

Count Of All Subarrays With Zero Sum

arr = 8 15 -2 2 -8 1 7 10 23

pre = 8 23 21 23 15 16 23 33 56

↓

$$\text{Sum}(i,j) = \text{pre}[j] - \text{pre}[i - 1] = 0$$

$$\text{pre}[j] = \text{pre}[i - 1]$$

if (map.contains(pre[j])) --> record ans

ans = ans + map.get(pre[j])

$$= 1 + 2 = 3$$

| I | 1 | I | freq | |
|----|---|---|------|-------|
| 8 | - | 1 | 0 | → imp |
| 23 | - | 1 | 2 | |
| 21 | - | 1 | | |
| 15 | - | 1 | | |
| 16 | - | 1 | | |
| 23 | - | 1 | | |
| 33 | - | 1 | | |
| 56 | - | 1 | | |

$$\begin{array}{c} \cdot \\ | \quad - \quad | \\ \downarrow \end{array}$$

$$\begin{array}{cccc} -1 & 7 & -8 & 1 \\ 0 & 7 & -1 & 0 \\ & \downarrow & \downarrow & \downarrow \\ & \downarrow & \downarrow & \downarrow \end{array}$$

$$\downarrow$$

$$\boxed{0 \quad - \quad +}^2$$

$$\begin{array}{ccc} 7 & - & 1 \\ - & 1 & - & 1 \end{array}$$

Find All Anagrams in a String

Anagrams --> permutation of char in string

example:

str = coding

docing

iocdng

s : cbaebabacd

p: abc

anagram of p:

abc
acb
bac
bca
cab
cba

0 6

s : cbaebabacd

p: abc

P

| | |
|---|----|
| a | -1 |
| b | -1 |
| c | -1 |

S

| | |
|---|-----|
| b | -10 |
| c | -10 |
| a | -1 |
| c | -1 |

-1 0 1 2 3 4 5 6 7 8 9
c b a e b e b a c (d)
 ↓ ↓
 si ei

matchCount : ~~0~~ ~~1~~ ~~2~~ ~~3~~ ~~2~~
(record char match
in current window from p)

window = ei - si

ans = 0, 6

→ if (pmap.contains(CHei)

acquire --> till window len < p.length()

matchCount++ --> pmap.contains(chei) &&
smap.get(chei) < pmap.get(chei)

Record ans --> matchCount == p.length -->
add si + 1 in list

Release --> till window len > p.length

remove from smap and decrease
matchCount accordingly

→

else : reseting to original values

matchCount = 0
smap = new HashMap
si = ei
ei++;

Group Anagrams

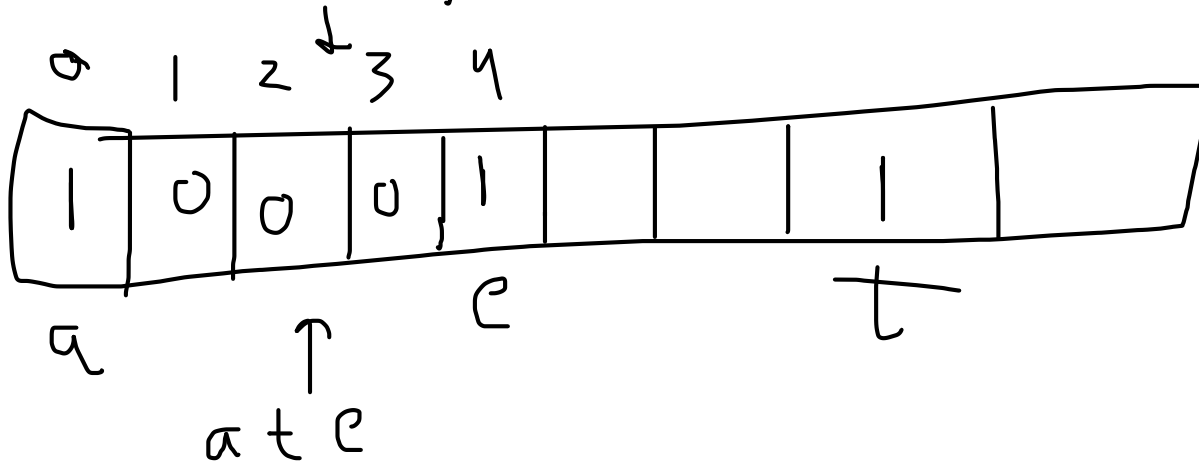
[ate, bat, eat, nat, tan, tea]

ate, eat, tea

nat, tan

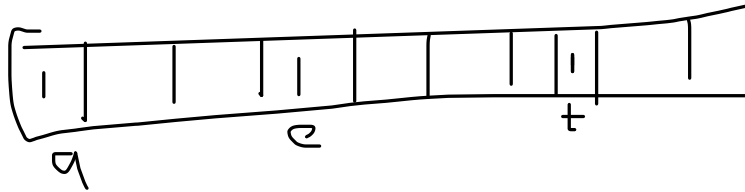
bat

$e_{\text{cut}} \rightarrow 2^G$ const wr



Convert this array in equivalent hashed string -->

to



↓

$[str, end, len] \rightarrow [1 \# 0 \# 0 \# 0 \# 1 \# 0 - - \# 1 \# 0 - - 0]$
 \downarrow
 Delimiter