CS 245 - Practice Assignment 11   Fall, 2019

The goal of this assignment is to practice designing solutions using data structures from this course.

Premise and Task

In a town, there are N people. There is a rumor that one of these people is secretly the town judge. If the town judge exists, then:

1. The town judge trusts nobody.
2. Everybody (except for the town judge) trusts the town judge.
3. There is exactly one person that satisfies properties 1 and 2.

You are given `trust` — an array of pairs `trust[i] = [a, b]` representing that the person labelled `a` trusts the person labelled `b`. Note that the number of people in the town is always between 1 and 1000.

If the town judge exists and can be identified, return the label of the town judge. Otherwise, return `-1`. Examples of inputs and outputs are shown in Table 1.

	N	trust	Output
Example 1	2	[[1, 2]]	2
Example 2	3	[[1, 3], [2, 3]]	3
Example 3	3	[[1, 3], [2, 3], [3, 1]]	-1
Example 4	3	[[1, 2], [2, 3]]	-1
Example 5	4	[[1, 3], [1, 4], [2, 3], [2, 4], [4, 3]]	3

Table 1: Examples of inputs (N, trust) and output

Note that:

● The number of people in the town is always between 1 and 1000.
● The number of entries in trust is always less than 10,000
● Each item in the trust array is unique and different

Requirements (Process)

Your implementation must have a class named `Judge`, and it must contain a function:

```
public int findJudge (int N, int [][] trust)
```

... which takes two parameters, in order:
- N: int = number of people in the town
- trust: int [] [] = the trust array, in the form provided above

… and returns the ID of the judge or -1 if no judge is found.

Outside this document, no starter code or other supporting files or documents are provided. You are expected to design

Grading

The assignment is graded for correctness only. However, other than the contents of Table 1, you are not provided a test set.

Submission

You are required to submit any number of classes for this assignment. Use GitHub to check in the class required to complete the implementation. On Canvas, submit the URL for your GitHub repository.