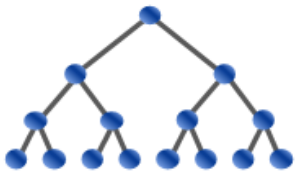

USACO 2022 DECEMBER CONTEST, SILVER
PROBLEM 3. RANGE RECONSTRUCTION

Not submitted yet

English (en)

Bessie has an array $a_1, \ldots, a_N$, where $1 \leq N \leq 300$ and $0 \leq a_i \leq 10^9$ for all i. She won't tell you a itself, but she will tell you the range of each subarray of a. That is, for each pair of indices $i \leq j$, Bessie tells you $r_{i,j} = \max a[i \ldots j] - \min a[i \ldots j]$. Given these values of r, please construct an array that could have been Bessie's original array. The values in your array should be in the range $[-10^9, 10^9]$.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains N.

Another N lines follow. The ith of these lines contains the integers $r_{i,i}, r_{i,i+1}, \ldots, r_{i,N}$.

It is guaranteed that there is some array a with values in the range $[0, 10^9]$ such that for all $i \leq j$, $r_{i,j} = \max a[i \ldots j] - \min a[i \ldots j]$.

OUTPUT FORMAT (print output to the terminal / stdout):

Output one line containing N integers $b_1, b_2, \ldots, b_N$ in the range $[-10^9, 10^9]$ representing your array. They must satisfy $r_{i,j} = \max b[i \ldots j] - \min b[i \ldots j]$ for all $i \leq j$.

SAMPLE INPUT:

```
3
0 2 2
0 1
0
```

SAMPLE OUTPUT:

```
1 3 2
```

For example, $r_{1,3} = \max a[1 \ldots 3] - \min a[1 \ldots 3] = 3 - 1 = 2$.

SAMPLE INPUT:

```
3
0 1 1
0 0
0
```

SAMPLE OUTPUT:

```
0 1 1
```

This example satisfies the constraints for subtask 1.

SAMPLE INPUT:

```
4
0 1 2 2
0 1 1
0 1
0
```

SAMPLE OUTPUT:

```
1 2 3 2
```

This example satisfies the constraints for subtask 2.

SAMPLE INPUT:

```
4
0 1 1 2
0 0 2
0 2
0
```

SAMPLE OUTPUT:

```
1 2 2 0
```

SCORING:

- Test 5 satisfies $r_{1,N} \leq 1$.
- Tests 6-8 satisfy $r_{i,i+1} = 1$ for all $1 \leq i < N$.
- Tests 9-14 satisfy no additional constraints.

Problem credits: Danny Mittal

Language: C

Source File: 选择文件 未选择任何文件

Submit Solution