

E. Test

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Sometimes it is hard to prepare tests for programming problems. Now Bob is preparing tests to new problem about strings — input data to his problem is one string. Bob has 3 wrong solutions to this problem. The first gives the wrong answer if the input data contains the substring s_1 , the second enters an infinite loop if the input data contains the substring s_2 , and the third requires too much memory if the input data contains the substring s_3 . Bob wants these solutions to fail single test. What is the minimal length of test, which couldn't be passed by all three Bob's solutions?

Input

There are exactly 3 lines in the input data. The i -th line contains string s_i . All the strings are non-empty, consists of lowercase Latin letters, the length of each string doesn't exceed 10^5 .

Output

Output one number — what is minimal length of the string, containing s_1 , s_2 and s_3 as substrings.

Examples

input
ab bc cd
output
4

input
abacaba abaaba x
output
11