
ACM Programming Challenges Lab

Exercise 1 – *One cycle*

Description You are given a connected graph on n vertices with *only one* cycle, where vertices are labelled with numbers from 0 to $n - 1$. Cycle is defined as a sequence of *distinct* vertices v_1, v_2, \dots, v_k , where $k > 2$, such that each two consecutive vertices are connected with an edge, as well as the vertices v_k and v_1 . The *length* of a cycle v_1, \dots, v_k is k . Your task is to calculate the length of the cycle in a given graph.

Input The first line of the input contains an integer $T \leq 10$, giving the number of test cases to follow.

Each test case starts with a line containing a single integer, the number of vertices n . Next n lines will each contain a pair of different numbers $u, v \in \{0, \dots, n - 1\}$. A line consisting of numbers u, v mean that vertices u and v are connected with an edge.

Output For each test case output a single line containing a single integer, the length of the cycle.

Test Sets

- **Small - 50 points** - All test cases in this testset will have the constraint that the number of vertices n is smaller than 10^3 .
- **Large - 50 points** - All test cases in this testset will have the constraint that the number of vertices n is smaller than 10^5 .

Sample input

```
2
3
0 1
1 2
2 0
8
4 1
1 5
2 1
3 7
7 6
7 0
2 0
2 6
```

Sample output

```
3
4
```