Some Hamiltonian paths — P90225_en

Consider a directed graph with n vertices and all the $n(n-1)$ possible arcs, some of which are painted. How many Hamiltonian paths are in the graph starting at vertex 0, ending at vertex $n-1$, and such that they do not traverse two consecutive painted arcs?

Input

Input consists of several cases. Every case begins with n, followed by an $n \times n$ matrix, where the position (i, j) has the color of the arc from vertex i to vertex j. A one indicates a painted arc, and a zero a non-painted arc. The diagonal (which is useless) only has zeroes. You can assume $n \geq 2$.

Output

For every case, print the number of permutations of the n vertices that start at 0, end at $n-1$, and do not have three consecutive vertices x, y and z such that the two arcs $x \to y$ and $y \to z$ are both painted. The test cases are such that the answer is smaller than 10^6.

Sample input 1

```
2
0 1
1 0

3
0 1 1
1 0 0
1 1 0

3
0 1 0
0 0 1
0 0 0

5
0 1 0 0 0
1 0 1 0 0
0 0 0 0 1
1 0 0 0 1
0 1 0 0 0
```

Sample output 1

```
1
1
0
4
```

Problem information

Author: Salvador Roura
Translator: Salvador Roura

Generation: 2026-01-25T11:50:22.518Z