

7406 Game of Arrays

Tweek and Craig are good friends and always playing together. And they just invented a new game when doing their math homework.

First of all, they write three arrays A , B , and C , each with N numbers. Then on the black board, they write those arrays as

$$A + B = C$$

If the equation is satisfied, it means for each position i from 1 to N , there are $A_i + B_i = C_i$ holds.

Of course, this equation is not always satisfied at the very beginning.

Fortunately, for arrays A , B and C , some numbers are *changeable*, while other's are not. Those *changeable* numbers' positions are determined before the game begins.

During the game, Tweek and Craig will take turns, trying to change a number from an array. Tweek plays first.

In each turn, the player can choose a *changeable* number from an array, and subtract it by one. However, no negative numbers should appear, so the chosen number cannot be 0 before subtraction.

Tweek's goal is to make the equation satisfied during the game, while Craig's goal is to prevent it to happen.

The game ends when the equation is satisfied (a win for Tweek) or there are no possible moves but still $A + B \neq C$ (means there is **at least one** $i \in [1, N]$, where $A_i + B_i \neq C_i$, which is a win for Craig).

Given A , B and C , and the position of *changeable* numbers for each array, your task is to determine the winner.

Input

First line contains an integer T , which indicates the number of test cases.

Every test case begins with an integers N , which is the length of array A , B and C .

The 2nd line and 3rd line describe the array A . The 2nd line contains N integers A_1, A_2, \dots, A_N , indicating the elements in array A . The 3rd line contains N integers u_1, u_2, \dots, u_N , and u_i is 1 if A_i is *changeable*, otherwise u_i is 0.

The 4th line and 5th line describe the array B . The 4th line contains N integers B_1, B_2, \dots, B_N , indicating the elements in array B . The 5th line contains N integers v_1, v_2, \dots, v_N , and v_i is 1 if B_i is *changeable*, otherwise v_i is 0.

The 6th line and 7th line describe the array C . The 6th line contains N integers C_1, C_2, \dots, C_N , indicating the elements in array C . The 7th line contains N integers w_1, w_2, \dots, w_N , and w_i is 1 if C_i is *changeable*, otherwise w_i is 0.

Restrictions:

- $1 \leq T \leq 2000$.
- for 75% data, $1 \leq N \leq 10$.
- for 95% data, $1 \leq N \leq 50$.
- for 100% data, $1 \leq N \leq 100$.
- $0 \leq A_i, B_i, C_i \leq 10^9$.
- both u_i, v_i, w_i is either 0 or 1.

Output

For every test case, you should output ‘Case # x : y ’, where x indicates the case number and counts from 1, and y is the winner of the game.

Sample Input

```
3
2
4 3
1 1
4 4
0 1
5 5
0 0
2
4 4
1 1
4 4
0 0
5 5
0 0
2
4 4
1 1
4 4
0 0
4 4
0 0
```

Sample Output

```
Case #1: Tweek
Case #2: Craig
Case #3: Tweek
```