

# Binary vs Ternary

Input file:            **standard input**  
Output file:         **standard output**  
Time limit:          1 second  
Memory limit:       1024 megabytes

A *binary string* is a sequence of bits, i.e., “0”s and “1”s. For a binary string  $S$ , you can perform the following operations for any number of times:

- Choose a non-empty substring  $S[l, r] = S_l S_{l+1} \dots S_r$ , consider it as a ternary (i.e., base 3) integer, and then convert it to the corresponding binary integer. For example,  $(101)_3 = (1010)_2$ , so you can transform **110110** into **1101010**.

Note that the selected substring **may have leading zeros**, but the transformed substring will have no leading zeros. We consider 0 as a proper binary integer without leading zeros. For example, you can transform 01 to 1 because  $(01)_3 = (1)_2$ . You can also transform 0 to 0 because  $(0)_3 = (0)_2$ .

Given two binary strings  $A$  and  $B$ , both starting with the digit “1”, you need to determine whether  $A$  can be transformed into  $B$  in no more than 512 operations. And you need to keep the length of the string no more than 128 during the transformation. If it is possible, print a solution.

## Input

There are multiple test cases in a single test file. The first line of the input contains a single integer  $T$  ( $1 \leq T \leq 1000$ ), indicating the number of test cases.

For each test case, the first line contains the string  $A$  ( $1 \leq |A| \leq 64$ ). The second line contains the string  $B$  ( $1 \leq |B| \leq 64$ ).

It is guaranteed that  $A$  and  $B$  start with the digit “1” and consist of only “1” and “0”.

## Output

For each test, if it is impossible to transform string  $A$  to  $B$ , output “-1”.

Otherwise, output an integer  $n$  ( $0 \leq n \leq 512$ ) first, indicating the number of steps. In the next  $n$  lines, output two integers  $l, r$  ( $1 \leq l \leq r$ ) indicating the substring you choose in each step. The indices are 1-based.  $r$  should be no more than the length of the current string.

## Example

standard input	standard output
3	-1
1	1
111	2 4
110110	2
1101010	1 3
1111	2 5
111111	

## Note

In the first test case, it can be shown that there is no possible solution.

In the second test case, for  $A = 110110$ , we can choose  $l = 2$  and  $r = 4$  first. Since  $A[2, 4] = 101$ , and  $(101)_3 = (1010)_2$ , so **110110** will be changed to **1101010**.