Some friends have the same hobby, they are collecting stamps. Once upon a time they decided to make an exhibition. Exhibition brought them some money and now they do not know how to divide their income. They decided to divide their money according this rule: "The percent of whole income that i-th friend will get is equal to the part of his unique stamp's type."

The stamp type is called unique if and only if this type of stamps of owned only by one person.

Input

The first line contains integer K $(0 < K \leq 100)$, it is number of tests. Each test case is described by positive integer N $(0 < N \leq 50)$, it's the number of friends. Next goes N lines with integers. Each line corresponds one friend stamp collection. The first integer on the line is M — the number of stamps owned by a person $(0 < M \leq 50)$. Next goes M integers A $(0 \leq A \leq 10000)$ — types of stams.

Output

For each test case out line formatter like this: 'Case i: a_1% a_2% a_3% ... a_n%'. Where i is a test number, and a_i percent of income that goes to i-th friend.

Sample Input

```
1
3
3 1 2 3
2 4 5
3 4 2 6
```

Sample Output

```
Case 1: 50.000000% 25.000000% 25.000000%
```