

Atoll Aegis

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Off the coast of Programmington are the IT islands, a series of islands located on a $N \times N$ grid. The Programming Police are located on the mainland and want to know which islands they could defend in the case of a siege by the Cyber Criminals. The police can begin anywhere along the shore located on the left of the ocean. The shore and each island have catapults that can transport the police one column to the right and any integer value between 0 and 2 units up or down. For each location within the ocean, output whether or not the police can access it.

Input

Line 1: The integer N
Lines 2.. N +1: N characters denoting a row

Output

Lines 1.. N : N space separated values denoting whether the island is reachable
0 denotes unreachable, 1 denotes reachable

Example

standard input	standard output
10	0 1 0 0 0 0 0 0 0 0
.L.....L.	1 0 0 0 0 0 0 0 0 0
L.....	0 0 1 0 1 0 0 0 0 0
..L.L....L	0 0 0 1 0 0 0 0 0 0
...L.....	0 0 0 0 0 0 0 0 0 0
.....	0 0 0 0 1 1 1 0 0 0
....LLL...	0 0 0 0 0 0 0 0 0 0
..L.....	1 0 0 0 0 0 0 0 0 0
L.....	0 0 0 0 0 0 0 0 0 0
.....	0 1 0 0 0 0 0 0 0 0
.L.....	

Note

$1 \leq N \leq 40$
.
denotes water
L denotes an island
The shore is to the left of the ocean.
The police cannot catapult into the ocean.