Problem L

Summation and Divisor

You are given N arrays of integers $A_1[\cdots]$, $A_2[\cdots]$, ..., $A_N[\cdots]$ of possibly different size. Each element in array $B[\cdots]$ is constructed by the following procedure:

1. Pick one element from each of array A; let say the selected integers as x_1, x_2, ..., x_N, where x_1 is taken from an element in A_1, x_2 is taken from A_2, and so on.
2. Sum all those chosen integers, i.e. $x_1 + x_2 + \cdots + x_N$, and let $B[i]$ be this value.

B contains all possible combination which can be obtained by the aforementioned procedure. As you might have noticed, the size of B will be $|A_1|$ * $|A_2|$ * ... * $|A_N|$.

Your task in this problem is to find the largest integer which divides all integers in B, or formally known as the GCD (greatest common divisor).

For example, let N = 3 and A_1 = {10, 40}, A_2 = {60, 50, 90}, and A_3 = {150, 100}. All possible combinations which can be obtained by the aforementioned procedure are:

- 10 + 60 + 150 = 220
- 10 + 60 + 100 = 170
- 10 + 50 + 150 = 210
- 10 + 50 + 100 = 160
- 10 + 90 + 150 = 250
- 10 + 90 + 100 = 200
- 40 + 60 + 150 = 250
- 40 + 60 + 100 = 200
- 40 + 50 + 150 = 240
- 40 + 50 + 100 = 190
- 40 + 90 + 150 = 280
- 40 + 90 + 100 = 230

Therefore, B = {220, 170, 210, 160, 250, 200, 250, 200, 240, 190, 280, 230}. The GCD of all elements in B is equal to 10.

Input

The first line of input contains an integer T (T ≤ 100) denoting the number of cases. Each case begins with an integers N (1 ≤ N ≤ 50) in a line. The next line each begins with an integer M_i (1 ≤ M_i ≤ 50) denoting the size of array A_i. M_i integers follow denoting the elements of array A_i. Each integer in the array will be between 1 and 1,000,000,000, inclusive.

Output

For each case, output "`Case #X: Y`" (without quotes) in a line where `X` is the case number (starts from 1) and `Y` denotes the GCD of all integers in array B as described in the problem statement.

Sample Input	Output for Sample Input
4 3 2 10 40 3 60 50 90 2 150 100 2 5 33 9 21 45 69 3 81 27 153 2 1 5000 1 1000 4 5 2877 798 105 4956 1722 3 1283 26000 8444 2 11799 13878 4 26083 1828 3907 19615	Case #1: 10 Case #2: 6 Case #3: 6000 Case #4: 231

Explanation for 2nd sample case

All the possible combinations are:

- 33 + 81 = 114
- 33 + 27 = 60
- 33 + 153 = 186
- 9 + 81 = 90
- 9 + 27 = 36
- 9 + 153 = 162
- 21 + 81 = 102
- 21 + 27 = 48
- 21 + 153 = 174
- 45 + 81 = 126
- 45 + 27 = 72
- 45 + 153 = 198
- 69 + 81 = 150
- 69 + 27 = 96
- 69 + 153 = 222

Therefore, B = {114, 60, 186, 90, 36, 162, 102, 48, 174, 126, 72, 198, 150, 96, 222}. The GCD of all elements in B is 6.

Explanation for 3rd sample case

There is only one possible combination in this sample case, i.e. 5000 + 1000 = 6000. The greatest integer which divides 6000 is 6000 itself.