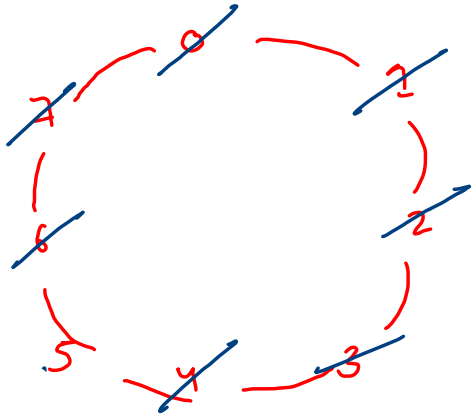
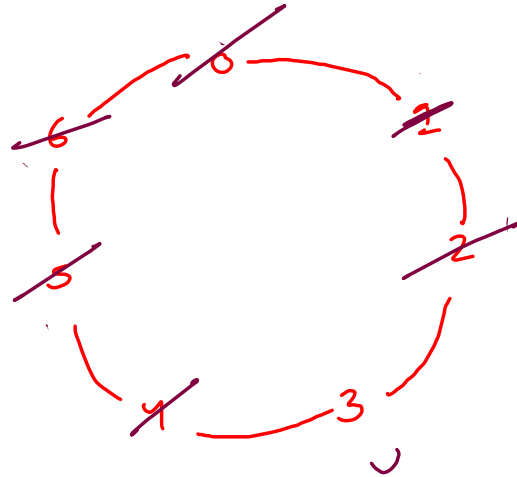


$n = 7$

$k = 3$



$n = 8, k = 4$



sz

high

0

2

3

5

6

1

3

6

0

4

0

0

$$n = 7$$

$$k = 3$$

4
↻

0 1 2 3 4 5 6

~~2~~

3

4

5

6

0

1

(n = 7)

↑ 2

0 1 2 3 4 5 6

~~2~~

3

4

5

0

1

(n = 6)

↑ 4

y =

0 1 2 3 4 5 6

~~2~~

3

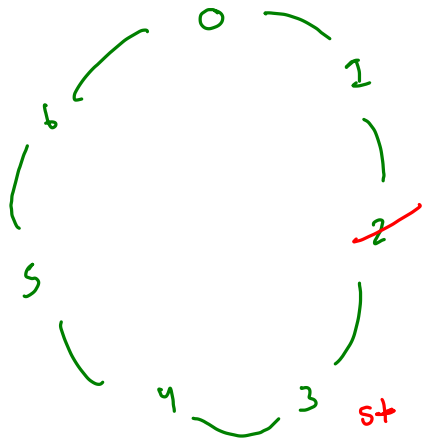
4

0

1

(n = 5)

↓



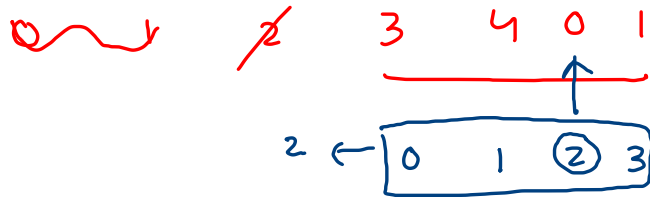
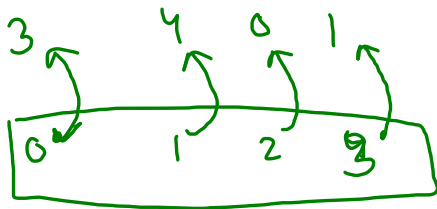
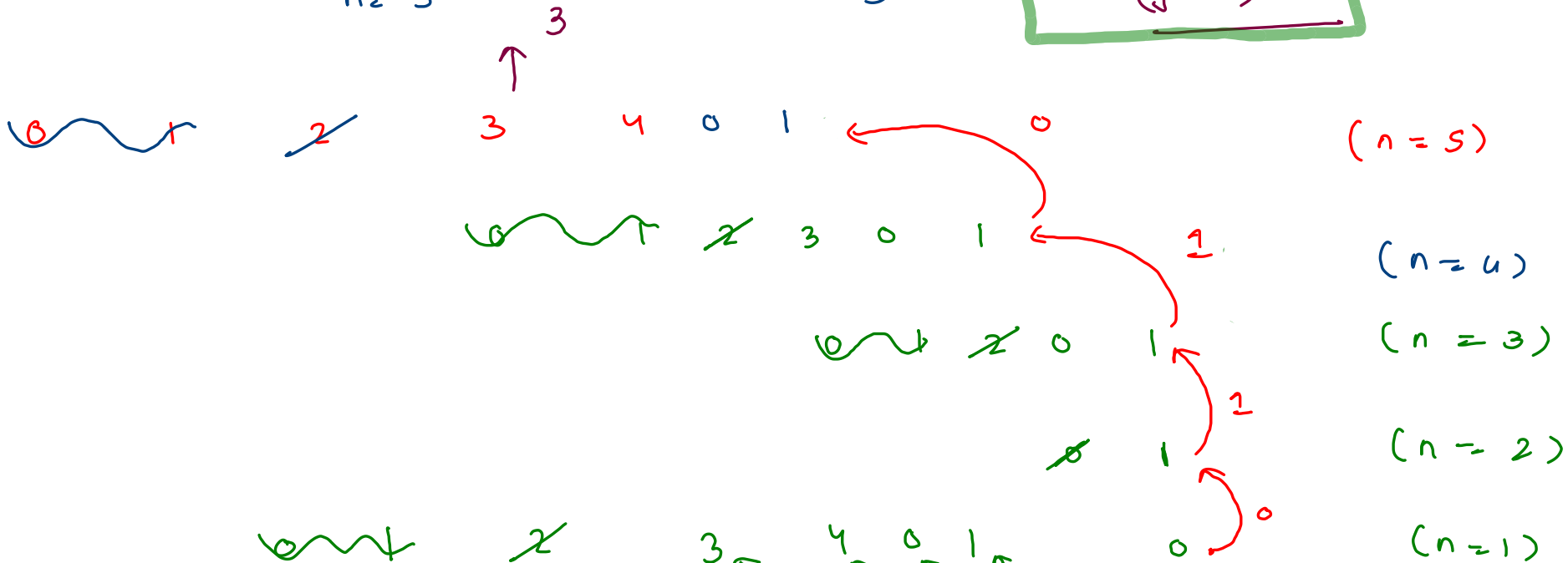
$$x = (y + k) \% n$$

$$= (1 + 3) \% 7 = 4$$

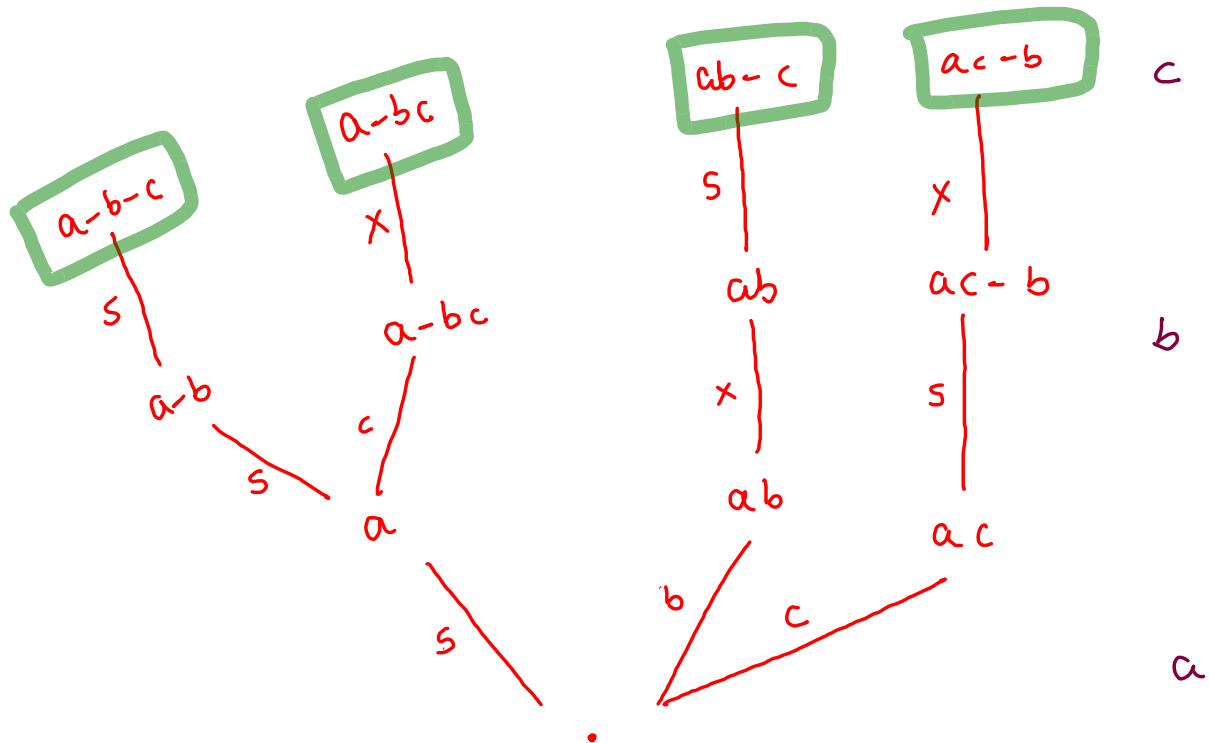
$$n = 5$$

$$K = 3$$

$$x = (y + 1) \cdot n$$



$$\underline{n = 3}$$





X → no effect

S → single

char → pair up with char

b

```

else {
    used[i] = true;
    //single
    solution(i+1,n,used,asf + "(" + i + ")" );
    //pair-up
    for(int j=i+1; j <= n;j++) {
        //try to pair up with 'j'
        if(used[j] == false) {
            used[j] = true;
            solution(i+1,n,used,asf + "(" + i + "," + j + ")" );
            used[j] = false;
        }
    }
    used[i] = false;
}

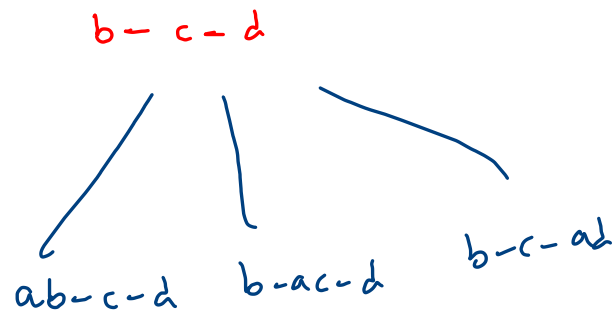
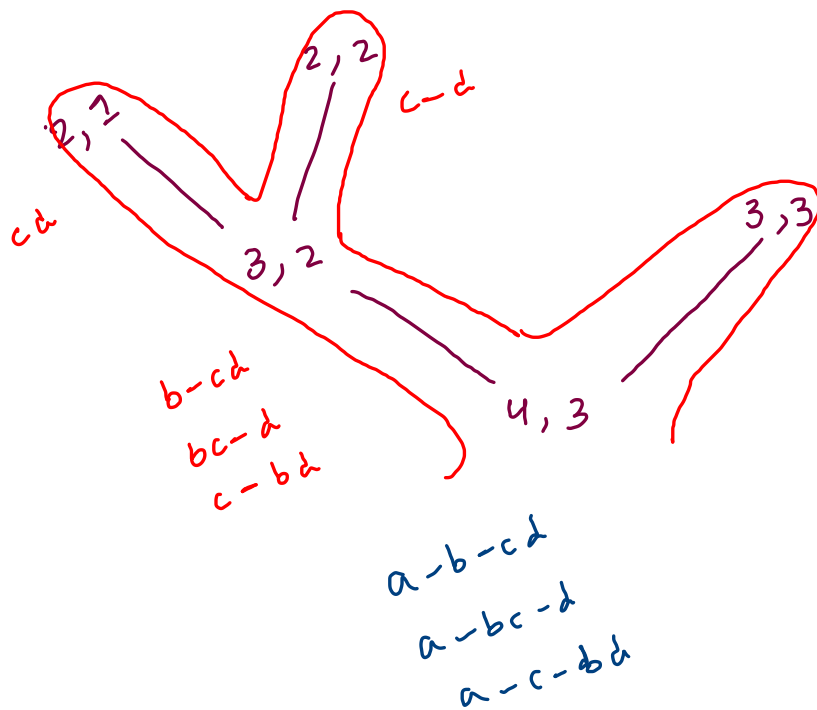
```

a

$$n = 4$$

$$k = 3$$

a, b, c, d

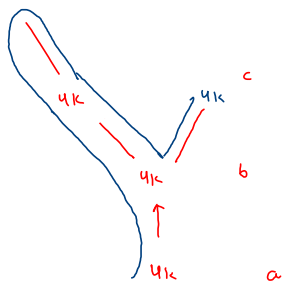



```

public static void solution(int i, int n, int k, int conessf, ArrayList<ArrayList<Integer>> ans) {
    if(i > n) {
        if(conessf == k) {
            System.out.print(counter + ". ");
            for(int s = 0; s < ans.size(); s++) {
                System.out.print(ans.get(s) + " ");
            }
            System.out.println();
            counter++;
        }
        return;
    }

    for(int s = 0; s < k; s++) {
        //to combine with non-empty subsets
        if(ans.get(s).size() > 0) {
            ans.get(s).add(i);
            solution(i+1, n, k, conessf, ans);
            ans.get(s).remove(ans.get(s).size()-1);
        }
        //to add in first empty subset
        else {
            ans.get(s).add(i);
            solution(i+1, n, k, conessf+1, ans);
            ans.get(s).remove(ans.get(s).size()-1);
            break;
        }
    }
}

```

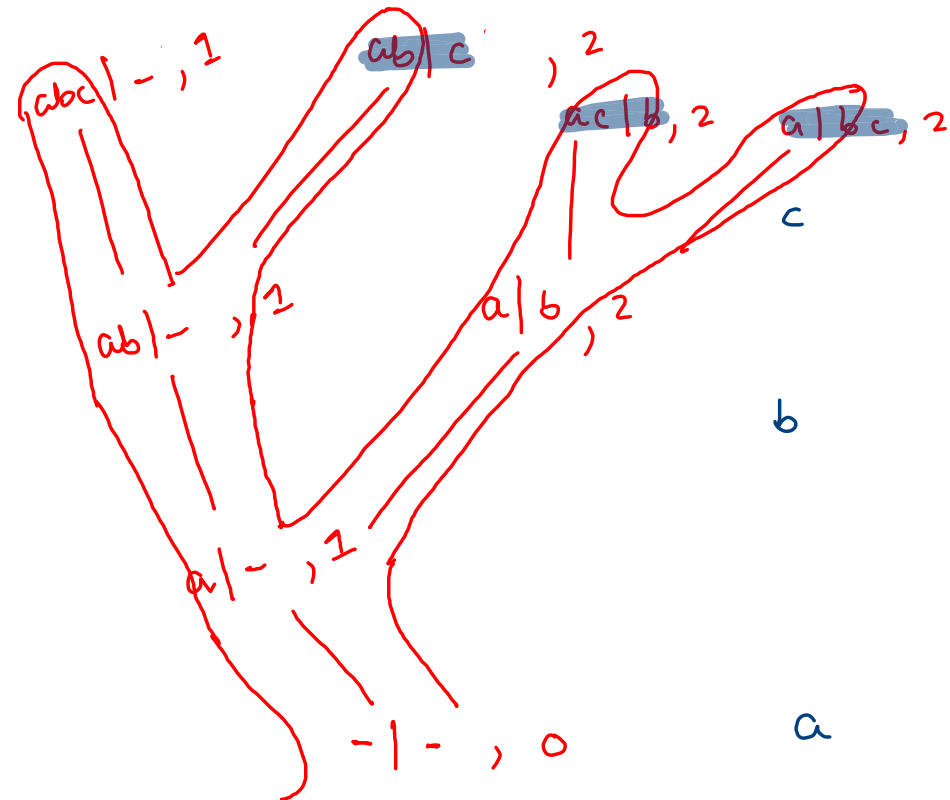


$4k$
 $[a, b, c]$
 ans

$ab-c$

$n=3$

$k=2$



$$\text{arr} = [5, 2, 3, 5]$$

$$n = 4$$

$$k = 3$$

$$\text{each subset sum} = \frac{\text{sum}}{k}$$

$$5 \mid 2 \mid 3 \mid 5$$

$$5 \mid 2 \mid 3 \mid 5$$

$$5 \mid 3 \mid 2 \mid 5$$

5th = p e p p e v

- ①. $p - e - p - p - e - \gamma$
- ② $p - e p p e - \gamma$
- ③ $p - e - p p - e - \gamma$
- ④ $p e p - p - e - \gamma$

$p \rightarrow \text{graph}$

$e \rightarrow \text{Tree}$

$\text{str} =$

graph Tree graph

$\text{pat} =$

$p \ e \ p$

$\text{str} =$

m p e p p e x s p e p p e x

$\text{pat} =$

a b c b

m - p e p p e x - s - p e p p e x

m p - e p p e x - s p - e p p e x

m p e - p p e x - s p e - p p e x

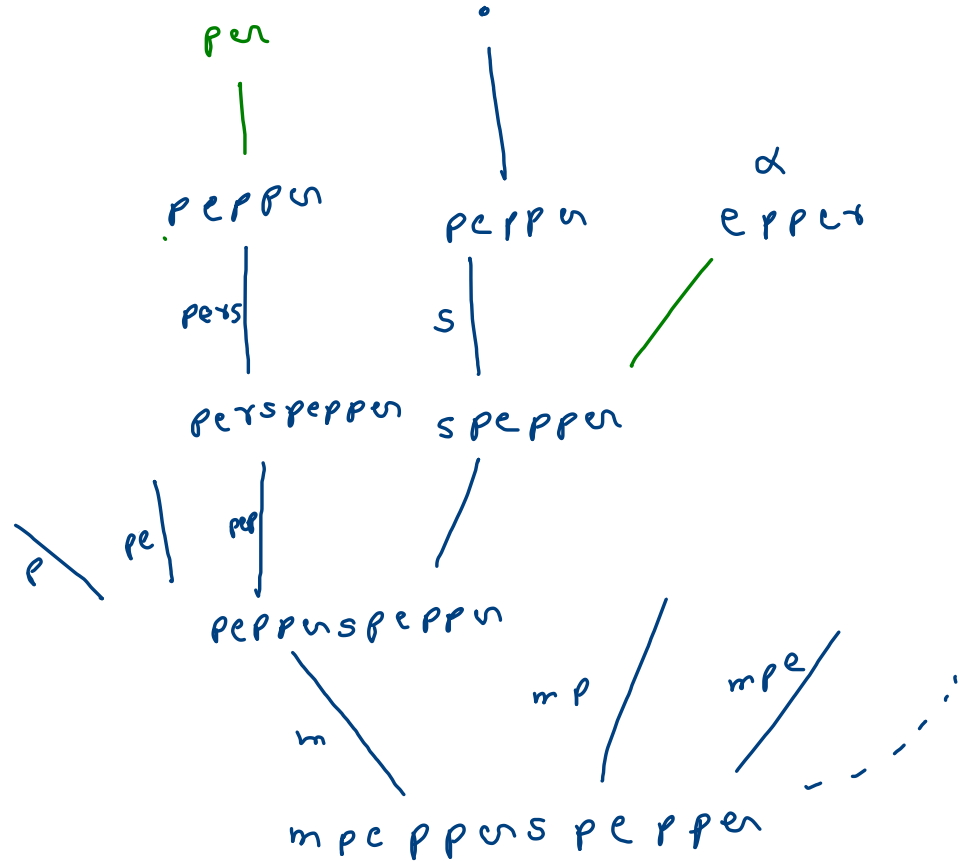
str = m pepper s pepper

pat = a b c b
- - -

a - m

b - pepper

c - s



b

c

b

a

a - m

b - pepper

c - s

dict = [I, Love, mango, man, go, icecream
ice, cream)

I Love mango icecream ✓

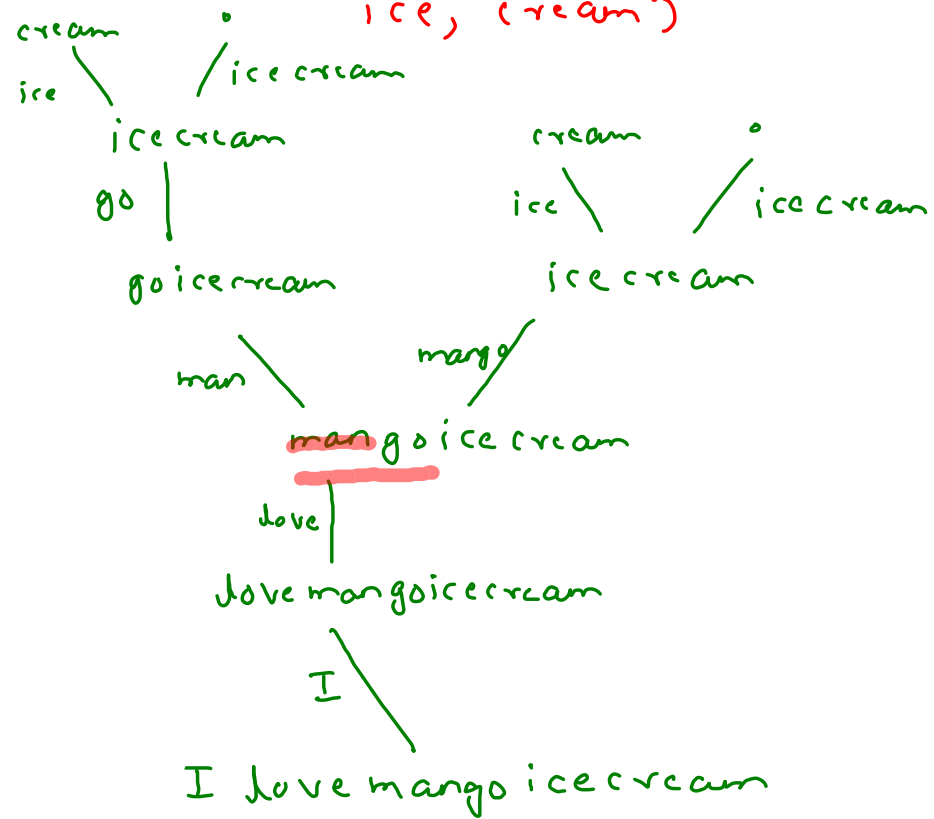
I Lovem argo icecream ✗

I Love mango icecream

I Love man go icecream

I Love man go ice cream

I Love mango ice cream



str = abab

perm = 6

abab

abba

aabb

baab

baab

bbaa

palindromic

abba

baab

abab

a-2

b-2

ccabbaabacd

a4 b2 c3

a2 b1 c1

(i) when all char have even freq

$$\frac{a4b2c2}{2} = a2b1c1$$

aabccbaa

aabc c cbaa

(ii) when all char have even freq but only char has odd freq.

$$\frac{a4b2c3}{2} = a2b1c1$$

aabcc cbaa

c c a b a a b a c

$$\frac{a4b2c3}{2} = \frac{a2b1c1}{\text{perm}}$$

aabc c cbaa
 abac c caba
 acab c baa ca
 caab c baac
 cbaa c caab c

Str = a b a b

