Problem F6405
Compressed Data

You have a n *by* n square matrix of 0's and 1's. Ideally the whole matrix will be stored, but indeed it is represented in the following compressed way using a string of character 'D' and numbers '0' and '1'.

1. If all the entries are 0's, then a single character 0 will be used to represent the matrix.
2. If all the entries are 1's, then a single character 1 will be used to represent the matrix.
3. If there are mixed 0's and 1's, then a single character 'D'(stand for Divide) will be used at the beginning,
   (a) The matrix is divided in to 4 equal sized sub matrix.
   (b) We represent the left top sub matrix using the compressed way.
   (c) We represent the right top sub matrix using the compressed way.
   (d) We represent the left bottom sub matrix using the compressed way.
   (e) We represent the right bottom sub matrix using the compressed way.

For example a 2 *by* 2 matrix

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

will be represented as "D1001". When we look at the matrix, since there are both 0's and 1's, so we should put a 'D' first. Then we look at the left top sub matrix, which is the $(1, 1)$ entry, a 1 *by* 1 sub matrix. Since for this sub matrix all the entries(it only has 1 entry) are 1's, we could represent it with a character 1. For right top matrix, which is $(1, 2)$ entry, left bottom matrix. which is $(2, 1)$ entry and right bottom matrix, which is $(2, 2)$ entry, they are similar to the left top entry. So the final compression will be "D1001".

Given a data matrix in the compressed form, you are asked to output original data matrix.

Input

The first line of input consist of a single integer $n(1 \leq n \leq 32)$, denoting the size of the matrix. This number is guaranteed to be a power of 2.

The second line consist of a string, a valid compression format of the data.

Output

Output the original data matrix. There are exactly n lines of output.

The *i-th* line is the *i-th* row of the original matrix. And it consist of n space separated 0's or 1's, the *j-th* number is the *j-th* entry of this row.

Sample Input 1

```
2
D1001
```

Sample Output 1

```
1 0
0 1
```

Sample Input 2

```
4
DD100110D0110
```

Sample Output 2

```
1 0 1 1
0 1 1 1
0 0 0 1
0 0 1 0
```