CSE 4404-Algorithms Lab. Summer 2022
Date: January 4, 2023.
Target Group: B
Topic: Graph Basics

Instructions:

- Task naming format: fullID_L05_T01_B.c/CPP
- **Solutions with less efficient approaches will be considered for partial marks.**

Task 01:

Suppose you are at a party with **n** people labeled from **0** to **n - 1**. Among them, there may exist one celebrity. The definition of a celebrity is that all the other **n - 1** people know the celebrity, but the celebrity does not know any of them. Now you want to find out who the celebrity is or verify that there is not one. Now you will be given an adjacency matrix that represents a graph where if there is an edge between i and j, that means person i knows person j. Your task is to determine who is the celebrity among all the people, or if there is none. The first line of the input contains **n** i.e., the total number of people in the party. Next, there will be an $n \times n$ adjacency matrix.

Sample Input	**Sample Output**
3 1 1 0 0 1 0 1 1 1	Person 1 is the celebrity
3 1 0 1 1 1 0 0 1 1	There is no celebrity.

Task 02:

There are **n** cities. Some of them are connected, while some are not. If city **a** is connected directly with city **b**, and city **b** is connected directly with city **c**, then city **a** is connected indirectly with city **c**.

A province is a group of directly or indirectly connected cities and no other cities outside of the group.

The first line of input will contain the value **n**. Next, you are given an **n x n** matrix adj where $adj[i][j] = 1$ if the i^{th} city and the j^{th} city are directly connected and $adj[i][j] = 0$ otherwise. Your task is to output the total number of provinces.

Sample Input	**Sample Output**
3 1 1 0 1 1 0 0 0 1	2
3 1 0 0 0 1 0 0 0 1	3