

Date - 7th August 2021

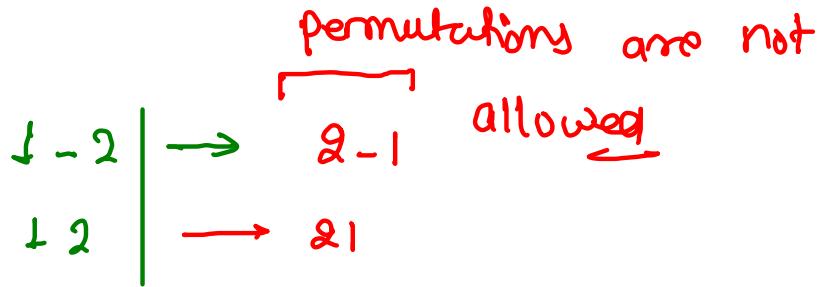
- ✓ Friends Pairing - 2
- ✓ K-partitions
- ✓ All Palindromic Permutations
- All Palindromic Partitions
- K Subsets With Equal Sum

Date - 8th August 2021

- Tug Of War
- Pattern Matching
- Word Break - I
- Remove Invalid Parenthesis
- Largest Number Possible After At Most K Swaps

Friends pairing

$n=2$

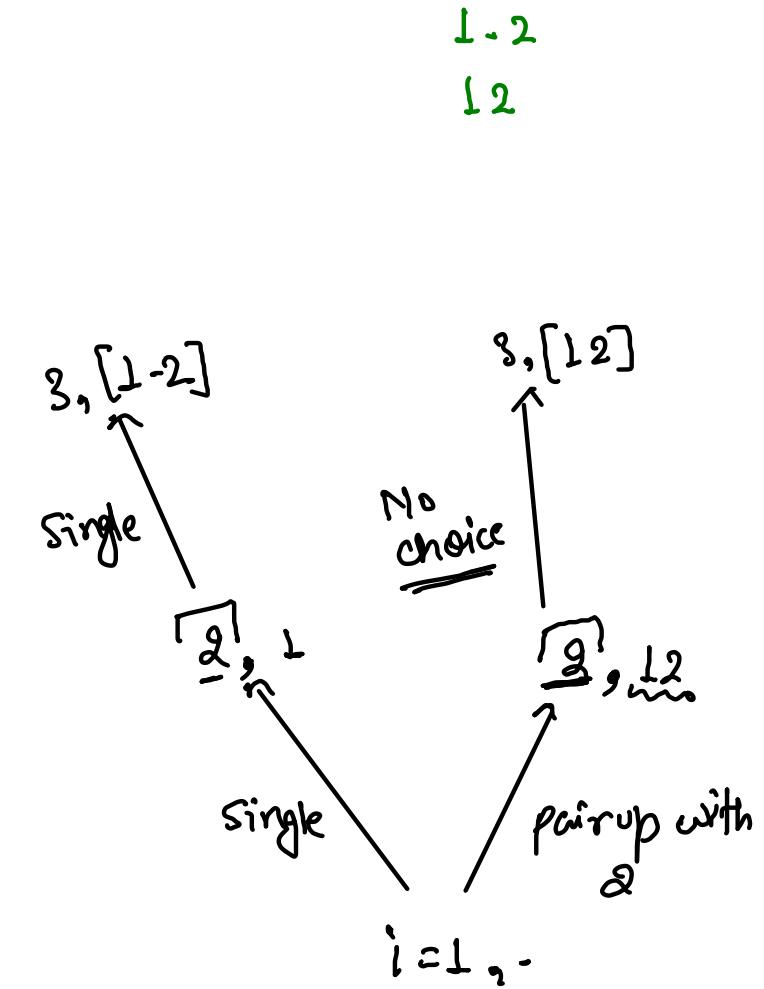


$n=3$

$1-2-3$ $1\ 2-3$ $1\ 3-2$ $1-2\ 3$	$2-1-3, 3-1-2, 2-3-1$ $3-1\ 2, 3-2\ 1$ $2-8\ 1, 2-1\ 3$ $28-1, 32-1 \dots$	<p style="color: red;">permutations are not allowed</p>
---------------------------------------------	-------------------------------------------------------------------------------------	---------------------------------------------------------

$n=2$

level → persons
 option → choice
 ↓
 single
 pair up



DRY RUN →

$n=3$

level → person

option → choice

→ if already engaged with answer
then No choice

→ Single choice

→ pair up

Multiple choice

1-2-3

1-23

12-3

13-2

↙
 $\checkmark [1][2][3]$

[3]

↙
 $\checkmark [1][23]$

No choice

↙
 $\checkmark [12][3]$

[3]

↙
 $\checkmark [13][2]$

No choice

3, [1][2]

[2]

2, [1]

[23]

3, [1][23]

No choice

3, [12]

No choice

3, [13][2]

[2]

2, [13]

try to pair up
with '3', but
'3' is already
engaged.

Requirement
to implement

① i, n

② String → asf

③ Boolean array → static
about engagement

single

[1]

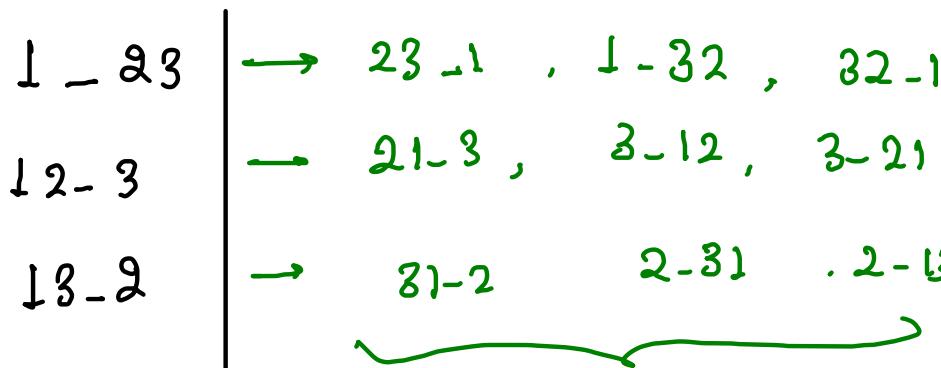
[

i=1,-

K-partitions: Given 'n' and 'k' partition 'n' elements in Exactly k subset

$$n=3$$

$$k=2$$



} Invalid answer.

Edge cases →

$$\begin{cases} n=4 \\ k=2 \end{cases} \rightarrow 0$$

$$\begin{cases} n=k \end{cases} \rightarrow 1$$

$$n=0 \rightarrow 0$$

$$k=0 \rightarrow 0$$

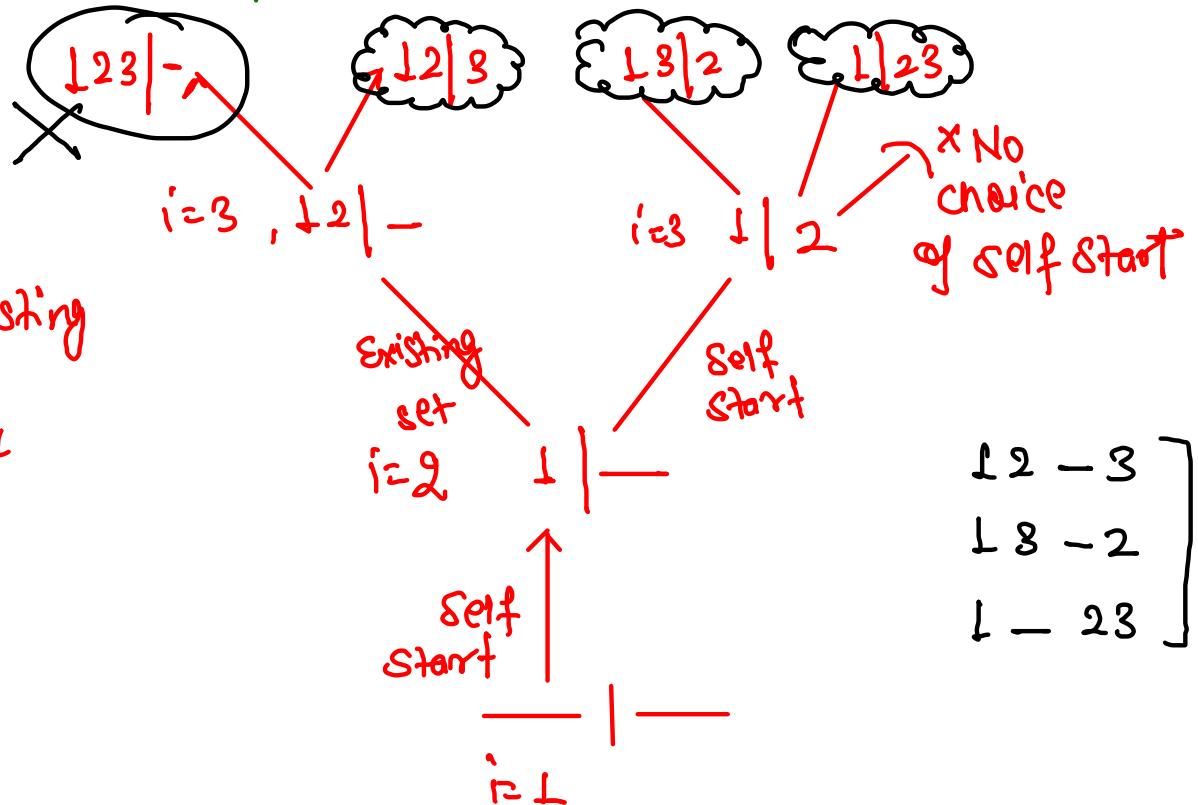
$$\underline{n=3} \quad k=2$$

level → no.

option → choice

- ↑ Add to existing set
- ↓ self start

permutations are not Allowed



$$\begin{bmatrix} 12 - 3 \\ 13 - 2 \\ 1 - 23 \end{bmatrix}$$

$n=4$

$k=3$

level → no.

option → choice of
number

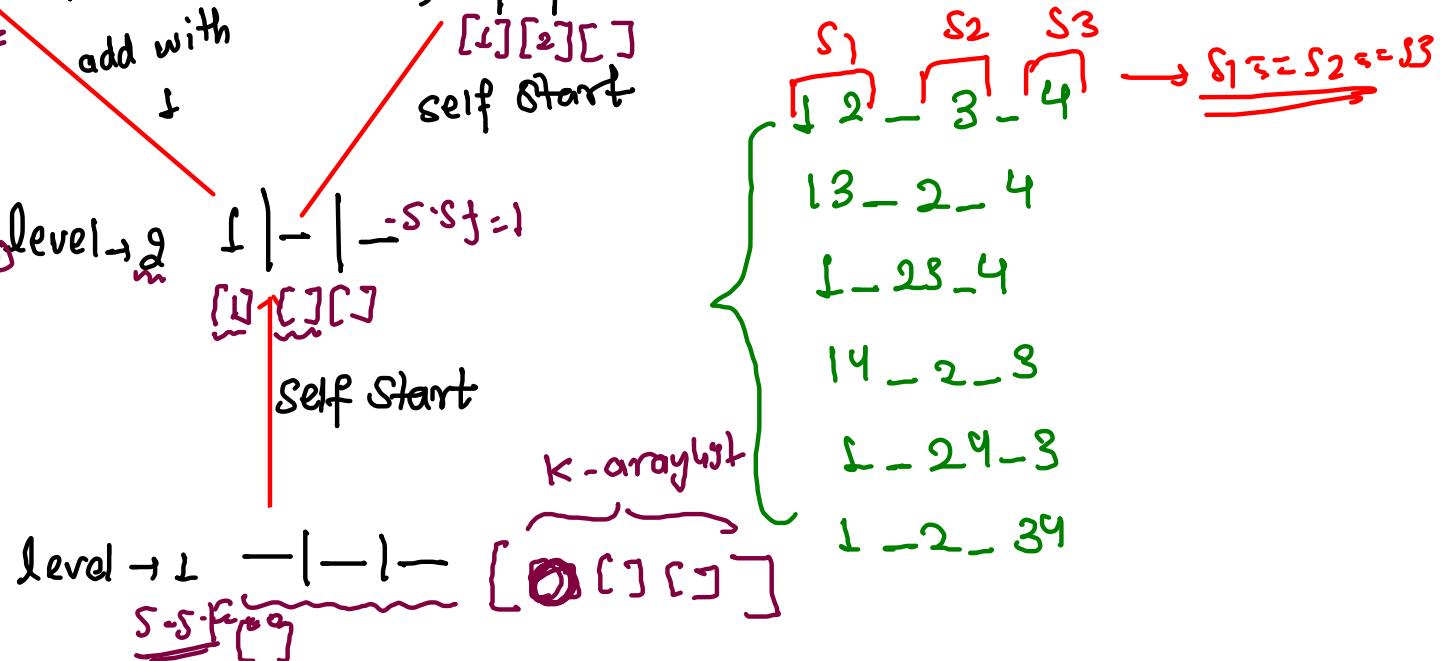
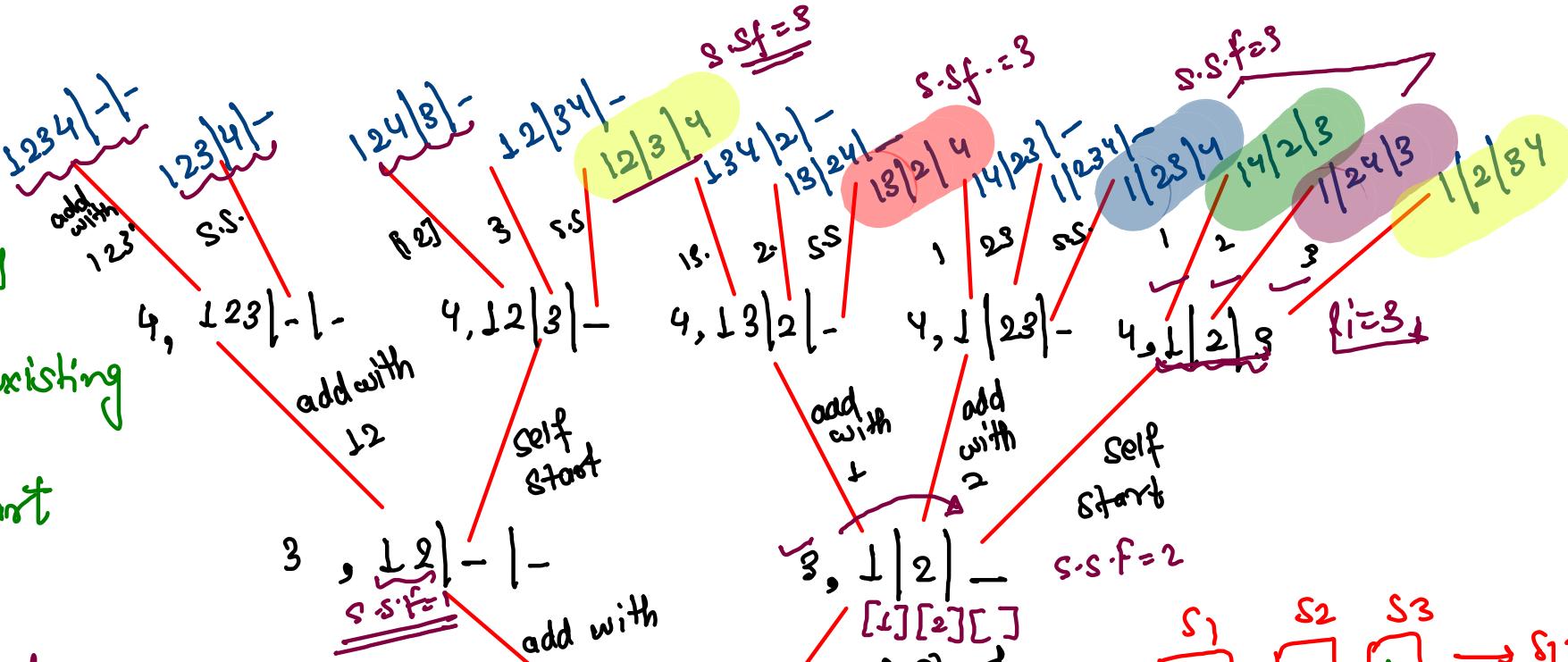
- Add in existing
set
- self start

Requirement →

① Answer so far → k size
array list<arraylist> level → 2

② i, n

③ selection so far



All palindromic Permutation

String → a b a b

Brute force → Generate all permutation and check if it is palindrome

No. of possible permutation: $\frac{4!}{2!2!}$

$$= \frac{2^2 \times 3 \times 2!}{2! \times 2!} = 6$$

Optimisation →

a2 b2 → aabb

half freq.

a1 b1 → ab → all possible permutation = 2!

ab + ba → abba
ba + ab → baab

[Palindromic]

→ If there is one more character

a2 b2 c1 → a1 b1
 Odd character → c

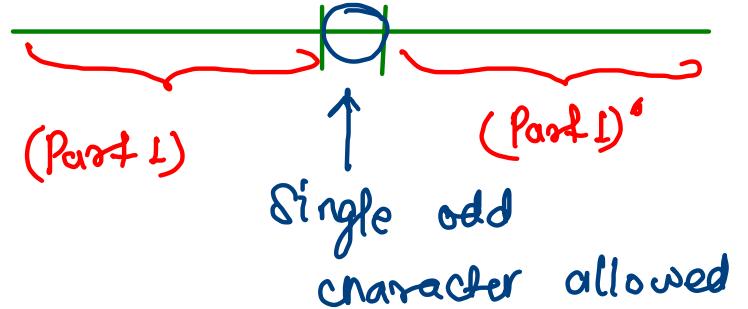
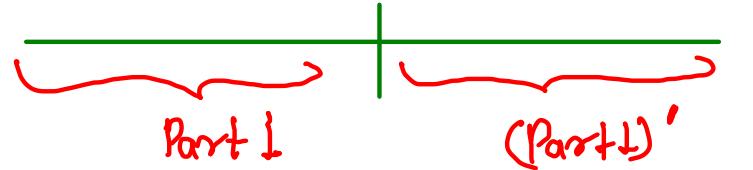
ab + c + ba = abcba
 ba + c + ab = bacab

[Palindromic]

How can we calculate result →

a₂ b₂ c d] ??

- ① All character have Even freq.
- ② All character have Even freq and one character have odd freq.



Ex abb aca a cc

↙ a₄ b₂ c₃

↙ a₂ b₁ c₁ → no. of possible permutation = $\frac{4!}{2!} = 12$

half odd character → 'c'

Part I + odd character + (Part I)'

$$\begin{array}{ll}
 aabc + c + cbaa & = aabc c cbaa \\
 abac + c + cab a & = abac c cab a \\
 abc a + c + acba & = abca c acba \\
 \vdots & \vdots \quad \vdots \quad \vdots \quad \vdots
 \end{array}$$

How to generate permutation →

String → aabb

$$\begin{array}{r} \overline{\text{aabb}} \\ | \\ \text{b} \\ \hline \text{aab} \end{array}$$

String + a4b4c1

$$\begin{array}{r} \overline{\text{abab}} \\ | \\ \text{b} \\ \hline \text{aba} \end{array}$$

$$\begin{array}{r} \overline{\text{abba}} \\ | \\ \text{a} \\ \hline \text{abb} \end{array}$$

$$\begin{array}{r} \overline{\text{baab}} \\ | \\ \text{b} \\ \hline \text{baa} \end{array}$$

$$\begin{array}{r} \overline{\text{bab}} \\ | \\ \text{a} \\ \hline \text{bab} \end{array}$$

$$\begin{array}{r} \overline{\text{bbaa}} \\ | \\ \text{a} \\ \hline \text{bba} \end{array}$$

Part 1 each (Part 1)

aabb + c + bbbaa

$$\begin{array}{r} \overline{\text{bb}} \\ | \\ \text{aa} \end{array}$$

abab + c + baba

$$\begin{array}{r} \overline{\text{ab}} \\ | \\ \text{ab} \end{array}$$

abba + c + abba

$$\begin{array}{r} \overline{\text{abb}} \\ | \\ \text{a} \end{array}$$

baab + c + baab

$$\begin{array}{r} \overline{\text{ba}} \\ | \\ \text{a} \end{array}$$

baba + c + abab

$$\begin{array}{r} \overline{\text{aab}} \\ | \\ \text{b} \end{array}$$

bbbaa + c + aabb

① Freq. Map
half
② odd character.
③ Unique String
half
④ String answer so far
⑤ Selection so far
→ total Selection

$a^4b^4c^5 \rightarrow a^2b^2c^2 \rightarrow \underline{\text{abc}}$

↳ odd + c

$a^2b^2c^2 \rightarrow \underline{\text{a}^1b^1} \rightarrow \text{ab}$

↳ odd - c

Reduce freq.
a
regain freq.
b

$$\begin{array}{r} \overline{\text{aab}} \\ | \\ \text{-} \end{array}$$

All palindromic partition:

String → a b a a b a

→ Include all character and make partition such that partition will be palindromic.

(a)(b)(a)(a)(b)(a)

(aba) (aba)

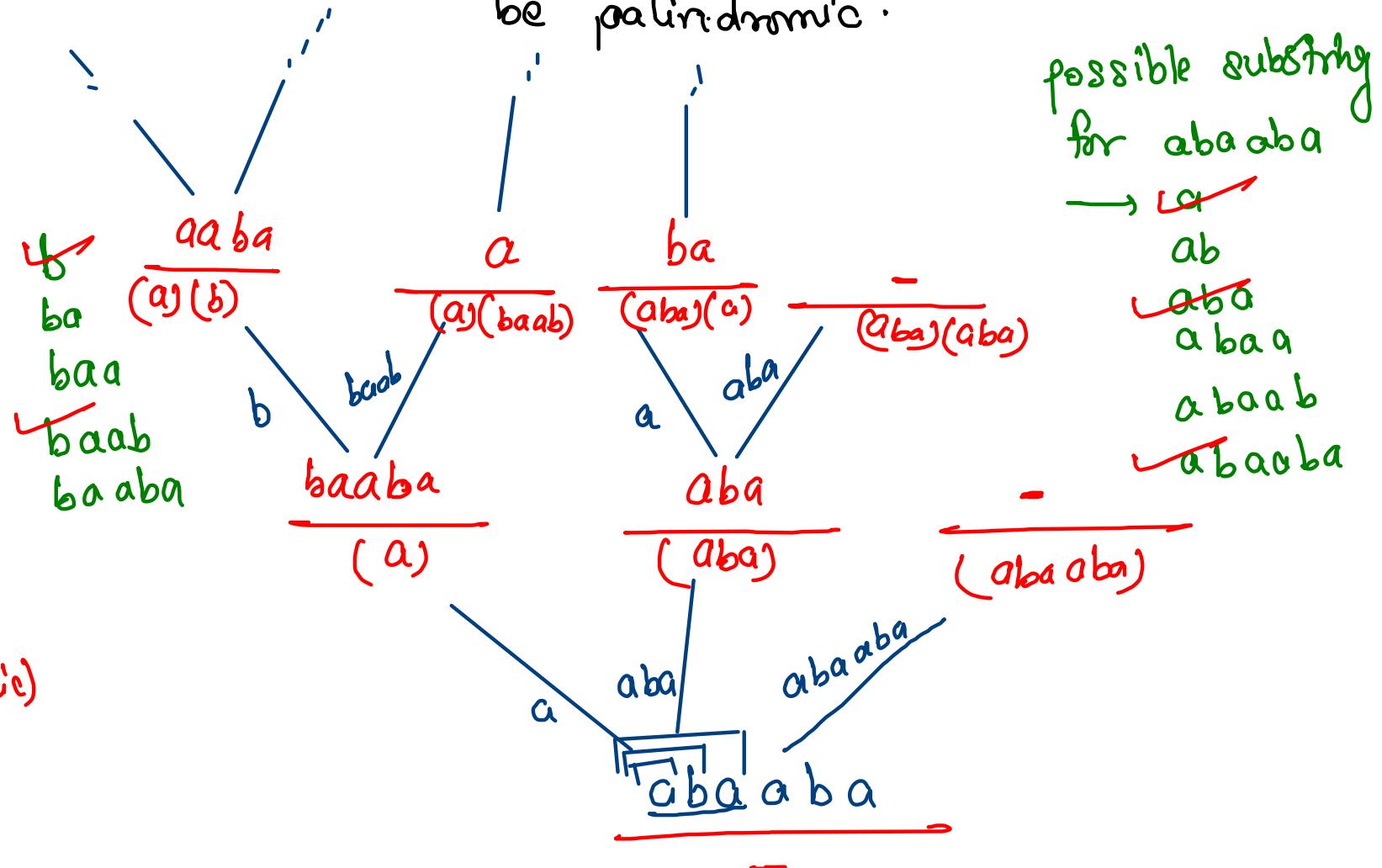
(a) (baab) (a)

$$(aba) (a) (b)(a)$$

(a)(b) (aa)(b)(a)

A grid of 15 red dots arranged in five columns and three rows. The dots are positioned at the intersections of five vertical and three horizontal lines.

print all possible
partition (perindromic)



k Subset with Equal Sum

Elements → a, b, c, d

$$\overline{k} = 3$$

