Task Z. Salesman

The travelling salesman problem asks the following question: "Given a list of cities and the distances between each pair of cities, what is the shortest possible route that visits each city exactly once and returns to the origin city?"

This problem is known to be NP-hard, which means that we don't know how to solve it efficiently. So your task will be to find not the best, but good solution. The better your solution is, the more points you will get.

This is output-only problem. There are 10 input files. You can download them from Files tab in PCMS. You need to solve them and submit your answers.

Input

Each input file contains several testcases. The first line of input file contains the number of testcases in the input file.

The first line of each testcase contains integers n, number of cities, next n lines contain n numbers each. Number j in i-th line is the distance $d_{i,j}$ from city i to city j.

In all testscases $n \le 100$, $d_{i,i} = 0$, $1 \le d_{i,j} \le 100$, $d_{i,j} = d_{j,i}$, $d_{i,j} \le d_{i,k} + d_{k,j}$.

Output

For each testcase output n integers: the order of cities in your route.

Scoring

For each input file, if the total length of your routes for all testcases in the input file is X, and the total length of best routes found by jury is M, then:

- if $X > 5M$ you will get 0 points.
- if $M < X \le 5M$ you will get $\lfloor 10 \cdot \frac{5M-X}{4X} \rfloor$ points.
- if $X \le M$ you will get 10 points.

Example

Input:

```
2
4
0 2 4 7
2 0 2 5
```

```
4 2 0 5
7 5 5 0
2
0 5
5 0
```

Output:

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