Adduction the matrix to the upper triangular form

It is required to adduct a given two-dimensional array A of integers to an upper triangular form. Bringing a two-dimensional array into an upper triangular shape going on means by multiplying the rows by a constant and subtracting them from the other rows. As a result, under the main diagonal, the elements should become equal to zero.

Input

From a standard input device, in the first row introduces the number N $(1 \leq N \leq 100)$ - the number of rows and columns of the two-dimensional *A* array. In the next *N* rows exactly *N* elements are entered, which are elements of the two-dimensional array *A*.

Output

Is required to output two-dimensional array *A* adducted to the upper triangular form. **It is not necessary to deduce a space after the last element of each row. Elements must be displayed with an accuracy of three decimal places.** Elements equal to zero must be output unsigned.

Sample Input

```
3
1 2 3
4 5 6
7 8 19
```

Sample Output

```
1.000 2.000 3.000
0.000 -3.000 -6.000
0.000 0.000 10.000
```

Note

At first, reset to zero the elements of the first column below the main diagonal. In the example for this, from each element of the second row are subtracted the corresponding elements of the first row multiplied by four, and from each element of the third row are subtracted corresponding elements of the first row multiplied at seven. It turns out an intermediate result:

```
1 2 3
0 -3 -6
0 -6 -2
```

Now reset to zero the elements of the second column are located below the main diagonal. For this, from the elements of the third row are subtracted from the corresponding elements of the second row multiplied by two. It turns result:

```
1 2 3
0 -3 -6
0 0 10
```