

Once upon a time, there existed a sequence **A** consisting of **N** positive integers. You don't know the sequence itself, but you do know the sum of every two elements of the sequence. Find the sequence **A**!

INPUT

The first line of input contains the positive integer **N** ($2 \leq N \leq 1000$).

Each of the following **N** lines contains **N** positive integers smaller than or equal to 100 000, forming the table **S**. The following relations hold: $S(i, j) = A[i] + A[j]$ for $i \neq j$, and $S(i, j) = 0$ for $i = j$. Here $S(i, j)$ denotes the number in the i^{th} row and j^{th} column of the table, and $A[i]$ denotes the i^{th} element of the sequence **A**.

It is guaranteed that for any input data set there exists a **unique sequence of positive integers A** with the given properties.

OUTPUT

The first and only line of output must contain the required sequence **A** (in the form of **N** space-separated positive integers).

SAMPLE TESTS

| | |
|---------------|---------------|
| input | input |
| 2 | 4 |
| 0 2 | 0 3 6 7 |
| 2 0 | 3 0 5 6 |
| | 6 5 0 9 |
| | 7 6 9 0 |
| output | output |
| 1 1 | 2 1 4 5 |