# 2018 BEST OF SHOW (BONUS)

The movie studio *Greenlight Casting Couch* are looking to promote their past films and have recently completed extensive market research. Every pair of their films has been compared, with a clear *best* determined in each case. During research the $n$ films were referred to by unique integers from 1 to $n$.

The studio had intended to use this information to order their films so that each film is better than the *immediately* preceding film in their list. Marketing have decided they should always be able to promote a better film, so desire a list with the additional criterion that the first entry in the list is better than the last entry in the list. Fortunately they've found a suitable list based on their research. Unfortunately, they've lost it.

For example, suppose that there are four films and $a>b$ indicates testing showed $a$ was better than $b$. If 1>2, 2>3, 3>1,4>1,4>2 and 3>4, the following list is valid: 3 2 1 4.

## SAMPLE INPUT

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

## SAMPLE OUTPUT

```
3 2 1 4
```

The first line of input will consist of a single integer, $n$ ($3 \leq n < 2^{10}$), indicating the number of films. This will be followed by a line for every possible pairing of distinct films, each containing two integers, $w$ then $l$ ($1 \leq w, l \leq n; w \neq l$) indicating that film $w$ beat $l$. No pair of films will be repeated.

You should output a single line containing a permutation of the numbers 1 to $n$ indicating a valid order for the films. You will only be given input which has a valid output list.