A string is a *valid parentheses string* (denoted VPS) if and only if it consists of "(" and ")" characters only, and:

* It is the empty string, or
* It can be written as AB (A concatenated with B), where A and B are VPS's, or
* It can be written as (A), where A is a VPS.

We can similarly define the *nesting depth* depth(S) of any VPS S as follows:

* depth("") = 0
* depth(A + B) = max(depth(A), depth(B)), where A and B are VPS's
* depth("(" + A + ")") = 1 + depth(A), where A is a VPS.

For example,  "", "()()", and "()(()())" are VPS's (with nesting depths 0, 1, and 2), and ")(" and "(()" are not VPS's.

Given a VPS seq, split it into two disjoint subsequences A and B, such that A and B are VPS's (and A.length + B.length = seq.length).

Now choose **any** such A and B such that max(depth(A), depth(B)) is the minimum possible value.

Return an answer array (of length seq.length) that encodes such a choice of A and B:  answer[i] = 0 if seq[i] is part of A, else answer[i] = 1.  Note that even though multiple answers may exist, you may return any of them.

**Example 1:**

**Input:** seq = "(()())"

**Output:** [0,1,1,1,1,0]

**Example 2:**

**Input:** seq = "()(())()"

**Output:** [0,0,0,1,1,0,1,1]

**Constraints:**

* 1 <= seq.size <= 10000