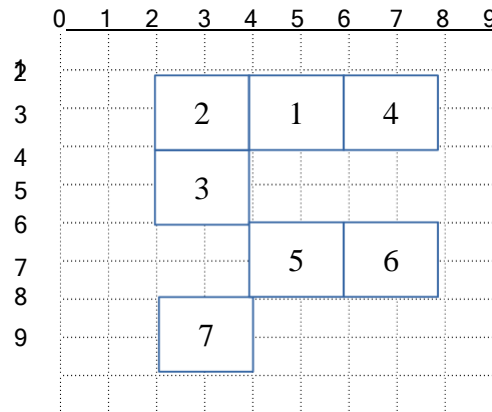


## Padosan

A Square is a closed geometric figure with 4 equal sides, and its interior angles all right angles ( $90^\circ$ ). From this it follows that the opposite sides are parallel.

Consider a grid comprising several identical squares. Squares sharing one of its sides with another are **adjacent squares (Padosan)**. Overlapping squares and squares sharing a single vertex point are not considered adjacent.

In the following figure, square 1 is adjacent to squares 2 & 4, square 2 is adjacent to squares 1 & 3, square 3 is adjacent to square 2, square 4 is adjacent to square 1, square 5 is adjacent to square 6, square 6 is adjacent to square 5 and square 7 is isolated (not adjacent to any of the other squares).



Write a program to determine the number of adjacent squares for a given square.

### Input Specification:

- 1) The first line of the input will contain integer **N** where **N** is number of squares ( $1 \leq N \leq 50$ ).
- 2) The next **N** lines will contain 8 positive integers in each line, each pair of the integers represents the (x, y) coordinates of one of the vertices of **N<sup>th</sup>** square.

### Output specification:

On each line print the square number and the number of the squares adjacent to it, separated by a space, for each square starting from square no. 1 to square no. **N** terminated by new line character.

Sample 1		Sample 2	
Sample Input - 1	Sample Output - 1	Sample Input - 2	Sample Output - 2
7	1 2	4	1 2
1 1 3 1 3 3 1 3	2 2	1 1 3 1 3 3 1 3	2 2
3 1 5 1 5 3 3 3	3 1	3 1 5 1 5 3 3 3	3 2
5 1 7 1 7 3 5 3	4 1	1 3 3 3 3 5 1 5	4 2
1 3 3 3 3 5 1 5	5 1	3 3 5 3 5 5 3 5	
1 7 3 7 3 9 1 9	6 1		
3 7 5 7 5 9 3 9	7 0		
5 4 7 4 7 6 5 6			

## **ShabdKhosh**

You have to write a program to chain some words. A word is properly chained if it starts with a trailing sub-string of its predecessor word with a minimum overlap of three (3) characters. Given a number of words, you have to reorder them to appropriately chain them. The first word in the input is used as a starting word in the chain. It may happen that there is no chaining possible for a given set of words. If chaining is possible, assume that there will be a unique word chain.

**Note:** A word is a sequence of alphabetic characters.

### ***Input Specification***

- The first line will be an integer N, indicating the number of words that will follow. Assume N will never be greater than twenty (20)
- The next N lines of input will contain words, which are to be chained. Assume that the maximum length of a word will never exceed thirty (30) characters.

### ***Output Specification***

- Your program should output the chain of words, one word on a separate line. If there is no chain possible from the given words, the program should print IMPOSSIBLE

Sample 1		Sample 2	
<i>Input 1</i>	<i>Output 1</i>	<i>Input 2</i>	<i>Output 2</i>
2 start finish	IMPOSSIBLE	8 whisper format perform sonnet person shopper workshop network	whisper person sonnet network workshop shopper perform format