Problem G. Go and restore!

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	256 mebibytes

Teacher Mai has a multiplication table in base p.

For example, the following is a multiplication table in base 4:

```
* 0 1 2 3
0 00 00 00 00
1 00 01 02 03
2 00 02 10 12
3 00 03 12 21
```

But a naughty kid maps numbers $0 \ldots p-1$ into another permutation and shuffle the multiplication table.

For example Teacher Mai only can see:

```
1*1=11 1*3=11 1*2=11 1*0=11
3*1=11 3*3=13 3*2=12 3*0=10
2*1=11 2*3=12 2*2=31 2*0=32
0*1=11 0*3=10 0*2=32 0*0=23
```

Teacher Mai wants you to recover the multiplication table. Output the permutation number $0 \ldots p-1$ mapped into.

It's guaranteed the solution is unique.

Input

There are no more than 150 test cases, terminated by a line "0".

For each test case, the first line contains one integer p ($2 \le p \le 500$).

In following p lines, each line contains $2p$ integers.The $(2j+1)$-th number x and $(2j+2)$-th number y in the i-th line indicates equation $i \cdot j = xy$ in the shuffled multiplication table. Size of the input file does not exceed 47 mebibytes.

Output

For each case, output one line, containing p integers, indicating the permutation number $0 \ldots p-1$ mapped into.

Examples

standard input	standard output
4 2 3 1 1 3 2 1 0 1 1 1 1 1 1 1 1 3 2 1 1 3 1 1 2 1 0 1 1 1 2 1 3 0	1 3 2 0