

Matrix Reachability

time limit per test: 1 second (2 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output
points: 100 · problem code: matrixreach

You are given a directed graph with vertices numbered from 1 to n . The graph is described by its adjacency matrix: the entry in row i and column j is `1` if there is a directed edge from vertex i to vertex j , and `0` otherwise.

Starting at vertex s , determine every vertex that can be reached by following zero or more directed edges.

Input

The first line contains two integers n and s , the number of vertices and the starting vertex.

The next n lines each contain n integers. The j -th integer on the i -th of these lines is the adjacency matrix entry for the directed edge from vertex i to vertex j .

Output

Output one line containing all reachable vertices in increasing order, separated by spaces.

Constraints

- $1 \leq n \leq 500$
- $1 \leq s \leq n$
- Each matrix entry is either `0` or `1`.

Example 1

Input

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

Output

```
1 2 3 4
```

Explanation

From vertex 1, we can directly reach vertices 2 and 3. From vertex 2, we can reach vertex 4, so all vertices are reachable.

Example 2

Input

```
5 3
0 0 0 0 0
1 0 0 0 0
0 0 0 1 0
0 0 0 0 1
0 0 0 0 0
```

Output

```
3 4 5
```

Explanation

Starting at vertex 3, the only new vertices reachable are 4 and then 5.