# Problem 1 Tour Planning - Part I (4%)

You are given an $n \times m$ grid map with 0 and 1. The grid with 1 means an obstacle (a wall) is on that spot while a grid with 0 means that the cell is empty.

The scientist of the grid world (SoGW) is currently at position $(x_1, y_1)$ and wants to travel to position $(x_2, y_2)$, where $1 \leq x_1, x_2 \leq n$, $1 \leq y_1, y_2 \leq m$, $(x_1, y_1) \neq (x_2, y_2)$.

Please determine for him if this is possible.

### Input

The first line contains two integers $n$ and $m$, $(1 \leq n, m \leq 50)$, the size of the grid map.

Each of the next $n$ lines contain $m$ integers that are either 0 or 1, the map of the grid world.

Then two lines follow. The first line contains the starting position $x_1$ and $y_1$ and the second line contains the destination $x_2$ and $y_2$.

Note that, $1 \leq x_1, x_2 \leq n$, $1 \leq y_1, y_2 \leq m$, and it is guaranteed that both $(x_1, y_1)$ and $(x_2, y_2)$ are empty cells and $(x_1, y_1) \neq (x_2, y_2)$.

### Output

Print ”Yes” if it is possible to move from $(x_1, y_1)$ to $(x_2, y_2)$. Otherwise, print ”No”.

### Example 1

**Input**

```
3 4
1 0 0 1
0 1 0 1
1 1 0 0
1 2
3 4
```

**Output**

```
Yes
```

### Example 2

**Input**

```
3 4
1 0 0 1
0 1 0 1
1 1 0 0
2 1
3 4
```

**Sample Output**

```
No
```

## Problem 2 Tour Planning - PartII (6%)

Thanks to your help in the previous problem, the scientist of the grid world (SoGW) is now aware of his travel destination. Please write a program that computes a path for him.

### Input

The first line contains two integers $n$ and $m$, $(1 \leq n, m \leq 50)$, the size of the grid map.

Each of the next $n$ lines contain $m$ integers that are either 0 or 1, the map of the grid world.

Then two lines follow. The first line contains the starting position $x_1$ and $y_1$ and the second line contains the destination $x_2$ and $y_2$.

Note that, $1 \leq x_1, x_2 \leq n$, $1 \leq y_1, y_2 \leq m$, and it is guaranteed that both $(x_1, y_1)$ and $(x_2, y_2)$ are empty cells and $(x_1, y_1) \neq (x_2, y_2)$.

### Output

Print a path from $(x_1, y_1)$ to $(x_2, y_2)$, inclusive. Since the scientist has a short memory, he could make mistakes asking for a destination that is unreachable. In case it is is not possible to reach the destination, print the integer $-1$.

### Example 1

**Input**

```
3 4
1 0 0 1
0 1 0 1
1 1 0 0
1 2
3 4
```

**Output**

```
1 2
1 3
2 3
3 3
3 4
```

### Example 2

**Input**

```
3 4
1 0 0 1
0 1 0 1
1 1 0 0
2 1
3 4
```

**Sample Output**

```
-1
```

Problem 2 continued on next page. . .

**Note**

You may want to write (design) a recursive (遞迴) function with a right prototype to solve this problem. In order to record the path, you need another array to record the incoming position of each spot.

你需要宣告另一個陣列來紀錄：

對於每一個可以到達的每個位置，它的上一格是來自哪裡。