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You are on vacation on a drunken island, but you couldn't resist the temptation of solving a good old problem. It all started when a group of kids played a game they call "The Falling Coconuts". In this game, a number of coconuts fall to the ground, one by one, on a single axis, at the locations given in drops. If a coconut X lands on the ground, it remains where it is. If it lands on top of another coconut Y, one of the following things happens:

If coconut Y is surrounded on both sides by coconuts (denoted by 'O'), coconut X remains where it is.

```
 X
OYO
```

If there is no coconut directly to the right of coconut Y, coconut X slides down to the position directly to the right of coconut Y.

```
 X
OY   ->  OYX
```

```
 X
 Y   ->   YX
```

If there is a coconut directly to the right of coconut Y, but no coconut directly to the left of coconut Y, coconut X slides down to the position directly to the left of coconut Y.

```
X
YO  ->  XYO
```

Each time coconut X slides down to a different position, it will continue to slide (following the behavior outlined above) until it's in a place where it will not slide any further.

The task is to display the final coconut configuration.

Input

First line is t = number of test cases.

Each test case consists of 2 lines, first line conataining the number of coconuts and second line contains n integers denoting the position of each coconut on the x-axis.

Output

As described in the problem statement.

Example

Input:
2
8
8 9 10 11 12 8 12 10
10
6 8 10 7 9 8 8 8 8 8

Output:
---O---
OOOOOOO
--O---
-OOO--
OOOOOO

Explanation of test case 1:

The configuration after each fallen coconut is given below:

X -> OX -> OOX -> 000X -> 0000X -> X00000 -> 000000X -> 0000000

In this diagram, 'X' denotes the last fallen coconut.