

Contest Duration: 2021-04-17(Sat) 12:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20210417T1610&p1=248>) - 2021-04-17(Sat) 14:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20210417T1810&p1=248>) (local time) (120 minutes)

iso=20210417T1610&p1=248) - 2021-04-17(Sat) 14:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20210417T1810&p1=248>) (local time) (120 minutes)

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G - Spanning Tree



Time Limit: 2 sec / Memory Limit: 1024 MB

Score : 600 points

Problem Statement

We have a graph with N vertices numbered $1, 2, \dots, N$. Initially, it has no edges.

Now, let us add some number of undirected edges to G so that the following condition holds for any i, j ($i \neq j$) after addition.

- If $A_{i,j} = 1$, there is an edge directly connecting Vertex i and Vertex j ;
- if $A_{i,j} = 0$, there is no edge directly connecting Vertex i and Vertex j ;
- if $A_{i,j} = -1$, either is fine.

Among the graphs that can be G after addition, how many are trees?

Since the count can be enormous, find it modulo $(10^9 + 7)$.

Constraints

- All values in input are integers.
- $2 \leq N \leq 300$
- $-1 \leq A_{i,j} = A_{j,i} \leq 1$
- $A_{i,i} = 0$

Input

Input is given from Standard Input in the following format:

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$$\begin{matrix} N \\ A_{1,1} & \cdots & A_{1,N} \\ \vdots \\ A_{N,1} & \cdots & A_{N,N} \end{matrix}$$

Output

Print the count modulo $(10^9 + 7)$.

Sample Input 1

Copy

```
4
0 1 -1 0
1 0 -1 -1
-1 -1 0 0
0 -1 0 0
```

Copy

Sample Output 1

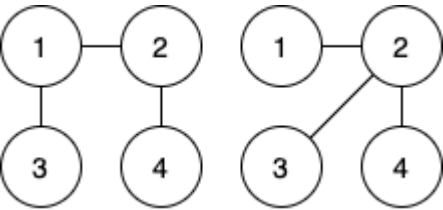
Copy

```
2
```

Copy

We need an edge between Vertex 1 and Vertex 2, and we must not add an edge between Vertex 1 and Vertex 4 or between Vertex 3 and Vertex 4.

Thus, we have the following two valid graphs:



Sample Input 2

Copy

```
3
0 1 1
1 0 1
1 1 0
```

Copy

Sample Output 2

Copy

```
0
```

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Sample Input 3

Copy

```
3
0 0 0
0 0 0
0 0 0
```

Copy

Sample Output 3

Copy

```
0
```

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Sample Input 4

Copy

```
11
0 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
-1 0 -1 -1 -1 -1 -1 -1 -1 -1 -1
-1 -1 0 -1 -1 -1 -1 -1 -1 -1 -1
-1 -1 -1 0 -1 -1 -1 -1 -1 -1 -1
-1 -1 -1 -1 0 -1 -1 -1 -1 -1 -1
-1 -1 -1 -1 -1 0 -1 -1 -1 -1 -1
-1 -1 -1 -1 -1 -1 0 -1 -1 -1 -1
-1 -1 -1 -1 -1 -1 -1 0 -1 -1 -1
-1 -1 -1 -1 -1 -1 -1 -1 0 -1 -1
-1 -1 -1 -1 -1 -1 -1 -1 -1 0 -1
-1 -1 -1 -1 -1 -1 -1 -1 -1 -1 0
```

Copy

Sample Output 4

Copy

```
357947677
```

Copy

When we distinguish the vertices, there are 11^9 trees with 11 vertices.

Language

Python (3.8.2)

Source Code

```
1
```

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* at most 512 KiB

* Your source code will be saved as `Main.extension`.



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