Supporters for the professional soccer clubs participating in the K-League, formerly the Korea Professional Soccer League, hold orderly and organized cheering, as did the Red Devils, the official supporters for the Korean national soccer team during the 2002 Korea-Japan World Cup. After many games of this season have been played, the supporters may wonder whether the team S they are backing can still win the championship. In other words, can winners be assigned for the remaining games so that no team ends with more victories than S? Two or more teams can win the championship jointly.

You are given the current number of wins and defeats, w_i and d_i, for every team i, $1 \le i \le n$, and the remaining number, $a_{i,j}$, of games to be played between every pair of teams i and j, $1 \le i, j \le n$, where n is the number of teams. The teams are numbered $1, 2, \ldots, n$. You are to find all teams that have a possibility of winning the championship. Every team has to play the same number games during the season. For simplicity, we assume that there are no draws, that is, every game has a winner and a loser.

Input

The input consists of T test cases. The number of test cases (T) is given in the first line of the input file.

Each test case consists of three lines: the first line has an integer $n(1 \le n \le 25)$, that represents the number of teams in the test case; the second line contains $2n$ nonnegative integers $w_1, d_1, w_2, d_2, \ldots, w_n, d_n$, each at most 100, where w_i and d_i are the current numbers of wins and defeats for team i, respectively; the third line contains n^2 nonnegative integers $a_{1,1}, a_{1,2}, \ldots, a_{1,n}, a_{2,1}, a_{2,2}, \ldots, a_{2,n}, \cdots, a_{n,1}, a_{n,2}, \ldots, a_{n,n}$, each at most 10, where $a_{i,j}$ is the remaining number of games to be played between teams i and j. For all i and j, $a_{i,j}$ is equal to $a_{j,i}$. If $i = j$, then $a_{i,j} = 0$. The integers given in a line are delimited by one or more spaces.

Output

Print exactly one line for each test case. The line should contain all teams that have a possibility of winning the championship, in an increasing order of team numbers.

Sample Input

```
3
3
2 0 1 1 0 2
0 2 2 2 0 2 2 2 0
3
4 0 2 2 0 4
0 1 1 1 0 1 1 1 0
4
0 3 3 1 1 3 3 0
0 0 0 2 0 0 1 0 0 1 0 0 2 0 0 0
```

Sample Output

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