Bhg.*

The travelling salesm is on a mission to visit **N** cities, each exactly once. The cities are represented by numbers 1, 2, ..., **N**. What we know is the direct flight duration between each pair of cities. The salesm, being the efficient m that he is, wts to modify the city visiting sequence so that the total flight duration is the minimum possible.
Alas, all is not so simple. In addition, the salesm has a peculiar condition regarding the sequence. For **each** city labeled **K** must apply: either all cities with **labels smaller th K** have been visited before the city labeled **K** or they will all be visited after the city labeled **K**. In other words, the situation when one of such cities is visited before, d the other after is not allowed.
Assist the poor fellow in his ambitious mission d calculate the minimum total flight duration needed in order to travel to all the cities, starting from whichever d ending in whichever city, visiting every city exactly once, so that his peculiar request is fulfilled.

INPUT

The first line of input contains the positive integer **N** ($2 \leq \mathbf{N} \leq 1500$), the number of cities.
Each of the following **N** lines contains **N** positive integers from the interval [0, 1000]. The number in $\mathbf{B}_{th}$ place in the $\mathbf{A}_{th}$ row represents the flight duration between cities **A** d **B**; that number is equal to the $\mathbf{A}_{th}$ number in the $\mathbf{B}_{th}$ row. When **A** = **B**, that number is 0. Otherwise, it is a positive value.

OUTPUT

The first d only line of output must contain the required minimum total flight duration

SAMPLE TESTS

input 3 0 5 2 5 0 4 2 4 0 output 7	input 4 0 15 7 8 15 0 16 9 7 16 0 12 8 9 12 0 output 31

Bai: tomau1.inp

Little AN spends his free time painting. For this hobby, he likes to use brushes d a pallet containing **K** colors overall. His friend BINH decided to use AN's talent d gave him his new coloring book for AN to color. The coloring book contains **N** images numbered 1, 2, ..., **N**.
AN has decided to paint each image in exactly one color of the possible **K** colors from his pallet. However, he really likes colorful things. He chose **N** numbers $\mathbf{f}_i$ d decided to paint the image numbered **i** differently th the images numbered $\mathbf{f}_i$, except when $\mathbf{f}_i = \mathbf{i}$. If $\mathbf{f}_i = \mathbf{i}$, that mean he can

paint the image numbered f_i whichever color he likes, as long as all other conditions have been met. AN wts to know the number of possible ways to color BINH's coloring book d he desperately needs your help! Calculate the number of possible ways to color the book. Given the fact that the output c be very large, print the swer modulo 1 000 000 007.

INPUT

The first line of input contains positive integers **N**, **K** ($1 \le N, K \le 1\,000\,000$).
Following line contains **N** numbers f_i ($1 \le f_i \le N$), the number stated in the text.

OUTPUT

The first d only line must contain the number of possible ways to color BINH's book

SAMPLE TESTS

Input	input	input	input
2 3 2 1	3 4 2 3 1	3 4 2 1 1	3 4 1 1 2
output	output	output	output
6	24	36	36

Clarification of the first example: AN has three colors and decided that the image numbered 2 mustn't be of the same color as the image numbered 1. The possible colorings are (1, 2), (1, 3), (2, 1),
(2, 3), (3, 1), (3, 2), where the first number in the brackets represents the color of the first image and the
second number the color of the second image.

Clarification of the fourth example: AN has four colors. There are no conditions regarding the first image, it can be painted in whichever color. The second must be different than the first, and the third different than the second. That means that those two images can be colored in the remaining 3 colors. This gives us a total of 36 combinations.