Count Arrays

Problem Code: **CNTAR**

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Given an array A of length N such that $1 \leq A_i \leq N$ and $A_i \neq i, \forall i \in [1, N]$.

Count the number of arrays B of length N such that $\forall i \in [1, N]$:

- $B_i \neq B_{A_i}$
- $1 \leq B_i \leq M$

Since the answer may be large, print it modulo $10^9 + 7$.

Input Format

- The first line contains a single integer T − the number of test cases. The description of T test cases follows.
- Each test case contains 2 lines of input:
  - The first line of each test case contains two space separated integers N, M.
  - The second line of each test case contains N space separated integers $A_1, A_2, \ldots, A_N$.

Output Format

For each test case, output a single integer on a newline - answer modulo $10^9 + 7$.

Constraints

- $1 \leq T \leq 10^5$
- $2 \leq N \leq 10^5$
- $1 \leq M \leq 100$
- $1 \leq A_i \leq N, A_i \neq i$
- Sum of N over all test cases does not exceed 10^6

Sample Input 1

```
2
2 3
2 1
3 2
2 1 1
```

Sample Output 1

```
6
2
```

Explanation

Test Case 1: There are 6 possible arrays - $[1, 2], [2, 1], [1, 3], [3, 1], [2, 3], [3, 2]$.

Test Case 2: There are 2 possible arrays - $[1, 2, 2], [2, 1, 1]$.

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Problem level:	Unavailable
Date Added:	6-02-2022
Time Limit:	1 secs
Source Limit:	50000 Bytes
Languages:	CPP17, PYTH 3.6, JAVA, C, CPP14, PYTH, PYP3, CS2, ADA, PYPY, TEXT, PAS fpc, NODEJS, RUBY, PHP, GO, HASK, TCL, kotlin, PERL, SCALA, LUA, BASH, JS, rust, LISP sbcl, PAS gpc, BF, CLOJ, R, D, CAML, swift, FORT, ASM, FS, WSPC, LISP clisp, SQL, SCM guile, PERL6, ERL, CLPS, PRLG, SQLQ, ICK, NICE, ICON, COB, SCM chicken, PIKE, SCM qobi, ST, NEM

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