

B. Polo the Penguin and Houses

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Little penguin Polo loves his home village. The village has n houses, indexed by integers from 1 to n . Each house has a plaque containing an integer, the i -th house has a plaque containing integer p_i ($1 \leq p_i \leq n$).

Little penguin Polo loves walking around this village. The walk looks like that. First he stands by a house number x . Then he goes to the house whose number is written on the plaque of house x (that is, to house p_x), then he goes to the house whose number is written on the plaque of house p_x (that is, to house p_{p_x}), and so on.

We know that:

1. When the penguin starts walking from any house indexed from 1 to k , inclusive, he can walk to house number 1.
2. When the penguin starts walking from any house indexed from $k + 1$ to n , inclusive, he definitely cannot walk to house number 1.
3. When the penguin starts walking from house number 1, he can get back to house number 1 after some non-zero number of walks from a house to a house.

You need to find the number of ways you may write the numbers on the houses' plaques so as to fulfill the three above described conditions. Print the remainder after dividing this number by 1000000007 ($10^9 + 7$).

Input

The single line contains two space-separated integers n and k ($1 \leq n \leq 1000$, $1 \leq k \leq \min(8, n)$) — the number of the houses and the number k from the statement.

Output

In a single line print a single integer — the answer to the problem modulo 1000000007 ($10^9 + 7$).

Examples

input
5 2
output
54

input
7 4
output
1728