Easy Tetris

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

Dwarf Franek has always loved all kinds of games. One day he was going through his dad's stuff in the attic and found an old console with what seemed like a **Tetris** game. Although it resembled the familiar game, some of its rules were different.

The game is played on an initially empty board **of width** 10 and unlimited height. Pieces fall from above, one by one, in the exact order given in the input.

There are only two types of pieces:

- The `I`**-piece**, shaped like a vertical bar of height 4 and width 1.
- The `O`**-piece**, shaped like a solid square of height 2 and width 2.

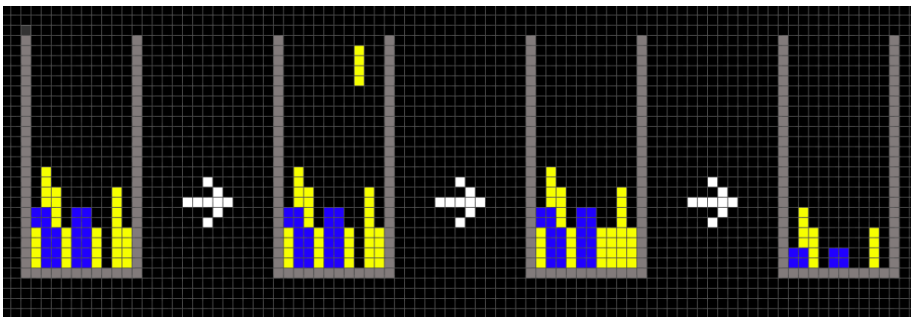
When a piece appears, Franek must choose where to drop it:

- An `I`-piece can be dropped into any of the 10 columns.
- An `O`-piece can be dropped so that its two columns fit entirely within the board (that is, starting at any column from 1 to 9).

Once a piece begins falling, it descends vertically until it lands on top of existing blocks or on the bottom of the board. **Pieces cannot be rotated, moved sideways mid-air, or split into parts.** After the piece lands, all cells it covers become filled.

Whenever a horizontal row of the board becomes completely filled with blocks (meaning all 10 columns have a block at that height), that row disappears. All blocks above it move down by one unit. If several rows are completed at the same time, they all disappear together.

You score one **tetris** whenever exactly **four rows disappear simultaneously**. The goal of the game is to score as many tetrises as possible.



The first board shows a sample configuration of pieces. After dropping an I-piece in the 8th column, it begins to fall as shown in the second and third boards. After that, the bottom four rows disappear, scoring a tetris, and resulting in the fourth board.

Being a competitive little dwarf, Franek wants to achieve the maximum score! However, he isn't good enough at the game, so you have to help him. Knowing the piece order in advance, help Franek determine the **maximum number of tetrises** he can achieve if he plays optimally. Additionally, provide a sequence of moves that achieves this score.

Input

The first line contains a single integer N, the number of pieces. The second line contains a string of length N, consisting only of the characters `I` and `O`, describing the sequence of pieces from first to last.

Output

In the first line, output a single integer being the maximum number of tetrises Franek can achieve. In the second line, output a sequence of N integers $c_1, c_2, \ldots, c_N$, where c_i is the column into which the i-th piece should be dropped (1-indexed). For an `I`-piece, c_i must satisfy $1 \leq c_i \leq 10$. For an `O`-piece, c_i refers to its left column and must satisfy $1 \leq c_i \leq 9$.

If there are multiple optimal sequences, you may output any of them.

Limits

$1 \leq N \leq 200\,000$.

Example

standard input	standard output
10 IIOIOIOOII	1 1 2 3 5 3 6 7 7 9 10

Note

The output shown is just one valid sequence of moves; other sequences may also achieve the same maximum number of tetrises.