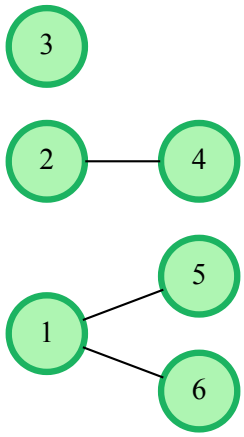
Components in a graph

HackerRank

There are $2 \times N$ nodes in an undirected graph, and a number of edges connecting some nodes. In each edge, the first value will be between 1 and N, inclusive. The second node will be between $N+1$ and $2 \times N$, inclusive. Given a list of edges, determine the size of the smallest and largest connected components that have 2 or more nodes. A node can have any number of connections. The highest node value will always be connected to at least 1 other node.

Note Single nodes should not be considered in the answer.

Example
$bg = [[1, 5], [1, 6], [2, 4]]$



The smaller component contains 2 nodes and the larger contains 3. Return the array $[2, 3]$.

Function Description
Complete the *connectedComponents* function in the editor below.

connectedComponents has the following parameter(s):
- *int bg[n][2]:* a 2-d array of integers that represent node ends of graph edges

Returns
- *int[2]:* an array with 2 integers, the smallest and largest component sizes

Input Format

The first line contains an integer n, the size of bg.
Each of the next n lines contain two space-separated integers, $bg[i][0]$ and $bg[i][1]$.

Constraints

- $1 \leq number of nodes N \leq 15000$
- $1 \leq bg[i][0] \leq N$
- $N+1 \leq bg[i][1] \leq 2N$

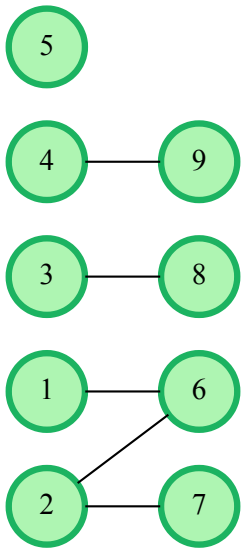
Sample Input

```
STDIN   Function
-----   --------
5       bg[] size n = 5
1 6     bg = [[1, 6],[2, 7], [3, 8], [4,9], [2, 6]]
2 7
3 8
4 9
2 6
```

Sample Output

```
2 4
```

Explanation



Since the component with node 5 contains only one node, it is not considered.

The number of vertices in the smallest connected component in the graph is 2 based on either $(3, 8)$ or $(4, 9)$.

The number of vertices in the largest connected component in the graph is 4 i.e. $1 - 2 - 6 - 7$.