23/05/2019 O - Matching

O - Matching

Time Limit: 2 sec / Memory Limit: 1024 MB

Score: 100 points

Problem Statement

There are N men and N women, both numbered 1, 2, ..., N.

For each i, j $(1 \le i, j \le N)$, the compatibility of Man i and Woman j is given as an integer $a_{i,j}$. If $a_{i,j} = 1$, Man i and Woman j are compatible; if $a_{i,j} = 0$, they are not.

Taro is trying to make N pairs, each consisting of a man and a woman who are compatible. Here, each man and each woman must belong to exactly one pair.

Find the number of ways in which Taro can make N pairs, modulo $10^9 + 7$.

Constraints

- All values in input are integers.
- $1 \le N \le 21$
- $a_{i,j}$ is 0 or 1.

Input

Input is given from Standard Input in the following format:

Output

Print the number of ways in which Taro can make N pairs, modulo $10^9 + 7$.

Sample Input 1 Copy

Copy

3 0 1 1 1 0 1 1 1 1

Sample Output 1 Copy

Сору

There are three ways to make pairs, as follows ((i,j) denotes a pair of Man i and Woman j):

- (1,2),(2,1),(3,3)
- (1,2),(2,3),(3,1)
- (1,3),(2,1),(3,2)

Sample Input 2 Copy

Copy
0 1 0 0
0 0 0 1
1 0 0 0
0 0 1
1 0 0 0

Sample Output 2 Copy

Сору

There is one way to make pairs, as follows:

• (1,2),(2,4),(3,1),(4,3)

Sample Input 3 Copy

1 0

Sample Output 3 Copy

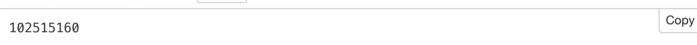
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Sample Input 4 Copy

```
Copy
21
0 0 0 0 0 0 0 1 1 0 1 1 1 1 0 0 0 1 0 0 1
 1 1 0 0 1 0 0 0 1 0 0 0 0 1 1 1 0 1 1
 0 1 1 1 1 0 1 1 0 0 1 0 0 1 1 0
       1010100100
1 1 0 0 1 0 1 0 0 1 1 1 1 1 0 0 0 0 0
  10111011100011110
 100010100011100110
 1001001011001010
 0 0 0 1 1 0 0 1 1 1 0 0 0 0 1 1 0 0
  1 0 1 1 0 0 1 1 0 0 0 1 1 1 1 0 1
 0 1 0 0 1 1 1 1 0 1 1 0 1 1 1 0 0 0
 1 1 0 0 1 1 1 1 0 0 0 1 0 1 1 0 1 0 1 1
   1 1 1 0 0 0 0 1 0 0 1 1 0 1 1 1 0
 0 1 1 0 1 0 1 0 0 1 0 0 1 1 0 1 0 1
 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 1 0
 0 0 1 0 0 1 1 0 1 0 1 0 1 1 0 0 1 1 0
0 0 0 0 1 1 1 0 1 0 1 1 1 0 1 1 0 0 1 1
 101100110111111010
100110111101010100000
```

Sample Output 4 Copy



Be sure to print the number modulo $10^9 + 7$.