# **HackerRank**

# Anti-Palindromic Strings

You are given two integers, N and M. Count the number of strings of length N (under the alphabet set of size M) that doesn't contain any palindromic string of the length greater than 1 as a consecutive substring.

#### **Input Format**

Several test cases will be given to you in a single file. The first line of the input will contain a single integer, T, the number of test cases.

Then there will be T lines, each containing two space-separated integers, N and M, denoting a single test case. The meanings of N and M are described in the Problem Statement above.

#### **Output Format**

For each test case, output a single integer - the answer to the corresponding test case. This number can be huge, so output it modulo  $10^9 + 7$ .

#### **Constraints**

$$1 \le T \le 10^5$$
  
 $1 \le N, M \le 10^9$ 

## **Sample Input**

```
2
2 2
2 3
```

## **Sample Output**

```
2
6
```

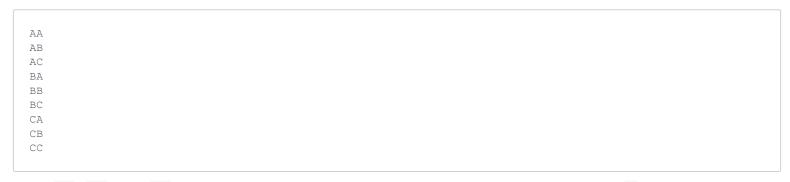
# **Explanation**

For the  $1^{st}$  testcase, we have an alphabet of size M=2. For the sake of simplicity, let's consider the alphabet as [A, B]. We can construct four strings of size N=2 using these letters.

```
AA
AB
BA
BB
```

Out of these, we have two strings,  $\frac{AB}{AB}$  and  $\frac{BA}{BA}$ , that satisfy the condition of not having a palindromic string of length greater than 1. Hence, the answer  $\frac{2}{AB}$ .

For the  $2^{nd}$  test case, we have an alphabet of size M=3. For the sake of simplicity, let's consider the alphabet as [A, B, C]. We can construct nine strings of size N=2 using these letters.



Save AA, BB, and CC, all the strings satisfy the given condition; hence, the answer 6.