# A Math Problem

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 1 second |
| Memory limit: | 256 megabytes |

There are $n$ fans $F_i(i = 1, \cdots, n)$ and $m$ teams $T_j(j = 1, \cdots, m)$.

(i) For any fan $F_i$, $F_i$ is a fan of at least one team but not a fan of all teams.

(ii) For any two teams $T_i, T_j(1 \le i, j \le m)$, there exists exactly one team $T_k(1 \le k \le m)$ exactly having the fans both $T_i$ and $T_j$ have. Note that $i, j, k$ can be the same.

(iii) For any two teams $T_i, T_j(1 \le i, j \le m)$, there exists exactly one team $T_k(1 \le k \le m)$ exactly having the fans either $T_i$ or $T_j$ have. Note that $i, j, k$ can be the same.

Please calculate that How many kinds of correspondences between the fans and the teams.

## Input

There are multiple test cases. The first line of the input contains an integer $T(T \le 100000)$, indicating the number of test cases. For each test case:

The first and only line contains two integers $n, m(1 \le n \le 10^{18}, 2 \le m \le 6)$.

## Output

For each test case, output a integer representing the answer modulo $1000000007(10^9 + 7)$ in one line.

## Example

| standard input | standard output |
|---|---|
| 9<br>2 2<br>2 3<br>3 3<br>3 4<br>4 4<br>4 5<br>5 5<br>5 6<br>6 6 | 2<br>12<br>36<br>216<br>1032<br>7200<br>46800<br>453600<br>3369600 |