7225 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:

- 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.
- 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 $|A_1| * |A_2| * \ldots * |A_N|$.

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 ($T \leq 100$) denoting the number of cases. Each case begins with an integers N ($1 \leq N \leq 50$) in a line. The next line each begins with an integer M_i ($1 \leq M_i \leq 50$) denoting the size of array A_i. Mi 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.

Note:

- 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.

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
```

Sample Output

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Case #1: 10
Case #2: 6
Case #3: 6000
Case #4: 231
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