

Problem C. AB-Strings

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

There are two strings s and t , consisting only of letters **a** and **b**. You can make the following operation several times: choose a prefix of s , a prefix of t and swap them. Prefixes can be empty, also a prefix can coincide with a whole string.

Your task is to find a sequence of operations after which one of the strings consists only of **a** letters and the other consists only of **b** letters. The number of operations should be minimized, but solutions that find non-optimal sequences will still get some points. Read the scoring section for more detailed information.

Input

The first line contains a string s ($1 \leq |s| \leq 2 \cdot 10^5$).

The second line contains a string t ($1 \leq |t| \leq 2 \cdot 10^5$).

Here $|s|$ and $|t|$ denote the lengths of s and t , respectively. It is guaranteed that at least one of the strings contains at least one **a** letter and at least one of the strings contains at least one **b** letter.

Output

The first line should contain a single integer n ($0 \leq n \leq 5 \cdot 10^5$)—the number of operations.

Each of the next n lines should contain two space-separated integers a_i, b_i —the lengths of prefixes of s and t to swap, respectively.

If there are multiple possible solutions, you can print any of them.

Scoring

Let n be the length of your sequence, and m be the length of some optimal sequence.

- If for all tests of the group $n = m$, you will get 100% of the score of this group.
- If for all tests of the group $n \leq m + 2$, you will get 70% of the score of this group (rounded down to the nearest integer).
- If for all tests of the group $n \leq 2m + 2$, you will get 50% of the score of this group (rounded down to the nearest integer).
- If for all tests of the group $n \leq 5 \cdot 10^5$, you will get 30% of the score of this group (rounded down to the nearest integer).
- If for at least one test you output $n > 5 \cdot 10^5$, you will get **WA** and 0 points for this group.

Subtask	Score	Constraints	Comment
0	0	—	Tests from the statement
1	5	$1 \leq s , t \leq 6$	s and t combined contain exactly one letter a
2	10	$1 \leq s , t \leq 6$	—
3	20	$1 \leq s , t \leq 50$	—
4	20	$1 \leq s , t \leq 250$	—
5	20	$1 \leq s , t \leq 2000$	—
6	25	$1 \leq s , t \leq 2 \cdot 10^5$	—

Examples

standard input	standard output
bab bb	2 1 0 1 3
bbbb aaa	0

Note

In the first example, you can solve the problem in two operations:

1. Swap the prefix of the first string with length 1 and the prefix of the second string with length 0.
After this swap, you'll have strings **ab** and **bbb**.
2. Swap the prefix of the first string with length 1 and the prefix of the second string with length 3.
After this swap, you'll have strings **bbbb** and **a**.

In the second example, the strings are already appropriate, so no operations are needed.