Friend Circle Queries

HackerRank

The population of HackerWorld is 10^9. Initially, none of the people are friends with each other. In order to start a friendship, two persons *a* and *b* have to shake hands, where $1 \leq a, b \leq 10^9$. The friendship relation is transitive, that is if *a* and *b* shake hands with each other, *a* and friends of *a* become friends with *b* and friends of *b*.

You will be given q queries. After every query, you need to report the size of the largest friend circle (the largest group of friends) formed after considering that query.

For example, your list of queries is:

```
1 2
3 4
2 3
```

First, 1 and 2 shake hands, forming a circle of 2. Next, 3 and 4 do the same. Now there are two groups of 2 friends. When 2 and 3 become friends in the next query, both groups of friends are added together to make a circle of 4 friends. We would print

```
2
2
4
```

Function Description

Complete the function *maxCircle* in the editor below. It must return an array of integers representing the size of the maximum circle of friends after each query.

maxCircle has the following parameter(s):

- *queries*: an array of integer arrays, each with two elements indicating a new friendship

Input Format

You need to complete the $solve$ function, which takes 2-D integer array $queries$ of size q. After each query, person $queries[i][0]$ and $queries[i][1]$ become friends.

Codestub input format:
First line consist of an integer q which denotes the number of queries to process.
Each of the next q lines consists of two integers denoting the 2-D array $queries$.

Constraints

- $1 \leq q \leq 10^5$
- $1 \leq queries[i][0], queries[i][1] \leq 10^9$ for $0 \leq i < q$
- $queries[i][0] \neq queries[i][1]$

Output Format

Return an integer array of size q, whose value at index i is the size of largest group present after processing till i^{th} query.

Sample Input 0

```
2
1 2
```

```
1 3
```

Sample Output 0

```
2
3
```

Explanation 0

In the first query, 1 and 2 shake hands. So, the size of largest group of friends is 2 (as no other friendships exist).
After the second query, 1, 2 and 3 all become friends, as 1 shakes hand with 3, 2 also become friends with 3 as he was already a friend of 1.

Sample Input 1

```
4
1000000000 23
11 3778
7 47
11 1000000000
```

Sample Output 1

```
2
2
2
4
```

Explanation 1

After first query, person 1000000000 and person 23 become friends. So, the largest group size is 2.
After the second query, person 11 and person 3778 become friends. So, the largest group size is still 2.
After the third query, person 7 and person 47 become friends. Answer is still 2.
After the last query, person 11 and person 1000000000 become friends, which means 23, 11, 1000000000 and 3778 all become friends. Hence, the answer now increased to 4.

Sample Input 2

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

Sample Output 2

```
2
2
4
4
4
7
```

Explanation 2

Friend circles after each iteration:

```
1   [1,2]
2   [1,2],[3,4]
```

```
3   [1,2,3,4]
4   [1,2,3,4],[5,7]
5   [1,2,3,4],[5,7,6]
6   [1,2,3,4,5,6,7]
```