

The Celebrity Problem

A celebrity is a person who is known to all but does not know anyone at a party. If you go to a party of N people, find if there is a celebrity in the party or not.

A square $N \times N$ matrix $M[][]$ is used to represent people at the party such that if an element of row i and column j is set to 1 it means i th person knows j th person. Here $M[i][i]$ will always be 0.

Note: Follow 0 based indexing.

Example 1:

Input:

$N = 3$

$M[][] = \{\{0\ 1\ 0\},$

$\{0\ 0\ 0\},$

$\{0\ 1\ 0\}\}$

Output: 1

Explanation: 0th and 2nd person both know 1. Therefore, 1 is the celebrity.

Example 2:

Input:

$N = 2$

$M[][] = \{\{0\ 1\},$

$\{1\ 0\}\}$

Output: -1

Explanation: The two people at the party both know each other. None of them is a celebrity.

Your Task:

You don't need to read input or print anything. Complete the function **celebrity()** which takes the matrix M and its size N as input parameters and returns the index of the celebrity. If no such celebrity is present, return -1.

Expected Time Complexity: $O(N)$

Expected Auxiliary Space: $O(1)$

```
def celebrity(self, M, n):  
    # code here  
    stack = []  
    for i in range(n):  
        stack.append(i)
```

```
while len(stack)>1:
    i = stack.pop()
    j = stack.pop()
    if M[i][j]==1:
        stack.append(j)
    else:
        stack.append(i)
pop = stack.pop()
for i in range(n):
    if i!=pop:
        if M[i][pop] == 0 or M[pop][i]==1:
            return -1
return pop
```