Lab5: Flip

After printing many review materials double-sided, you find it disturbing to flip them upside down during the review. Assume that `N` pages of the materials are double-sided printed, each side containing one of `N` chapters in the textbook. You wonder if there is a way to flip some of them so that you can cover all the `N` chapters at once.

Input

First line: a single number `N`
Then follow `N` lines. The i-th line contains two integers $1 \leq x_i, y_i \leq N$, representing the two chapters printed on the i-th page.

Sample Input

```
5
3 2
2 5
4 1
1 3
2 1
```

Output

N numbers in a line, representing your choice for the pages in order. They are expected to cover all integers from 1 to N.
As usual, echo the input before your output for convenince of debugging.

Sample Output

```
5
3 2
2 5
4 1
1 3
2 1
3 5 4 1 2
```

Explanation

Just flip the second page (swap `2 5` , the third line of input), and get the first colum as the answer

(they covered 1-N).

Limitation

- $1 \leq N \leq 15$
- There is at least one flipping solution available.
- For the case of multiple solutions, just print any one of them.

Requirements

- Write program with **LC-3 assembly language**
- Start your program at `x3000`
- Use **recursion** to solve the problem
- Remember to halt your program in the end
- **NO CHEATING**

Grading

Lab 5 takes 8% of the final score, consisting of Check and Report.

Check (50%)

- Contact to your lab TA to check your code. In most cases, it is required to be **OFFLINE**.
- TA will test your code in different cases. Correctness is the primary factor in grading.
- TA will ask you questions to make sure you finish it on your own. It is very important to be familiar with the lab and your code. Suggestion: write some comments in case you forget what your code means.
- You can retry if you fails a check, but there will be a penalty of 10% points in Check part each time.

Report (50%)

- Written in **English**, concise and complete
- Convince TA that you finish the lab on your own
- **No more than** 3 A4 pages
- Consisting of:
    - Algorithm explanation

    - Essential parts of your code with sufficient comments
    - Questions TA asked you and your answer in Check

Other Penalty

- Delay: -10% each day after ddl
- Cheating: -100%, and -10% in final score of the course