



## Problem H. Homeward Glance

Oblivionis took one final look at home before departing, resolutely deciding to leave the past behind. She wished that the magic of time could reshape her now chaotic heartbeat into a healthy, harmonious rhythm once again. But before she could truly forget everything, a question lingered in her mind: What if the events of the past had unfolded in a different order? Would the outcome have been different, and would her understanding of it have changed as well?

Given an  $n \times n$  matrix  $A$  over  $\mathbb{F}_{998244353}$ , consider how many matrices  $B$  commute with  $A$ , i.e., how many matrices satisfy  $AB = BA$ . It can be proven that there exists a positive integer  $k$  such that the number of such matrices is  $998244353^k$ . Please determine the value of  $k$ .

### Input

The first line of the input contains a single integer  $n$  ( $1 \leq n \leq 500$ ).

The next  $n$  lines describe the matrix  $A$ . The  $i$ -th line of these lines contains  $n$  integers  $A_{ij}$  ( $0 \leq A_{ij} < 998244353$ ), indicating the matrix  $A$ .

### Output

Output a single line with a single integer, indicating the answer,  $k$ .

### Examples

standard input	standard output
3 1 2 3 4 5 6 7 8 9	3
3 1 1 0 0 1 0 0 0 1	5