D. Beautiful Pairs of Numbers

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The sequence of integer pairs $(a_1, b_1), (a_2, b_2), ..., (a_k, b_k)$ is *beautiful*, if the following statements are fulfilled:

- $1 \le a_1 \le b_1 < a_2 \le b_2 < ... < a_k \le b_k \le n$, where n is a given positive integer;
- all numbers $b_1 - a_1$, $b_2 - a_2$, ..., $b_k - a_k$ are distinct.

For the given number n find the number of beautiful sequences of length k. As the answer can be rather large, print the remainder after dividing it by 1000000007 $(10^9 + 7)$.

Input

The first line contains integer t $(1 \le t \le 2 \cdot 10^5)$ — the number of the test data.

Each of the next t lines contains two integers n and k $(1 \le k \le n \le 1000)$.

Output

For each test from the input print the answer to the problem modulo 1000000007 $(10^9 + 7)$. Print the answers to the tests in the order in which the tests are given in the input.

Examples

input
6 1 1 2 1 2 2 3 1 3 2 3 3

output
1 3 0 6 2 0

Note

In the first test sample there is exactly one beautiful sequence: $(1, 1)$.

In the second test sample, the following sequences are beautiful:

- $(1, 1)$;
- $(1, 2)$;
- $(2, 2)$.

In the fourth test sample, the following sequences are beautiful:

- $(1, 1)$;
- $(1, 2)$;
- $(1, 3)$;
- $(2, 2)$;
- $(2, 3)$;

- $(3, 3)$.

In the fifth test sample, the following sequences are beautiful:

- $(1, 1), (2, 3)$;
- $(1, 2), (3, 3)$.

In the third and sixth samples, there are no beautiful sequences.