



# Common Child

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Problem

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Given two strings  $a$  and  $b$  of equal length, what's the longest string ( $s$ ) that can be constructed such that it is a child of both?

A string  $x$  is said to be a child of a string  $y$  if  $x$  can be formed by deleting 0 or more characters from  $y$ .

For example, ABCD and ABDC has two children with maximum length 3, ABC and ABD. Note that we will not consider ABCD as a common child because C doesn't occur before D in the second string.

## Input format

Two strings,  $a$  and  $b$ , with a newline separating them.

## Constraints

- $1 \leq |a|, |b| \leq 5000$
- All characters are upper cased and lie between ASCII values 65-90.

## Output format

Print the length of the longest string  $s$ , such that  $s$  is a child of both  $a$  and  $b$ .

## Sample Input 0

```
HARRY
SALLY
```

## Sample Output 0

```
2
```

The longest possible string that is possible by deleting zero or more characters from **HARRY** and **SALLY** is **AY**, whose length is 2.

## Sample Input 1

```
AA
BB
```

## Sample Output 1

```
0
```

**AA** and **BB** has no characters in common and hence the output is 0.

## Sample Input 2

SHINCHAN  
NOHARAAA

### Sample Output 2

3

The longest string that can be formed between *SHINCHAN* and *NOHARAAA* while maintaining the order is *NHA*.

### Sample Input 3

ABCDEF  
FBDAMN

### Sample Output 3

2

*BD* is the longest child of the given strings.

[f](#) [t](#) [in](#)

Submissions: 14893

Max Score: 60

Difficulty: Medium



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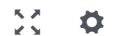
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Java 8



```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     static int commonChild(String str1, String str2){
10
11         int[][] arr = new int[str1.length()][str2.length()];
12
13         for(int j = 0 ; j < str1.length() ; j++){
14
15             for(int k = 0 ; k < str2.length() ; k++){
16
17                 if(k == 0 && j == 0 && str2.charAt(k) == str1.charAt(j)){
18                     arr[j][k] = 1;
19                 }
20                 else if(k == 0 && j == 0 && str2.charAt(k) != str1.charAt(j)){
21                     arr[j][k] = 0;
22                 }
23                 else if(k == 0){
24                     if(str1.charAt(j) == str2.charAt(k)){
25                         arr[j][k] = 1;
26                     }
27                 }
28                 else{
29                     arr[j][k] = Math.max(arr[j-1][k],0);
30                 }
31             }
32         }
33     }
34 }
```

```
29         }
30     }
31     else if(j == 0){
32         if(str1.charAt(j) == str2.charAt(k)){
33             arr[j][k] = 1;
34         }
35         else{
36             arr[j][k] = Math.max(0,arr[j][k-1]);
37         }
38     }
39     else if(str2.charAt(k) == str1.charAt(j)){
40         arr[j][k] = arr[j - 1][k - 1] + 1;
41     }
42     else if(str2.charAt(k) != str1.charAt(j)){
43         arr[j][k] = Math.max(arr[j - 1][k],Math.max(arr[j - 1][k - 1],arr[j][k - 1]));
44     }
45 }
46 }
47
48 return arr[str1.length() - 1][str2.length() - 1];
49
50 }
51
52 public static void main(String[] args) {
53     Scanner in = new Scanner(System.in);
54     String s1 = in.next();
55     String s2 = in.next();
56     int result = commonChild(s1, s2);
57     System.out.println(result);
58 }
59 }
60
```

Line: 1 Col: 1

[Upload Code as File](#) ☐ Test against custom input

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