

# Count Substring of 0 and 1 (Imp)

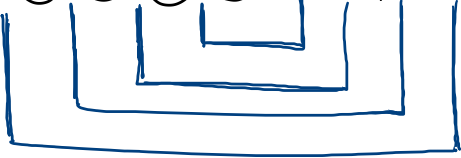
↳ count substrings having

↳ equal no. of 0's and 1's

↳ all 0's and all 1's should be together

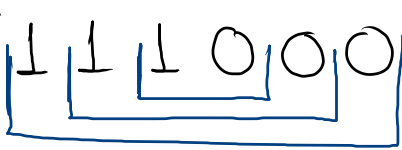
Ex:-

str = "0000001111"



ans = 4

str = "1110000000000000"

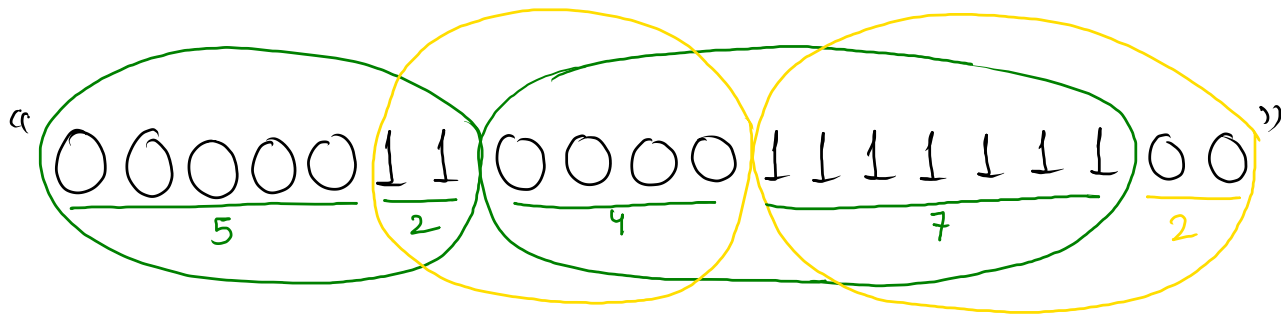


ans = 3

ans =  $\min(\text{count of 0}, \text{count of 1})$ ;

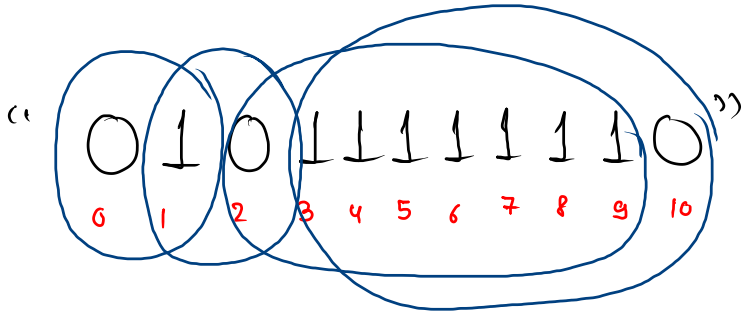
Ex2

str =



ans = 2 + 4 + 2 + 2  
= 10

str =

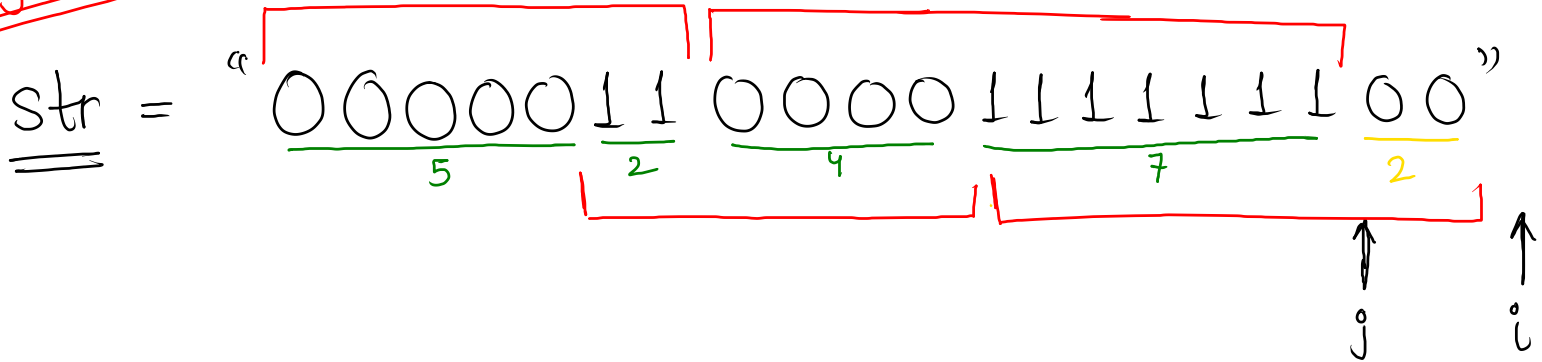


ans = 1 + 1 + 1 + 1  
= 4

ans =

- 01 ✓
- 0011 ✓
- 10 ✓
- 1100 ✓
- 01 ✓
- 0011 ✓
- 000111 ✓
- 00001111 ✓
- 10 ✓
- 1100 ✓

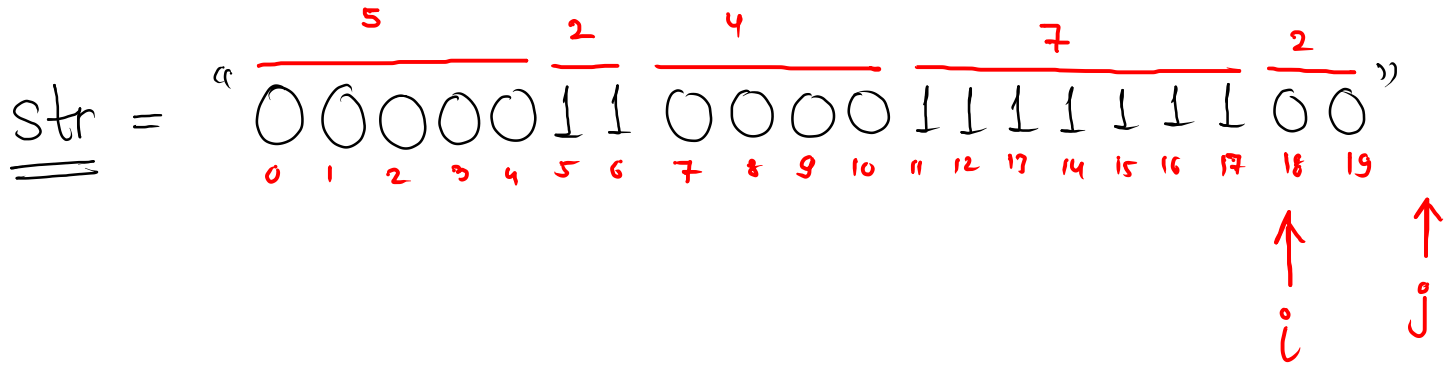
dry run



countZero = ~~0~~ ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ ~~6~~ ~~7~~ ~~8~~ ~~9~~ ~~10~~ ~~11~~ ~~12~~ ~~13~~ ~~14~~ ~~15~~ ~~16~~ ~~17~~ ~~18~~ ~~19~~ ~~20~~ ~~21~~ ~~22~~ ~~23~~ ~~24~~ ~~25~~ ~~26~~ ~~27~~ ~~28~~ ~~29~~ ~~30~~ ~~31~~ ~~32~~ ~~33~~ ~~34~~ ~~35~~ ~~36~~ ~~37~~ ~~38~~ ~~39~~ ~~40~~ ~~41~~ ~~42~~ ~~43~~ ~~44~~ ~~45~~ ~~46~~ ~~47~~ ~~48~~ ~~49~~ ~~50~~ ~~51~~ ~~52~~ ~~53~~ ~~54~~ ~~55~~ ~~56~~ ~~57~~ ~~58~~ ~~59~~ ~~60~~ ~~61~~ ~~62~~ ~~63~~ ~~64~~ ~~65~~ ~~66~~ ~~67~~ ~~68~~ ~~69~~ ~~70~~ ~~71~~ ~~72~~ ~~73~~ ~~74~~ ~~75~~ ~~76~~ ~~77~~ ~~78~~ ~~79~~ ~~80~~ ~~81~~ ~~82~~ ~~83~~ ~~84~~ ~~85~~ ~~86~~ ~~87~~ ~~88~~ ~~89~~ ~~90~~ ~~91~~ ~~92~~ ~~93~~ ~~94~~ ~~95~~ ~~96~~ ~~97~~ ~~98~~ ~~99~~ ~~100~~ ~~101~~ ~~102~~ ~~103~~ ~~104~~ ~~105~~ ~~106~~ ~~107~~ ~~108~~ ~~109~~ ~~110~~ ~~111~~ ~~112~~ ~~113~~ ~~114~~ ~~115~~ ~~116~~ ~~117~~ ~~118~~ ~~119~~ ~~120~~ ~~121~~ ~~122~~ ~~123~~ ~~124~~ ~~125~~ ~~126~~ ~~127~~ ~~128~~ ~~129~~ ~~130~~ ~~131~~ ~~132~~ ~~133~~ ~~134~~ ~~135~~ ~~136~~ 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code

```
public static int countSubstring(String str) {
    int n = str.length();
    int i = 0;
    int ans = 0;
    while (i < n) {
        int countZero = 0;
        int countOne = 0;
        if ( str.charAt(i) == '0' ) {
            // count zero
            while ( i < n && str.charAt(i) == '0' ) {
                countZero++;
                i++;
            }
            // count one
            int j = i;
            while ( j < n && str.charAt(j) == '1' ) {
                countOne++;
                j++;
            }
        } else {
            // count One
            while ( i < n && str.charAt(i) == '1' ) {
                countOne++;
                i++;
            }
            // count zero
            int j = i;
            while ( j < n && str.charAt(j) == '0' ) {
                countZero++;
                j++;
            }
        }
        ans = ans + Math.min(countZero, countOne);
    }
    return ans;
}
```



$$\text{ans} = 0 + 2 + 2 + 4 + 2 = 10$$

$$\text{countZero} = \cancel{0} \cancel{1} \cancel{2} \cancel{3} \cancel{4} \cancel{5} \cancel{0} \cancel{1} \cancel{2} \cancel{3} \cancel{4} \cancel{0} \cancel{1} \cancel{0} \cancel{2}$$

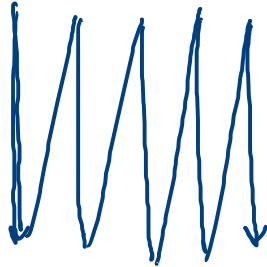
$$\text{countOne} = \cancel{0} \cancel{1} \cancel{2} \cancel{0} \cancel{1} \cancel{2} \cancel{0} \cancel{7} \cancel{0} \cancel{7}$$

# Merge Strings Alternatively

Ex:-

str1 = "Omkar"

0 1 2 3 4



str2 = "Suraj"

0 1 2 3 4

ans = "Osmukraarj"

## pseudo code

1) check if both strings are of same len

1.1) create ans = "" ;

1.2) iterate 0 to str1.length()

1.2.1)  $ans = ans + \underline{str1.charAt(i)} + \underline{str2.charAt(i)}$

2) return ans;

code

T.C =  $O(N)$ , len of str

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    String str1 = scn.nextLine();
    String str2 = scn.nextLine();
    String ans = mergeString(str1, str2);
    System.out.println(ans);
}

public static String mergeString(String str1, String str2) {
    String ans = "";
    for (int i = 0; i < str1.length(); i++) {
        char ch1 = str1.charAt(i);
        char ch2 = str2.charAt(i);
        ans = ans + ch1 + ch2;
    }
    return ans;
}
```