F. Wordplay (16 Mb, 1 sec)

Hacker Kirill is fond of playing with words. He considers any sequence of letters to be a word, even if the sequence makes no sense.

Once he amused himself by composing chains of words using characters **a** and **b** only. Each following word ***Q*** in the chain must be produced from the previous one ***P*** with the use of one of the following rules:

- append letter **a** to the left of ***P***, i.e. ***Q***=**a*P***;
- replace the sequence **bb**…**ba**… at the beginning of ***P*** with **aa**…**ab**… (the number of **b**'s in the first fragment is equal to the number of **a**'s in the second one, and it may be equal to zero);
- replace the whole word ***P***=**bb**…**b** with ***Q***=**aa**…**ab** (the number of **b**'s in ***P*** is equal to the number of **a**'s in ***Q***).

An example of word chain: **bb** → **aab** → **bab** → **abab**.

Write a program that determines if it is possible to build a chain to turn one given word (***S***) into another (***F***) and finds the number of transformations in the shortest chain.

Limitations

The input word ***S*** is 1 to 50 characters long and is guaranteed to end with **b**.

Input

The first line of the input file contains the initial word ***S***. The second line contains the target word ***F***. Words ***S*** and ***F*** differ.

Output

The input file should contain a single number, the number of transformations. If it is impossible to build the required chain then write -1 to the output file.

Sample Input	Sample Output
bb abab	3