N-Restaurants (restaurants)

Cooking reality shows are now widespread on television. Not being much different from everyone else, Giorgio occasionaly watches his favourite one: "quattro ristoranti" (Italian for "four restaurants"). The format is straightforward: alternately, all but one restaurateurs plus Alessandro Borghese (the host of the show) dine in the restaurant of the remaining restaurateur, giving each a mark from 0 to 10. The episode is won by the restaurateur who got the maximum score, defined as the sum of the marks of other restaurateurs plus the mark given by Alessandro Borghese.

Figure 1: Alessandro Borghese giving full score to a restaurateur ("diesci", in Italian).

Giorgio keeps receiving notifications from his smartphone and thus is not able to pay full attention to the television. Sometimes, right in the middle of the show, he wonders: who is winning at the moment? Help him by determining, after each round, who leads the ranking (or, in other words, who has the maximum score).

> ☞ Among the attachments of this task you may find a template file `restaurants.*` with a sample incomplete implementation.

Input

The first line contains the only integer N, the number of restaurateurs. There are N lines following, each containing $N+1$ integers. On the i-th of these lines, the first N integers represent the votes from other restaurateurs to restaurant i, while the $N+1$-th integer is the vote given by Alessandro Borghese. As a restaurateur cannot vote for themselves, the i-th value of the i-th line will always be -1, as a placeholder.

Output

You need to write N lines containing an integer each. The i-th line must contain the identifier (from 1 to N) of the restaurant that leads the ranking after the first i rounds.

Constraints

- $2 \leq N \leq 100$.
- Each (valid) vote is in the range 0-10.
- A restaurateur cannot vote for himself: the i-th vote of the i-th round is fixed at -1 as a placeholder and is irrelevant.
- It is guaranteed that after each round the leading restaurateur can be uniquely identified: there is never a tie.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (20 points) $N = 2$.

– **Subtask 3** (20 points) $N = 4$, as in the original TV show!

– **Subtask 4** (60 points) No additional limitations.

Examples

input	output

`2`
`-1 6 8`
`5 -1 6`
	`1`
	`1`

`3`
`-1 8 5 5`
`10 -1 8 9`
`8 9 -1 9`
	`1`
	`2`
	`2`

Explanation

In the **first sample case** there are only two restaurateurs. After the first round, the first restaurateur gets 6 points from the other one and 8 points from Alessandro Borghese, for a total of 14 points. After the second round, the second restaurateur gets 5 points from the first one and 6 points from Alessandro Borghese, for a total of 11 points. Thus, after both rounds, the first restaurateur has the best score.

In the **second sample case** there are three restaurateurs. After the first round, the first restaurateur gets 13 points from the other two and 5 points from Alessandro Borghese, for a total of 18 points. He thus trivially leads the ranking.

After the second round, the second restaurateur gets 18 points from the other two and 9 points from Alessandro Borghese, for a total of 27 points. In the current situation, the second restaurateur is the one with the maximum score.

After the third round, the third restaurateur gets 17 points from the other two and 9 points from Alessandro Borghese, for a total of 26 points. Thus, he conquers the second place, leaving the second restaurateur at the top of the ranking.