

Count of substrings with exactly k distinct chars.

$k = 3$

$(1, 2, 3)$
→ count of ss with atmost k distinct

- count of ss with atmost $k-1$

$(1, 2)$

extra effort or ↗

exactly k
distinct char

j
b a b c a d
i

$k = 3$

a - 1

c - 1

d - 1

atmost 3 distinct

Char ss -

atmost 2 distinct

Char ss -

$k = 3$

→ ss

ss with atmost
3 distinct char

b
ba a
bab ab b
babcb abc bc c
babca abca bca ca a
cad ad d

j
 b a b c a d
 i

$k = 2$

$a - 1$

$d - 1$

ss with atmost
 2 distinct char

b
 ba a
 bab ab b
 bc c
 ca a
 ad d

~~b~~
~~ba~~ ~~a~~
~~bcb~~ ~~cb~~ ~~b~~
~~babc~~ ~~abc~~ ~~bc~~ ~~c~~
~~babca~~ ~~abca~~ ~~bca~~ ~~ca~~ ~~a~~
~~cad~~ ~~ad~~ ~~d~~

ss with atmost
 3 distinct
 char

~~b~~
~~ba~~ ~~a~~
~~bcb~~ ~~cb~~ ~~b~~
~~bcb~~ ~~c~~
~~ca~~ ~~a~~
~~ad~~ ~~d~~

substroing with
 atmost 2
 distinct char

babc
 abcb
 babra
 abra
 bra
 cad

ss with
 exactly
 k distinct
 chars.

954. Array of Doubled Pairs

$$[a, 2a, b, 2b, c, 2c, a, 2a, \dots]$$

Given an integer array of even length `arr`, return `true` if it is possible to reorder `arr` such that `arr[2 * i + 1] = 2 * arr[2 * i]` for every $0 \leq i < \text{len}(\text{arr}) / 2$, or `false` otherwise.

$$[10, 5, 4, 8]$$



$$\begin{array}{cccc} 4, & 8, & 5, & 10 \\ 0 & 1 & 2 & 3 \end{array}$$

$$i = 0$$

$$i = 1$$

$$i = 2$$

⋮

$$\text{arr}[2i+1] = 2 * \text{arr}[2i]$$

$$\text{arr}[1] = 2 * \text{arr}[0]$$

$$\text{arr}[3] = 2 * \text{arr}[2]$$

$$\text{arr}[5] = 2 * \text{arr}[4]$$

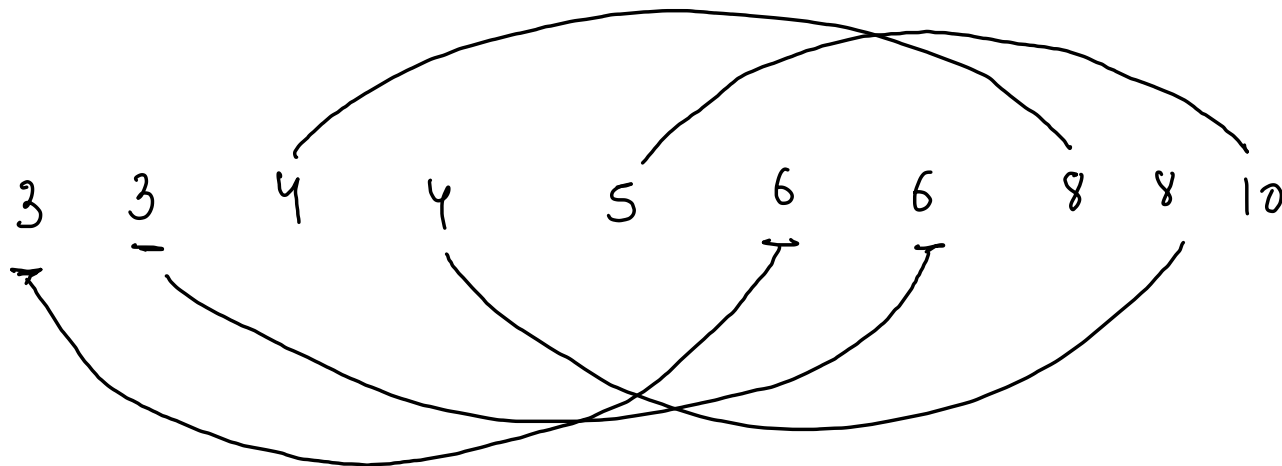
32, 64, 16, 8

4, 8, 16, 2
: sort

8 16 32 64
↗ ↗

→ 2 4 8 16
↗ ↗

8, 4, 8, 5, 10, 6, 3, 6, 4, 3



3 - ~~2~~ 0

4 - ~~2~~ 0

5 - 0

6 - ~~2~~ 0

8 - ~~2~~ 0

10 - 0

-8, 8, 4, 8, 5, -6, 10, 6, 3, 6, 4, 3, -3, -16

-16 -8 -6 -3 3 3 4 4 5 6 6 8 8 10
(normal sorting)

[3 3 -3 4 4 5 6 6 -6 8 8 -8 10 -16
) Sorting based on absolute value

(i) Sort array on absolute value sort.

(ii) for -ve region find $\text{arr}(i)/2$
(case : odd)

(iii) Segregate : +ve L \rightarrow R
-ve R \rightarrow L
find $2 * \text{arr}(i)$

6, -8, -4, 3, 8, 0, 6, -5, -10, 8, 12, 4, 16, 4, 2, 0, 3, 6

~~8~~, ~~0~~, ~~2~~, ~~3~~, ~~3~~, ~~4~~, ~~-4~~, ~~9~~, ~~-5~~, ~~8~~, ~~6~~, ~~8~~, ~~-8~~, ~~8~~, ~~8~~, ~~-10~~, ~~12~~, ~~16~~

6 \rightarrow ~~3~~ ~~2~~ ~~2~~ 0 -5 \rightarrow ~~2~~ 0

-8 \rightarrow ~~1~~ 0

-10 \rightarrow ~~2~~ 0

-4 \rightarrow ~~1~~ 0

12 \rightarrow ~~2~~ 0

3 \rightarrow ~~2~~ ~~1~~ 0

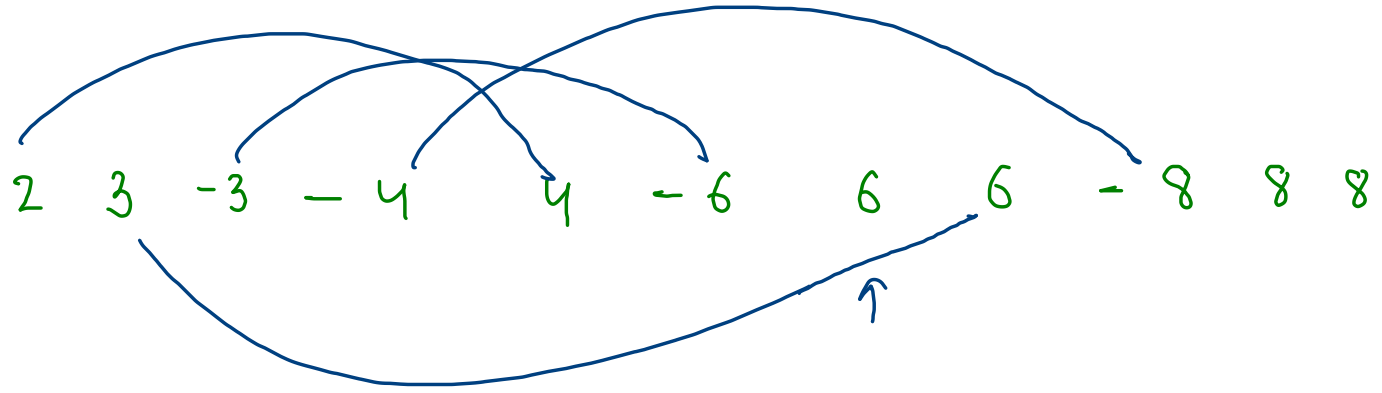
4 \rightarrow ~~2~~ ~~1~~ 0

8 \rightarrow ~~2~~ ~~2~~ 0

16 \rightarrow ~~1~~ 0

2 \rightarrow ~~1~~ 0

0 \rightarrow ~~2~~ 0



```
for(int i=0; i < arrI.length;i++) {
    int e1 = arrI[i];
    int e2 = 2 * arrI[i];

    if(e1 == 0) {
        if(map.get(e1) % 2 != 0) {
            return false;
        }
        continue;
    }

    if(map.containsKey(e1,0) > 0) {
        int f1 = map.get(e1,0);
        int f2 = map.get(e2,0);

        if(f2 == 0) {
            return false;
        }

        map.put(e1,f1-1);
        map.put(e2,f2-1);
    }
}
```

2 → (1) 0	4 → 1 0
3 → (1) 0	-6 → 1 0
-3 → (1) 0	6 → 2 1
-4 → (1) 0	-8 → 1 0
	8 → 2

```
}
```

914. X of a Kind in a Deck of Cards

- (i) No. of group can be anything
- (ii) no. of elements in one group should same among all the groups.
- (iii) elements in a group should be same.

$\text{gcd} \rightarrow 1$ (not possible)

2 2 2 2 4 4 4 4 4 4
3 3 3 3 3 3 3 3

2 - 4

4 - 6

3 - 8

$\text{gcd}(\text{all freq})$

$\text{gcd}(4, 6, 8) \rightarrow 2$

$$a = 18$$

$$b = 60$$

$$\begin{array}{r} 3 \\ 18 \overline{) 60} \\ \underline{54} \\ 6 \end{array}$$

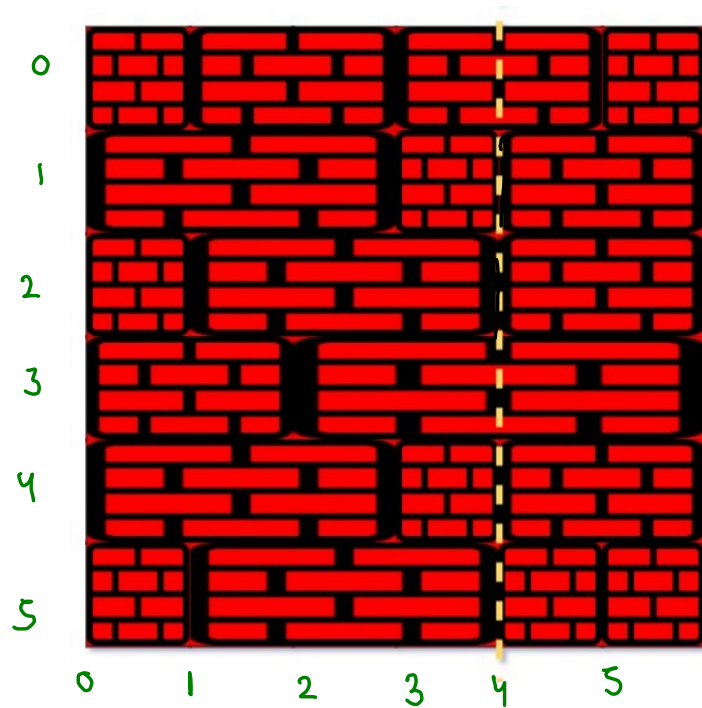
6

$$\begin{array}{r} 3 \\ 6 \overline{) 18} \\ \underline{18} \\ 0 \end{array}$$

gcd

554. Brick Wall

Input: wall = [[1,2,2,1],[3,1,2],[1,3,2],[2,4],[3,1,2],[1,3,1,1]]
Output: 2



1 → 3

3 → 3

5 → 2

4 → 4

2 → 1

$x = ?$

you cross min no. of
bricks.

↙
end points vs

how many have
this end points

(i) end points

↳ using prefix sum