



Triangle sum (IOI 1994 in Sweden)

```
      7
     3 8
    8 1 0
   2 7 4 4
  4 5 2 6 5
```

Your given a number triangle, just like the one above. Write a program that computes the largest sum of numbers such that all the numbers lie on a path starting at the top and ending anywhere in the bottommost row. In a single step, the path may either go diagonally down-left or diagonally down-right.

Input

The first line contains N , the number of rows of the triangle. The next N lines contain the triangle row by row.

Output

On the first line, print the largest possible sum.

Then, on the second line, describe the path as a sequence of characters of length $N - 1$, where “L” stands for a step to the left and “R” stands for a step to the right.

Limits

There are 5 batches of inputs, every one of them is worth 20 points.

- In batch 1, we have $N = 2$
- In batch 2, we have $N = 5$
- In batch 3, we have $1 \leq N \leq 10$
- In batch 4, we have $1 \leq N \leq 100$
- In batch 5, we have $1 \leq N \leq 1000$

Every number in the triangle is an integer from 0 to 99.

Examples

Input	Output
<pre>5 7 3 8 8 1 0 2 7 4 4 4 5 2 6 5</pre>	<pre>30 LLRL</pre>