

# 1061. Lexicographically Smallest Equivalent String

Medium805Add to ListShare

Given strings *A* and *B* of the same length, we say *A[i]* and *B[i]* are equivalent characters. For example, if *A* = "abc" and *B* = "cde", then we have 'a' == 'c', 'b' == 'd', 'c' == 'e'.

Equivalent characters follow the usual rules of any equivalence relation:

- Reflexivity: 'a' == 'a'
- Symmetry: 'a' == 'b' implies 'b' == 'a'
- Transitivity: 'a' == 'b' and 'b' == 'c' implies 'a' == 'c'

For example, given the equivalency information from *A* and *B* above, *S* = "eed", "acd", and "aab" are equivalent strings, and "aab" is the lexicographically smallest equivalent string of *S*.

Return the lexicographically smallest equivalent string of *S* by using the equivalency information from *A* and *B*.

## Example 1:

Input: A = "parker", B = "morris", S = "parser"  
Output: "makkek"  
Explanation: Based on the equivalency information in A and B, we can group their characters as [m,p], [a,o], [k,r,s], [e,i]. The characters in each group are equivalent and sorted in lexicographical order. So the answer is "makkek".

## Example 2:

Input: A = "hello", B = "world", S = "hold"  
Output: "hdld"  
Explanation: Based on the equivalency information in A and B, we can group their characters as [h,w], [d,e,o], [l,r]. So only the second letter 'o' in S is changed to 'd', the answer is "hdld".

## Example 3:

Input: A = "leetcode", B = "programs", S = "sourcecode"  
Output: "aasaaaaa"  
Explanation: We group the equivalent characters in A and B as [a,o,e,r,s,c], [l,p], [g,t] and [d,m], thus all letters in S except 'u' and 'd' are transformed to 'a', the answer is "aasaaaaa".

## Note:

- String *A*, *B* and *S* consist of only lowercase English letters from 'a' - 'z'.
- The lengths of string *A*, *B* and *S* are between 1 and 1000.
- String *A* and *B* are of the same length.

Accepted 3,016 | Submissions 4,669

Seen this question in a real interview before?

Contributor	
Related Topics	↓
Show Hint 1	↓
Show Hint 2	↓
Show Hint 3	↓

```
class Solution(object):
    def
smallestEquivalentString(self, A,
B, S):
    """
:type A: str
:type B: str
:type S: str
:rtype: str
    """
```