

2 The Jester

In the King's court, there is a bitter rivalry between the Mathematician and the Jester. The King gives both of them an array A , and then the Mathematician asks the jester questions of the form:

“What is the maximum value in the array between positions i and j ?”

The jester, being lazy, doesn't compute the maximum of all the elements in the interval $A[i], \dots, A[j]$. Instead, he just computes the maximum of $A[i]$ and $A[j]$ and reports this as his answer.

The King supports the Jester, since his wit is what keeps the court distressed and calm. Hence, he wishes to give an array A such that, no matter what values of i and j the Mathematician chooses, the Jester's lazy strategy always gives the correct answer to the Mathematician's query.

Your task is to compute how many possible arrays there are of this sort, given two constraints:

- N , the length of the array
- M , an upper bound such that each element of the array is between 1 and M .

Since the answer may be large, output the value modulo 1,000,000,007.

Input format

- The first line is a single integer Q , the number of queries.
- The next Q lines each contain two space separated integers M and N , the constraints described above.

Output format

Your output should consist of Q lines, where line i is the answer for testcase i .

Test Data

- Subtask 1 (10 marks) : $1 \leq Q \leq 100$, $1 \leq N, M \leq 20$.
- Subtask 2 (30 marks) : $1 \leq Q \leq 2 \times 10^5$, $1 \leq N, M \leq 200$.
- Subtask 3 (60 marks) : $1 \leq Q \leq 2 \times 10^5$, $1 \leq N, M \leq 5000$.

Sample Input

```
3
2 2
3 3
1 5
```

Sample Output

```
4
22
1
```

Limits

- *Time limit*: 4 s
- *Memory limit*: 128 MB