

# Intuition

Intuition is to reduce the problem somehow to problems of smaller size. If string has just 1 letter then minimum steps would be 1.

If it has 2 letters then there can be 2 cases :  $f("aa") = 1$   $f("ab") = 2$ . Similarly for all unique characters we have length as the answer.

Generalisation : If a current character doesn't occur in the string then we can call the recursive function for  $i + 1$  to  $j$  and add 1.

eg.  $str = abcb$  then  $answer = 1 + Util("bcb")$ . But in case we have a character that is same as the current character then we might have better option. eg  $str = abac$ , in this case we have a repeated, so we might get a better answer. Now since we don't know where exactly is the better we will find all of them. Now we will split the  $str$  into  $aba$  and  $c$ , means at the point where we found repeated character.

This is done to split the problem into subproblem, Now we are seeing that in  $aba$ , the amount of steps needed would be same as  $ab$ , so we will remove the repeated character and call the  $Util$  function for  $i$  to  $k - 1$  and for another half of the string from  $k + 1$  to  $j$ .

Note : We have removed the last  $a$  from the first half as discussed earlier.

Now we will calculate the minimum of the answer with the better answer and return the updated answer.

## Complexity

- Time complexity:  $O(N * N * N)$
- Space complexity:  $O(N * N)$