higher than all towers between tower \( i \) and tower \( j \) (not including the \( i \)-th tower). More formally, let \( S \) be the range of all towers between \( i \)-th and \( j \)-th tower. This means that \( S = [i + 1, j - 1] \) if \( j > i \), and \( S = [j + 1, i - 1] \) otherwise. The \( j \)-th tower is visible from the tower \( i \) if \( \forall k \in S, A_j > A_k \).

Let \( B_i \) be the number of towers visible from tower \( i \) (not including tower \( i \)). Yusuf calls a sequence of towers lucky if \( A_i = B_i \) for all \( i \). Yusuf wants you to find the number of lucky sequences of \( n \) towers modulo prime number \( m \).

**Input**

The first line contains 2 integers \( n \) and \( m \).

- \( 2 \leq n \leq 1000 \)
- \( 10^7 \leq m \leq 10^9 \), \( m \) is prime.

**Output**

Print one number, the number of lucky sequences of \( n \) towers modulo \( m \).

**Example**

Input:

```
7 47774477
```

Output:

```
3
```

**Explanation**

Lucky sequences are \( [1, 2, 2, 2, 2, 2, 1], [2, 2, 3, 2, 3, 2, 2], [2, 3, 2, 4, 2, 3, 2] \).