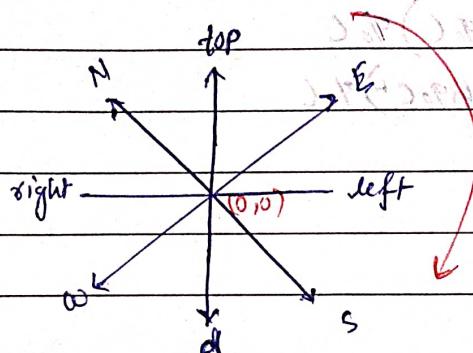




## Problems: Flood fill



0	*	0	(0+3)	0	1	(2+3)	0
1	0	0	(0+3)	0	1	(2+3)	0
2	0	0	(0+3)	0	1	(2+3)	0
3	0	0	(0+3)	0	1	(2+3)	0

Solve

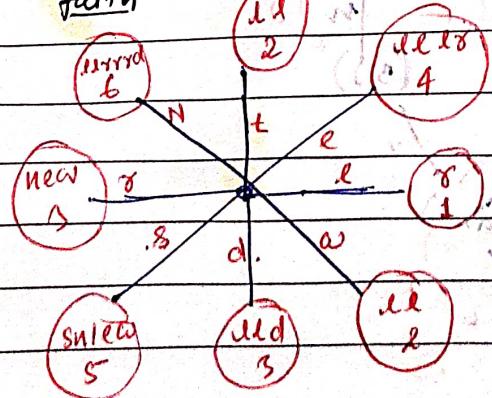
- ① point all path
- ② counts of all path
- ③ longest path length
- ④ shortest path length

## direction Array

0	-1	0	+	+	(T)
1	-1	0	E	(-1,-1)	(E)
2	0	1	d	(N)	(-1,1)
3	1	1	s	(0,-1)	(L)
4	1	0	d	(0)	(0,L)
5	0	-1	w	(1,-1)	(S)
6	0	0	r	(1)	(1,1)
7	-1	-1	n	(1,0)	(D)

## longest path length

faith



## Pair class

path  
length

(RecAns.length + 1 > length) {

length = RecAns.length + 1;

String = dices[d] + RecAns.psF;



## modulo operation

$$\textcircled{1} \quad (a+b) \% c = (a \% c + b \% c) \% c$$

$$\textcircled{2} \quad (a-b) \% c = (a \% c - b \% c + c) \% c$$

$$X \% m = [0, m-1]$$

Problems: Special. matrices

input :-  $n=3 \quad m=3 \quad k=2$

block-cell :- {1, 2, 3, 1, 2, 3}

	0	1	2	3
0	*			
1	src	*		
2				
3		*	dest.	

1, 2 → block

3, 2 → block

Final answer

	1	2	3
1	1	0	
2	2	1	1
3	0	0	1

$\times (3,3)$

$n \backslash \checkmark \downarrow$

(2,3)

$n \backslash \checkmark \downarrow$

(2,2)

$n \backslash \checkmark \downarrow$

(1,1)

$n \backslash \checkmark \downarrow$

src

(block)

$n \backslash \checkmark \downarrow$

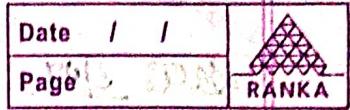
(3,2)

$n \backslash \checkmark \downarrow$

(3,1)

$n \backslash \checkmark \downarrow$

dest



## Problem: Path with Maximum gold

	0	1	2	3
0	$m_1$	$m_2$	$m_3$	$m_4$
1	$m_5$	$m_6$	$m_7$	$m_8$
2	$m_9$	$m_{10}$	$m_{11}$	$m_{12}$
3	$m_{13}$	$m_{14}$	$m_{15}$	$m_{16}$

Result  $\rightarrow \max(m_1, m_2, \dots, m_{15}, m_{16})$

↓ ↓ ↓ ↓ A  
Each segment

X → maximum  
↓ ↓ ↓ ↓ A

Problems: 2 3 5 7, 11, 13, 15, 17, 19

- ① Permutation with  $n$  coins.
  - ② Combination with  $n$  coins.
  - ③ Combination with single coins.
  - ④ Permutation with single coins.

## Permutation

A O C D E

agare me 'E' 'D' ko pick kara tab me permutation nee 'D' se E ko bhi pick kr skta hu aur  $D \rightarrow C$  ko bhi pick kar sakta hu.

A diagram showing a horizontal line with five points labeled A, B, C, D, and E from left to right. Point D is circled. Below the line, there are two arrows pointing to the right, one under point C and one under point E.

## Combination:

A B C D E

agar we ek baar 'E' 'D' ko pitch kar liya toh we combination me sink 'E' ko pitch kar sakte hain. Pichle ~~frequency~~ frequency kaun sahi sakta

A B C D E

~~Reason~~ agar hum ~~ek~~ element ke aage aur phir wala element ko bhi pick kar lein toh permutation ~~ka~~ create ho jayega. jo humne nahi kar na he.

a b c d e

d c }  
c d } Permutation.

Note:

- ① Combination nu hum siif forward ko pick kar sake he.
  - ② Permutation nu hum kisi ko koi pick kar sake he.



## ① permutation with 10 coins.

2	3	5	7
---	---	---	---

2	2	2	2	2
---	---	---	---	---

2	2	3	3
---	---	---	---

2	3	2	3
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2	3	3	2
---	---	---	---

2	3	5	
---	---	---	--

2	5	3	
---	---	---	--

3	2	2	3
---	---	---	---

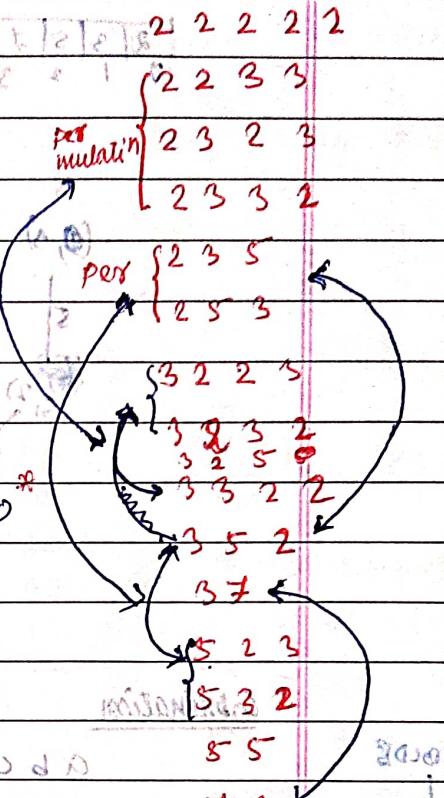
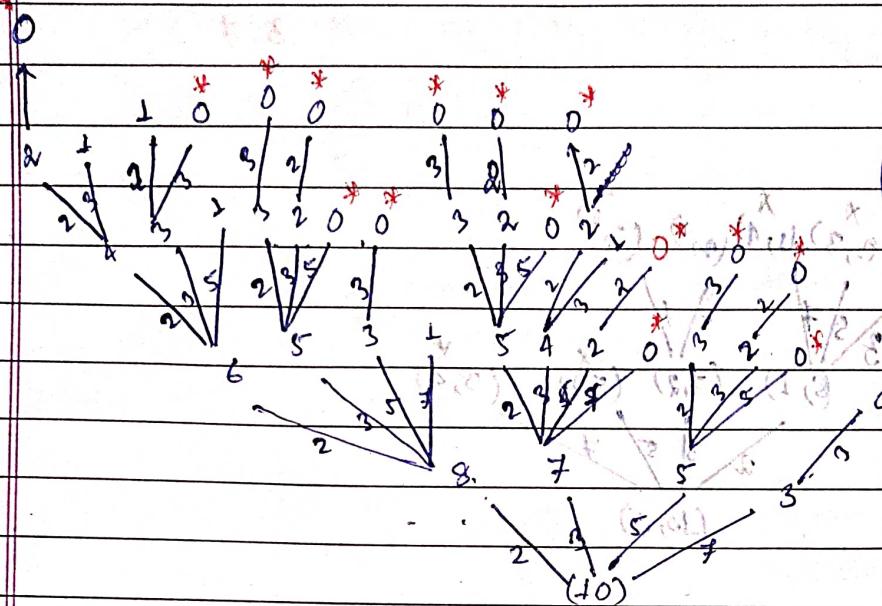
3	2	3	2
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3	3	2	2
---	---	---	---

3	5	2	
---	---	---	--

5	2	3	
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5	3	2	
---	---	---	--



## ② combination with 10 coins.

A B C D E

2	3	5	7
---	---	---	---

(10)

ABCDA

55

200A

2	2	2	2	2
---	---	---	---	---

2	2	3	3	
---	---	---	---	--

2	3	5	0	
---	---	---	---	--

3	7	0		
---	---	---	--	--

5	5			
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### ③ Combination with single coins.

2	3	5	7
0	1	2	3

2 3 5

3 7

(0, 1)

(5, 2)

3 S

7

5

4

2

3

5

7

(10, 0)

### Combination

ABCDE

a b c d e

n = 5

 $\rightarrow n_{c5}$  (ek saath 5 logo ko select karne ka tarika)

ABCD

ABCE

ABDE

ACDE

BCDE

 $\rightarrow n_{c4}$  (ek saath 4 logo ko select karne ka tarika)

ABC

ABD

ABE

ADE

ACE

BCE

BDE

CDE

 $\rightarrow n_{c3}$  (ek saath 3 logo ko select karne ka tarika)

AC

AD

AE

BC

BD

BE

CD

CE

DE

 $\rightarrow n_{c2}$  (2 logo ko select karne ka tarika)

AB

AC

AD

AE

BC

BD

BE

CD

CE

DE

 $\rightarrow n_{c1}$  (1 logo ko select karne ka tarika)

A

B

C

D

E

 $\rightarrow n_{c0}$  (0 logo ko select karne ka tarika)

ABCDE

(oids)



$$T(n) = n_{C_0} + n_{C_1} + n_{C_2} + n_{C_3} + n_{C_4} + n_{C_5} + \dots + n_{C_n}$$

$$(1+x)^n = x^0 n_{C_0} + x^1 n_{C_1} + x^2 n_{C_2} + x^3 n_{C_3} + x^4 n_{C_4} + \dots + x^n n_{C_n}$$

$$(2)^n = n_{C_0} + n_{C_1} + n_{C_2} + n_{C_3} + n_{C_4} + \dots + n_{C_n} \quad (\text{where } 2^1)$$

$$(2)^n = \sum_{r=0}^n n_{C_r}$$

(1) Ncr method

$\begin{cases} A \rightarrow A, AB, ABC, ABCD, ABD, AC, ACD, AD \\ B \rightarrow B, BC, BCD, BD \\ C \rightarrow C, CD \\ D \rightarrow D \end{cases}$   
 $n_{C_4}$       ABCD

$$\sum_{r=0}^n n_{C_r} \times 2^r$$

A      start      human lexicographical order

home walls      cell orders are

same combination

AO      point rank & dega

BCD      (with respect to index)

BCD      AO

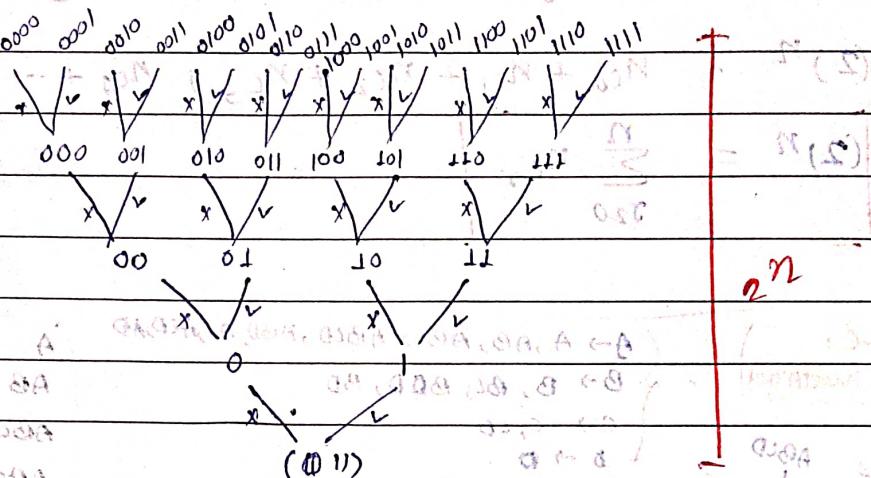
BCD      BCD

### ③ Binary method

Georgia

$O \rightarrow$  chase  
Hello

$\downarrow \rightarrow$  char  
askta  
ke.



A B C D SFA

0000.2A → about

0 0 0 → D

0010, → c

001511 → c

$$0100 \xrightarrow{\text{add } 1} 1100$$

$$0101 \rightarrow B$$

$$0110 \xrightarrow{\beta}$$

0111 → 0

9000

100)  $\rightarrow$  A

1412

1018

1011 —

1100 →

~~110~~

1110 →

→ 100 200 300 400

1911

*1930*

100% **BR**

AMERICAN MUSEUM OF NATURAL HISTORY

400

—  
—

10. The following table gives the number of hours worked by 1000 workers in a certain industry.



→ Combinatorial ka question solve karne ke liye 3 methods available

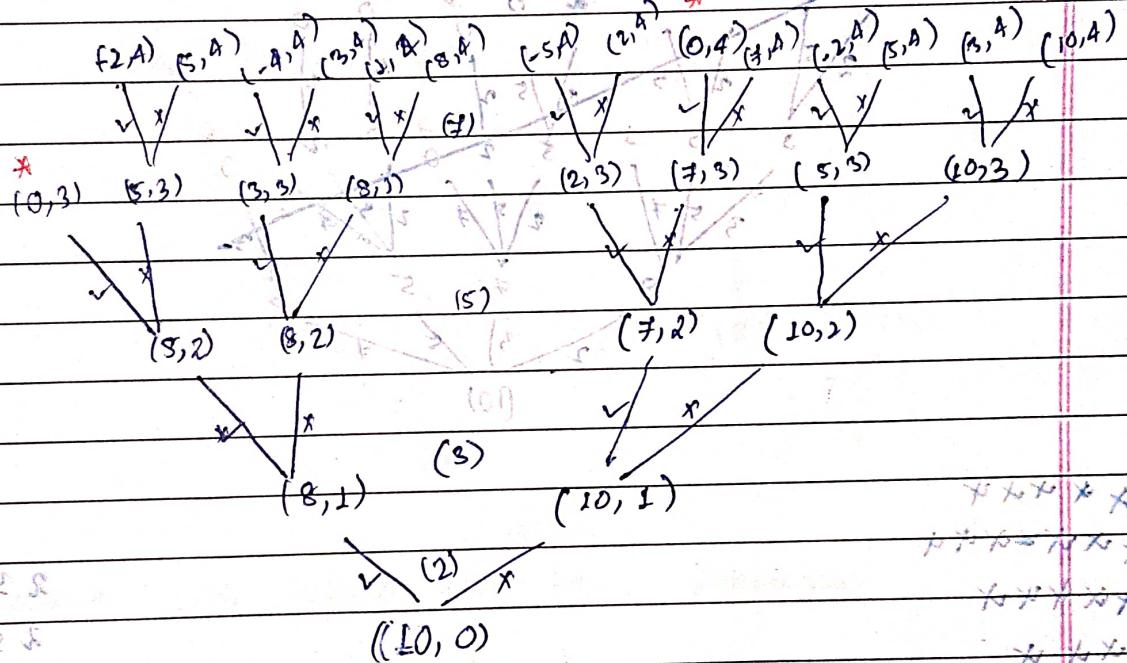
① combination method  $(2^n) \rightarrow$ thora fast

② Subsequence method  $(2^n) \rightarrow$  space thor slow

③ binary method.  $(2^n) \rightarrow$  Better chalga

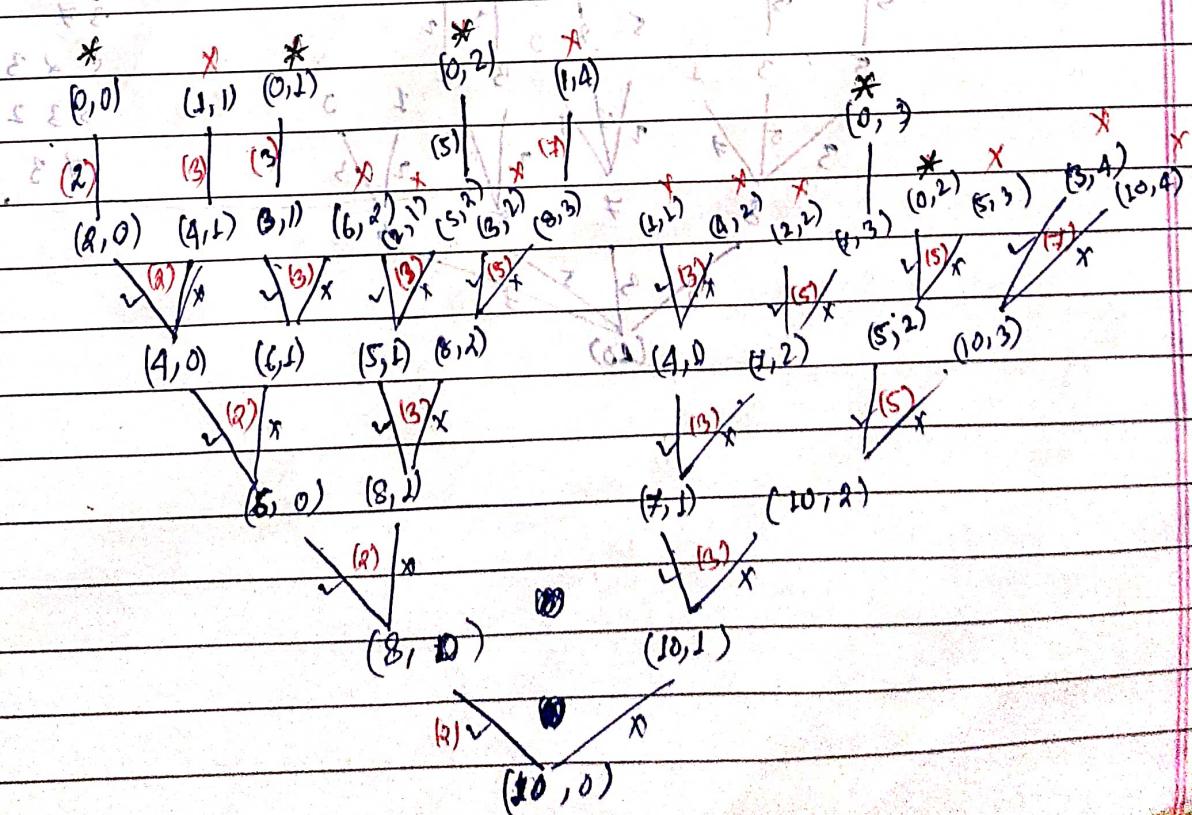
### 1. Combination with single sets. coins using Subsequence method

$(2, 3, 5, 7)$



### 2. Combination with infinite coins using Subsequence method.

$(2, 3, 5, 7)$



### (B) permutation with single signs.

(2, 3, 4, 5)

\*

\*

Indus vishesh kiya hai 2nd step apne step position.

(A, 1) (A, 2) (A, 3) (A, 4) (A, 5)

(A, 2) (A, 3) (A, 4) (A, 5) (A, 6)

(A, 3) (A, 4) (A, 5) (A, 6) (A, 7)

(5, 0) (5, 1) (5, 2) (5, 3) (5, 4)

(10)

(2)

(3)

4 4 4 4 4

3 4 4 4 4

5 4 4 4 4

7 4 4 4

2 3 5

2 5 3

3 2 5

3 5 2

3 7

5 4 3

5 3 2

7 3

Indus vishesh kiya hai 2nd step apne step position.

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0

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0

1

2

3

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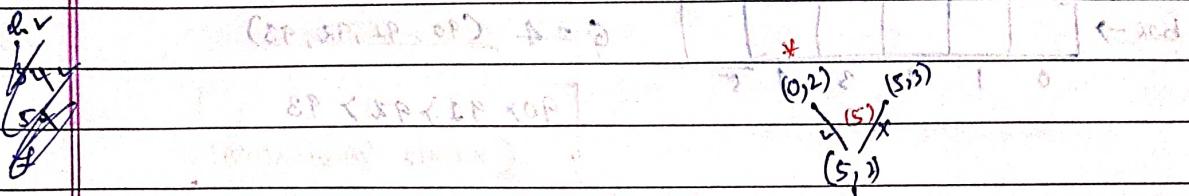
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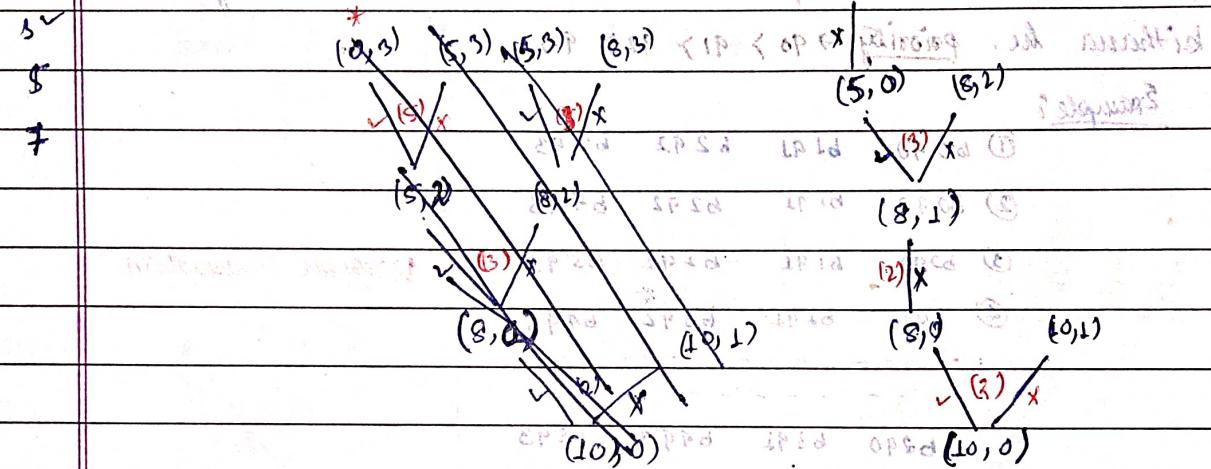


## Permutation with single coin using Subsequence method.

(2, 3, 5, 7)

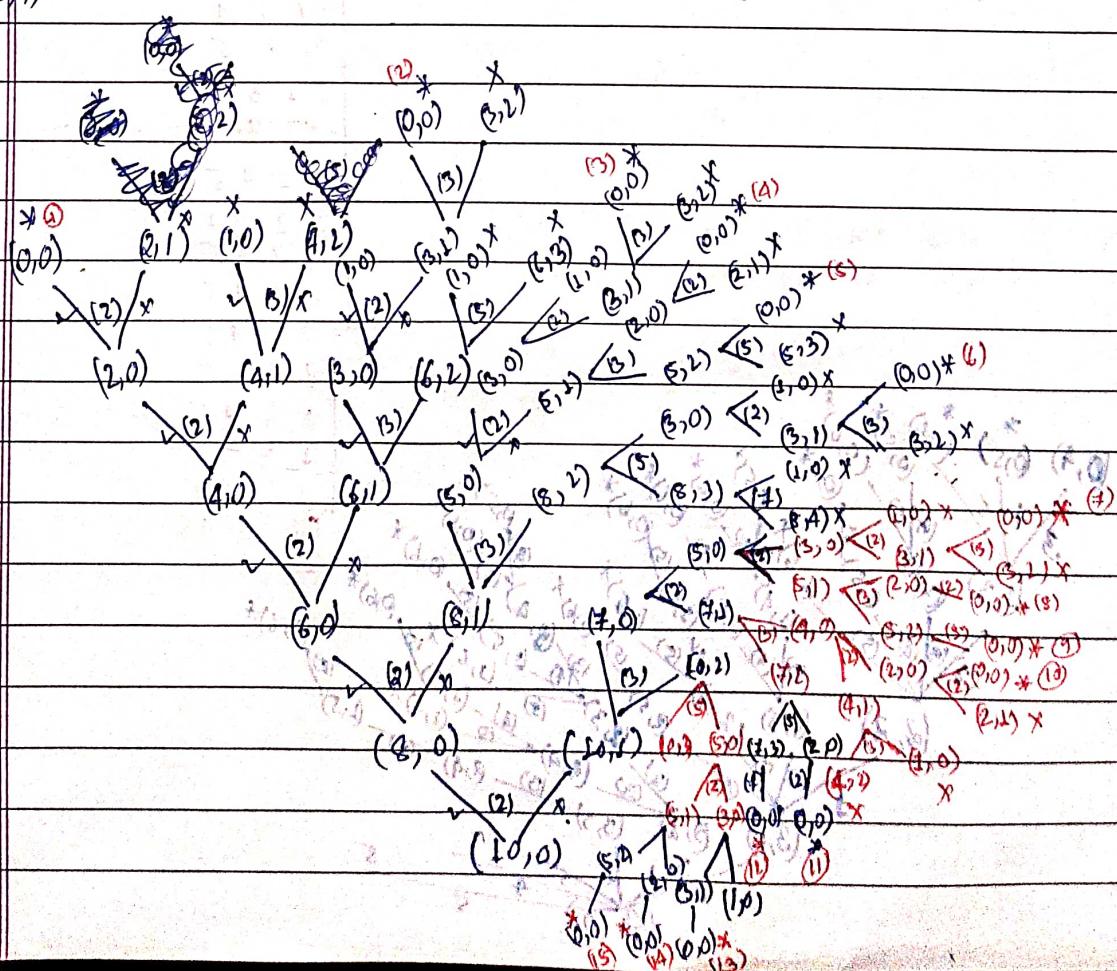


and so on



### ④ Permutation with infinite coins using 1 subsequence.

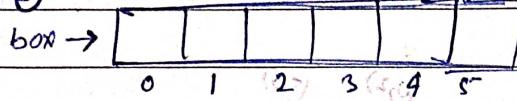
(2, 3, 5, 7)





## Queens problem

Q



Queens

$$Q = 4 \quad (9_0, 9_1, 9_2, 9_3)$$

$$9_0 > 9_1 > 9_2 > 9_3$$

(means combination)

→ 1st possible combination like to place 4 queens no ek order  
me box ke andar places kar sakte aur reciprocity wise shuru  
kithana h. priority  $\rightarrow 9_0 > 9_1 > 9_2 > 9_3$

Example:

~~① 60 90 61 91 62 92 63 93~~

~~② 60 90 61 91 62 92 64 93~~

~~③ 60 90 61 91 62 92 65 93~~

~~④ 60 90 61 91 63 92 64 93~~

Possible combination

~~(6,0) 62 90 63 91 64 92 65 93~~

Hints

(2,2)

1	1	1	1	1	1
0	1	2	3	4	5

Q(2,2)

Q(2,2)

$$0 \ 1 \ 2 \ 3$$

$$0 \ 1 \ 2 \ 4$$

$$0 \ 1 \ 2 \ 5$$

$$0 \ 1 \ 3 \ 4$$

$$0 \ 1 \ 3 \ 5$$

$$0 \ 1 \ 4 \ 5$$

$$0 \ 2 \ 3 \ 4$$

$$0 \ 2 \ 3 \ 5$$

$$0 \ 2 \ 4 \ 5$$

$$0 \ 3 \ 4 \ 5$$

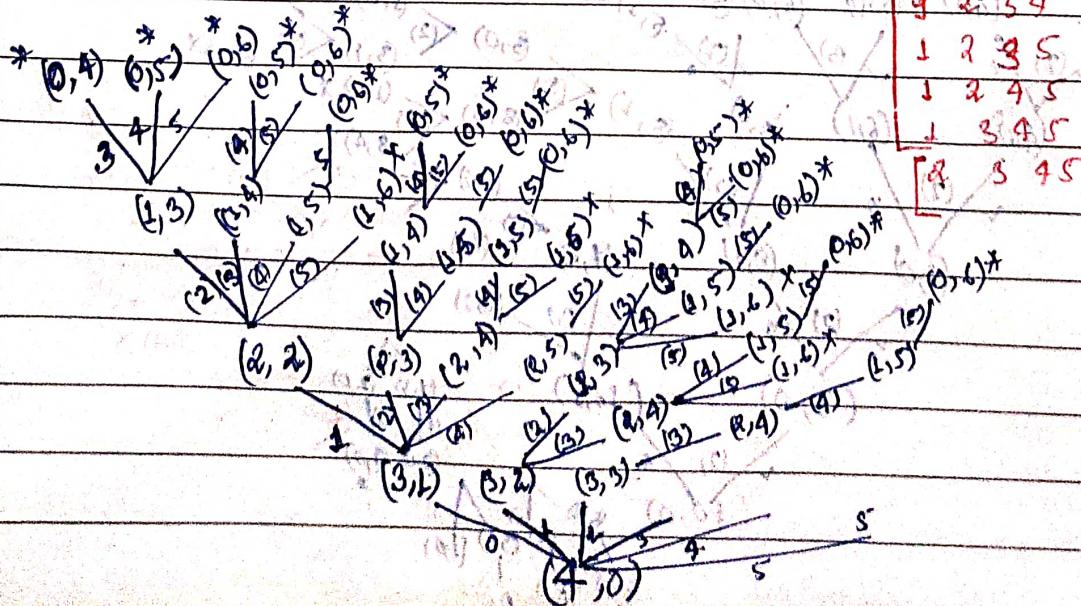
$$0 \ 2 \ 3 \ 4$$

$$1 \ 2 \ 3 \ 5$$

$$1 \ 2 \ 4 \ 5$$

$$1 \ 3 \ 4 \ 5$$

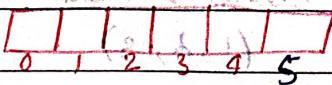
$$2 \ 3 \ 4 \ 5$$




Variable used

$t_{\text{Boxes}}$  → total no of Boxes

①  $t_{\text{Boxes}} \rightarrow 6$



$t_{\text{Queens}}$  → Total no of Queens

②  $t_{\text{Queens}} \rightarrow 4$

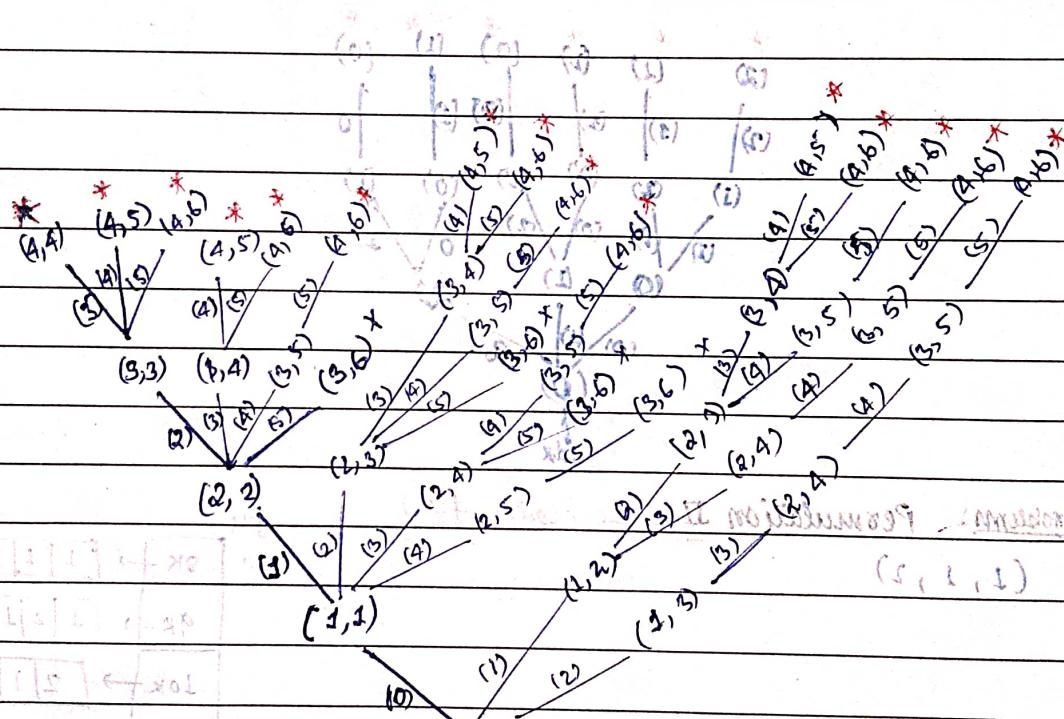
(q<sub>0</sub>, q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>)

qpsf → queen placed so far → ③ It states that ap house queens placed  
box → box no ④

box ke liye aye ho.

↳ → ④ It states that ap house box ke queen placed  
box ke liye aye ho.

Boxes								$Q_2 4$
0	1	2	3	4	5			



(0, 0)

↑  
↑  
qpsf  
box

b090 b191 b292 b393

b090 b191 b291 b493

b090 b191 b292 b493

b090 b191 b392 b593

b090 b191 b492 b593

b090 b191 b492 b593

b090 b291 b392 b493

b090 b291 b392 b593

b090 b291 b492 b593

b090 b391 b492 b593

b090 b391 b492 b593

b090 b391 b592 b693

b090 b391 b692 b793

b090 b391 b692 b893

b090 b391 b693

b090 b391 b792 b893

b090 b391 b892 b993

x x 0

x x 1

x x 2

x x 3

x x 4

x x 5

x x 6

x x 7

x x 8

x x 9

x x 10

x x 11

x x 12

x x 13

x x 14

x x 15

x x 16

x x 17



Date 1 / 1  
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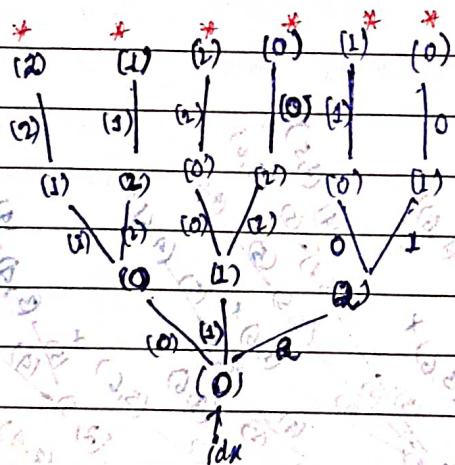


## Problems: Permutation (LeetCode 46)

(1, 2, 3)

0 ✕ ✕  
1 ✕ ✕  
2 ✕ ✕ ✕

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



## Problems: Permutation II (LeetCode 47)

(1, 1, 2)

0 ✕ ✕

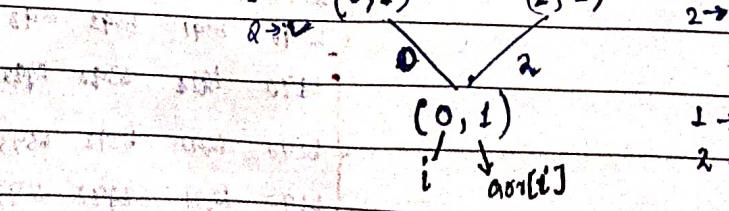
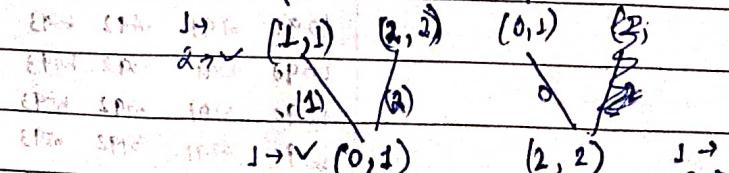
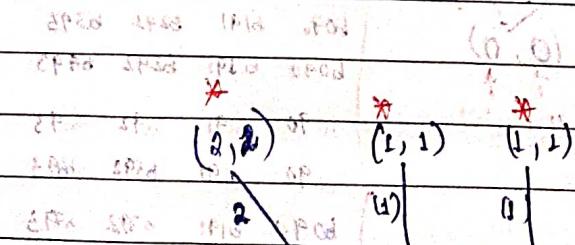
1 ✕ ✕ ✕

2 ✕ ✕ ✕

prev = 2

Count = 1

8K	<table border="1"><tr><td>1</td><td>1</td><td>2</td></tr></table>	1	1	2
1	1	2		
9K	<table border="1"><tr><td>1</td><td>2</td><td>1</td></tr></table>	1	2	1
1	2	1		
10K	<table border="1"><tr><td>2</td><td>1</td><td>1</td></tr></table>	2	1	1
2	1	1		



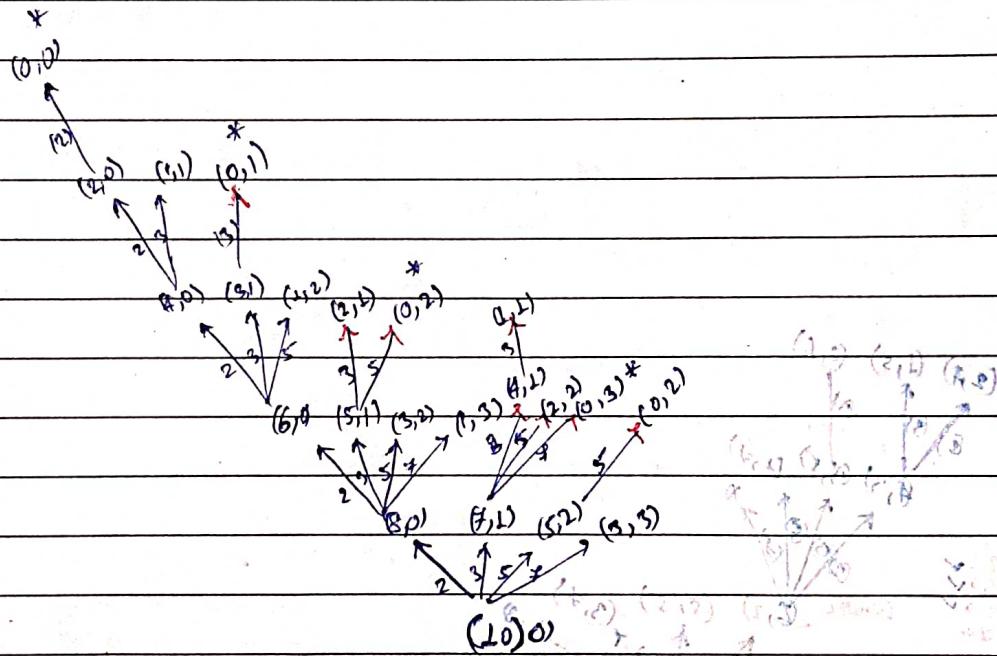
(1, 1, 2)



## Problems: Combination Sum Cattle (39)

(2, 3, 5, 7)

reduzierung der individuellen Fertigkeiten kann wiederum die sozialen Kompetenzen erhöhen.



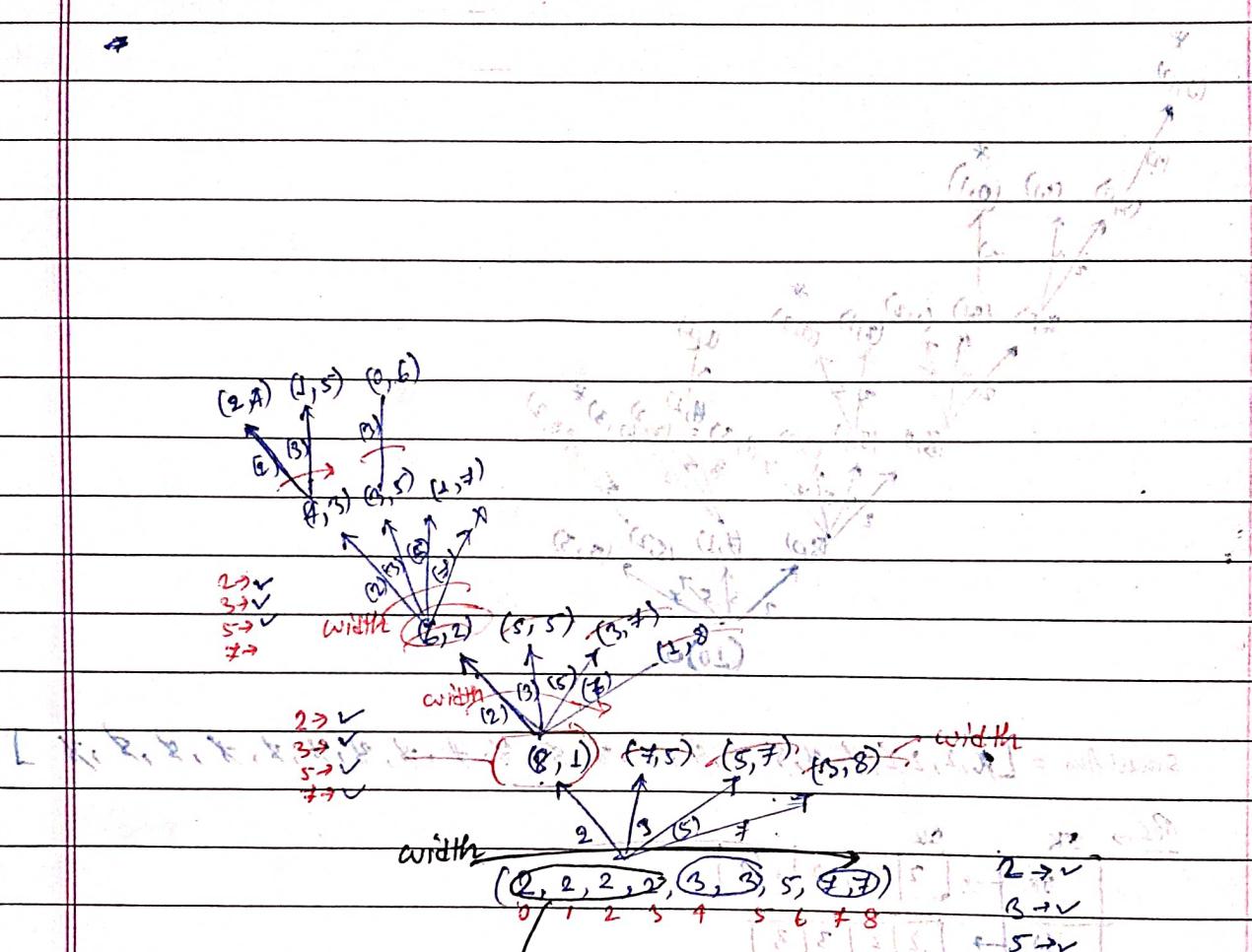
`smallAns = [x, y, z, w, t, u, v, b, f, g, h, s, d, r, m, l, k, j, i]`

<u>Res</u> → <u>5K</u>	<u>8K</u>	<u>10K</u>	<u>12K</u>	<u>14K</u>	<u>16K</u>	<u>18K</u>
<u>8K</u> →	<u>2   2   2   2   2  </u>					
<u>10K</u> →	<u>2   2   3   3  </u>					
<u>12K</u> →	<u>2   3   5  </u>					
<u>14K</u> →	<u>3   7  </u>					
<u>16K</u> →	<u>16K</u>	<u>5   5  </u>				
<u>18K</u> →						

## Problems: Combination Sum II (leetcode 40)

(2, 2, 2, 2, 3, 3, 5, 7, 7), target = 10

Note: the solution set must not contain duplicates combination.



duplicates  
 $\begin{cases} 2, 3, 5, \\ 2, 3, 5 \\ 2, 3, 5 \\ 2, 3, 5 \end{cases}$   
 isme sirf ek hi '2' use karna.  
 karna allowed he kyunki duplicates  
 allowed nahi he.

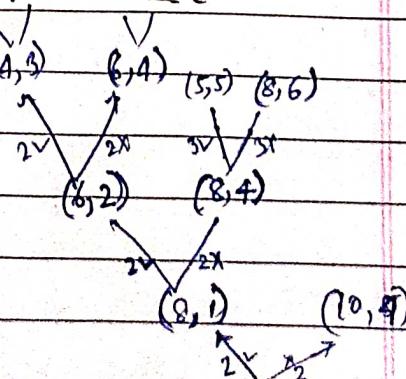
Note: combination me duplicates na aaye toh use  
 like hum aadesi me numbers ko block ~~karna~~ hoga.

Pointee method

prev = -1;  
 $\begin{array}{ccccccccc} 2 & 2 & 2 & 2 & 3 & 3 & 5 & 7 & 7 \\ 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \end{array}$   
 prev  
 i

{ if ( prev != arr[i] ) {  
 call  
 }  
 prev = arr[i];

Subsequence method

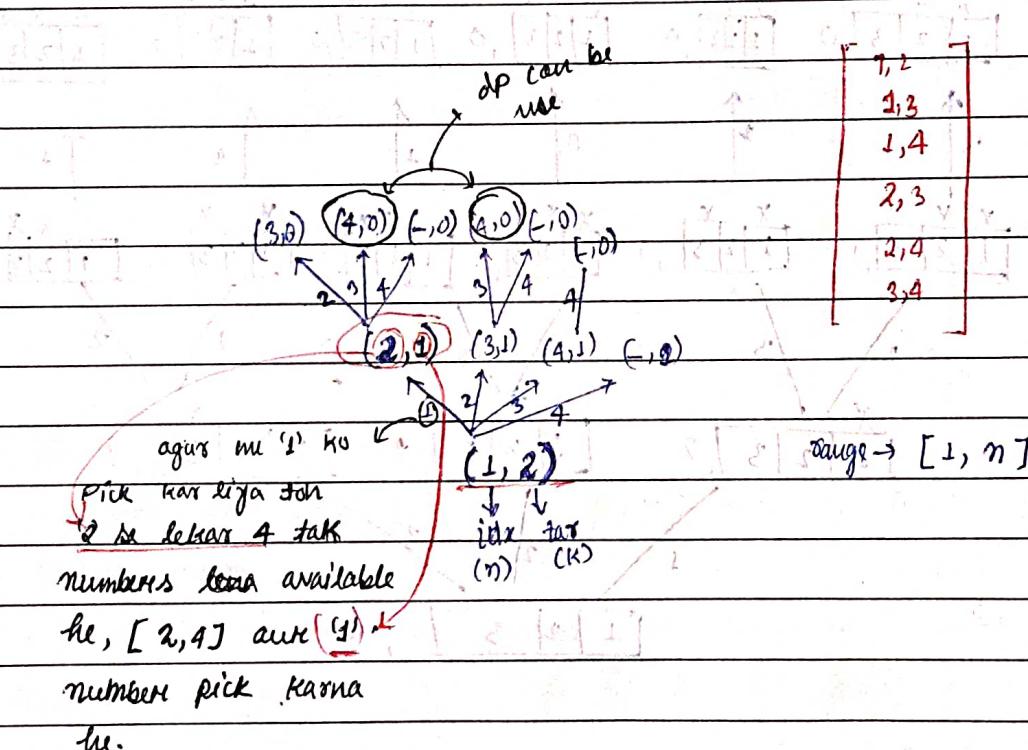


$\begin{array}{ccccccccc} 2 & 2 & 2 & 2 & 3 & 3 & 5 & 7 & 7 \\ 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \end{array}$

### Problems: Combination (Leetcode 77)

Given two integers  $m$  and  $K$ , return all possible combinations of  $K$  numbers out of the ranges  $[1, n]$

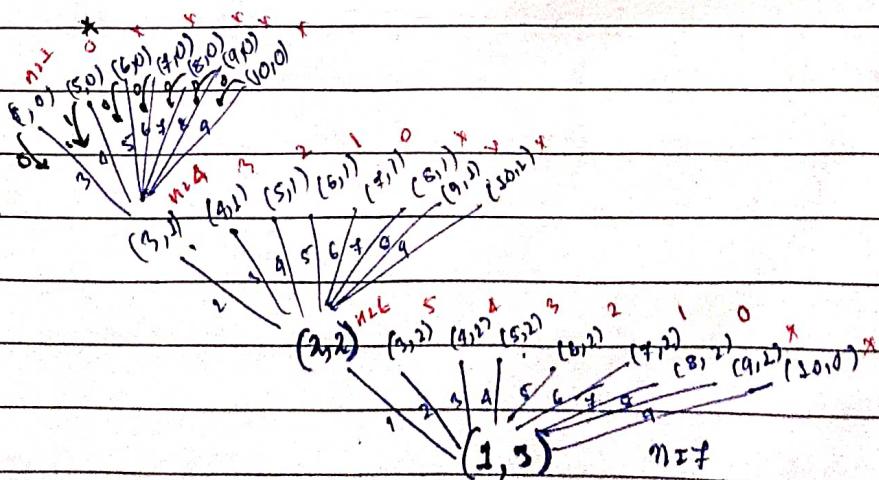
$$n = 4 \quad k = 2$$



### Problems: Combination Sum 3 (Leetcode 216)

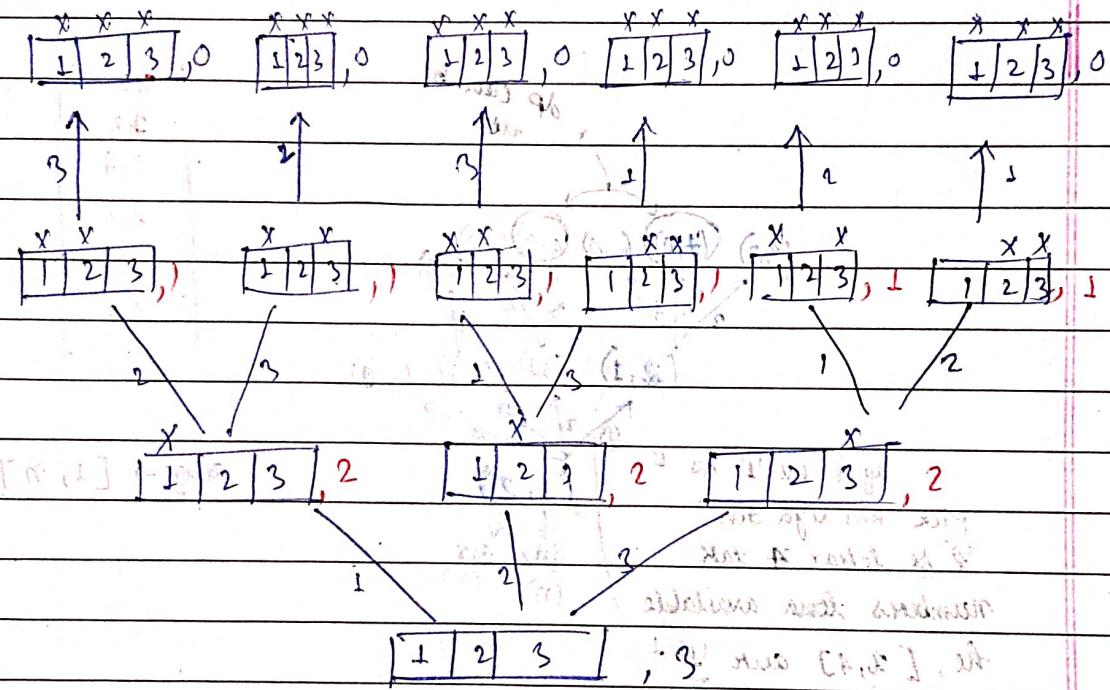
$$[1, 2, 3, 4, 5, 6, 7, 8, 9]$$

$$n = 7 \quad k = 3$$



Problem: Permutation (LeetCode 46)

(1, 2, 3)

dry run

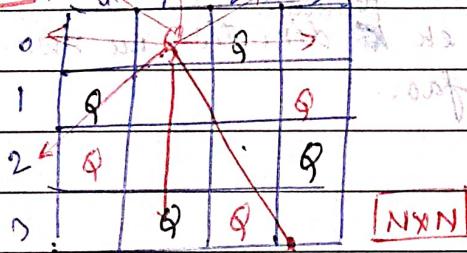
- 1, 2, 3
- 1, 3, 2
- 2, 1, 3
- 2, 3, 1
- 3, 1, 2
- 3, 2, 1



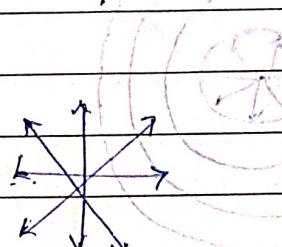
## N-Queens

The n-queens puzzle is the problem of placing  $n$  queens on an  $n \times n$  chessboard such that no two queens attack each other.

N24Q



[N x N]

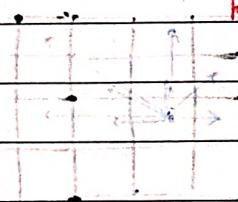
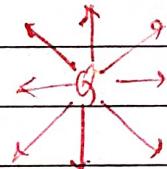


condition

1) Every row should have 1 Q

2) Every column should have 1 Q

3) None of the Qs attack each other.

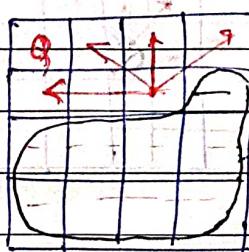
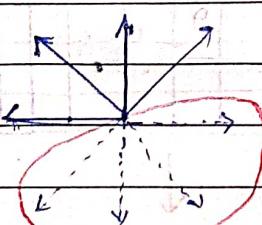


Step 2

1. Pehle me ~~soche~~ queens ko placed karne ki saare possible combination nikal leunga.

2. Uske baad jaha me queens ko placed karna sahi hoga he isse fagarh queens ko rakhne ki liye safe he hi nahi check kar leunga.

direction



Combination ke liye jaha me aayega koi queen placed nahi karri he so iss direction me call ~~hoga~~ chalana koi fayda nahi hogu.

→ useless call

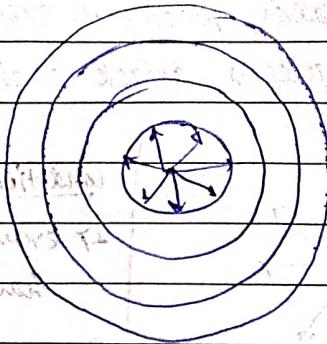
(-1, -1)

(-1, 0)

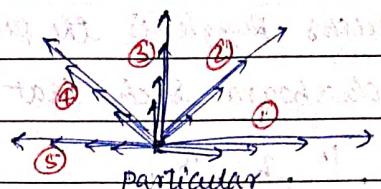
(-1, 1)

(0, -1)

1



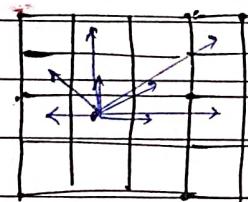
2



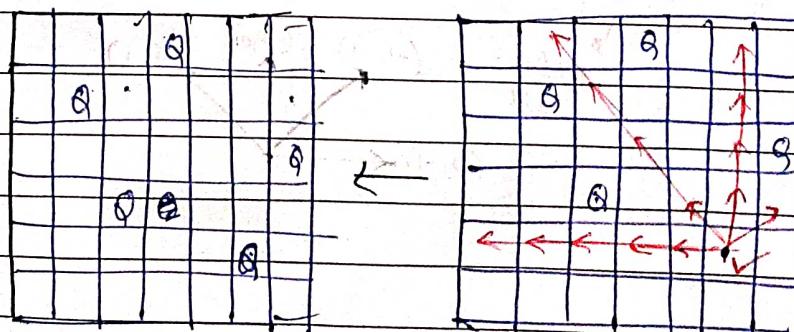
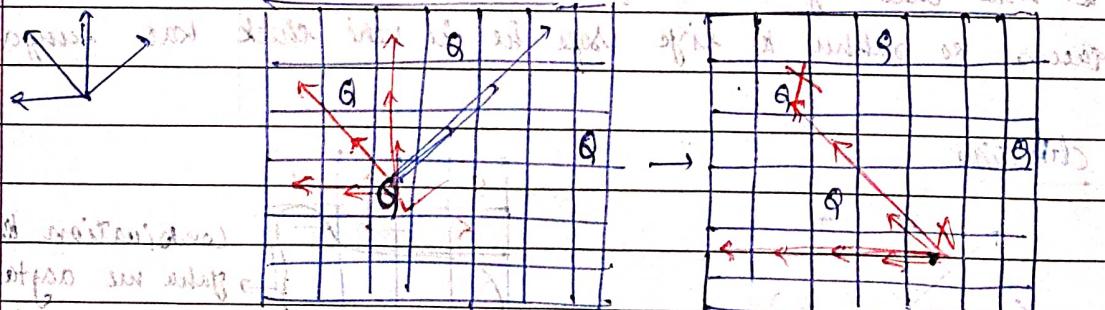
ek ~~is~~ direction. we move Karle  
fao.

radii by radius

~~दूसरा वाला फ्यारे बेनिफियल होगा -~~



## Chota sa day run

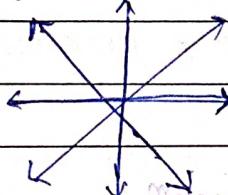


$$\text{Time complexity: } \left\{ (n \times m) [2 \times (n + m)] \right\}^q$$

q → no of queens

Shadow Technique's method

direction



(col)

m.

(row)

(Antidiag.)

(diagonal)

row	0	1	2	3	4	5
0	0	1	2	3	4	5
1	1	2	3	4	5	6
2	2	3	4	5	6	7
3	3	4	5	6	7	8
4	4	5	6	7	8	9
5	5	6	7	8	9	10

diagonal

0	0	1	2	3	4	5
1						6
2						7
3						8
4						9
5						10

common diagonal

col	0	1	2	3	4	5	6	7	8	9	10
row	0	1	2	3	4	5	6	7	8	9	10

Anti-diagonal	0	-1	-2	-3	-4	-5	0	1	2	3	4
1							1				
2							2				
3							3				
4							4				
5							5				

### Observation Table

	length	formula
row	m	$\tau$
col	m	c
diag.	$m+m-1$	$\tau + c$
Anti	$m+m-1$	$\tau - c + (m-1)$

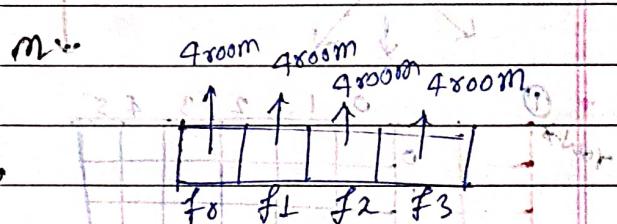
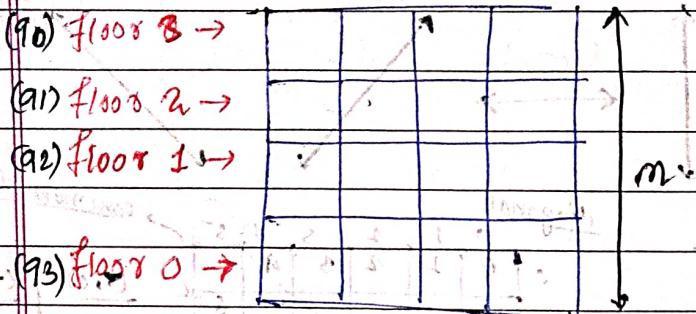
0	1	2	3	4	5	6	7	8	9	10
-5	-4	-3	-2	-1	0	1	2	3	4	5
+	+	+	+	+	+	+	+	+	+	+

Time Complexity =  $(n \times m) \tau$

Program: N Queens problem upto (n)  $^{9!}$  (Combination)

$n \rightarrow$  no of recursive calls

$q \rightarrow$  no of queens.



faith:

'4' floors me '4' queen placed karne ka jawab  $\boxed{4C_4}$

(1) has ek floor me sirf ek hi queen aa skta he.

(2) ek floor ne chaar (m) room he aur ek queen ko inn chauri room me placed kisi room pe placed karana hoga aur hum ek baat ka dhyana rakhna hoga, noi kisi queen se dusre ko kill na kare.

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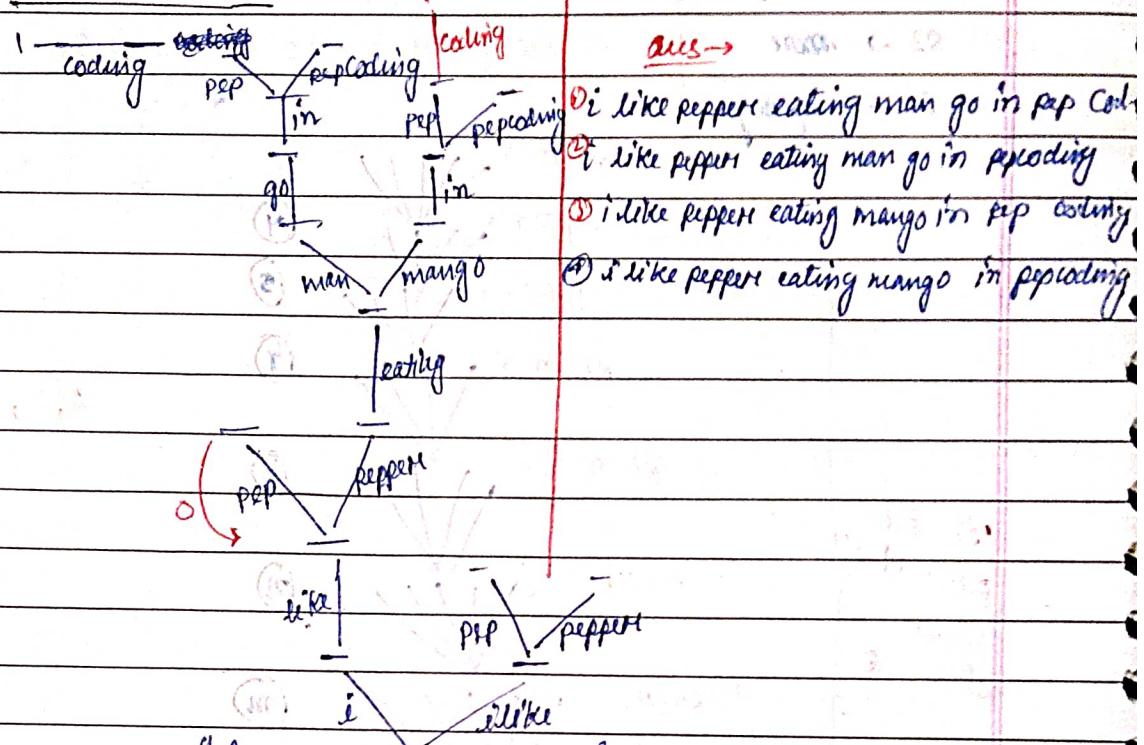
(275)

(276)



Program 8 Word break

Date / /



String → "ilikepepperatingmangoinpepcoding"

Dictionary → ① ilike pep coding paper eating mango man  
go in pepcoding ilike.

① micro soft hi ring

(1) Microsoft - Microsoft

dictionary

ring

(2) Microsoft - Microsoft

soft

micro soft hi

(3) Microsoft - Microsoft

hi

micro soft

(4) Microsoft - Microsoft

ring

hi

(5) Microsoft - Microsoft

hiring

ring

(6) Microsoft - Microsoft

microsoft

micro

(7) Microsoft - Microsoft

soft

soft

(8) Microsoft - Microsoft

ans

ans

(9) Microsoft - Microsoft

ans

ans

(10) Microsoft - Microsoft

ans

ans

(11) Microsoft - Microsoft

ans

ans

(12) Microsoft - Microsoft

ans

ans

(13) Microsoft - Microsoft

ans

Date : 10/07

Problems: Sudo Kuu Solution (leet code 37)

	1	2	3	4	5	6	7	8
1	6	2nd mat	1	9	5	3rd mat		
2	9	8	2nd mat		6			
3	4	1	8th mat	5	3	6th mat		
4	5	2	3rd mat	2	7	4th mat		
5	6	7	8th mat	2	8	5th mat		
6	7	8	4th mat	1	9	9th mat		
7	8	9	5th mat	8	7	6th mat		
8								

row check

1

① row const.

2

range

3

Column  
check

4

② Col (0-9) varry karega

① 1st mat  $\rightarrow (0,0) \rightarrow (2,2)$

5

① col const

② 2nd mat  $\rightarrow (0,3) \rightarrow (2,5)$

6

② Row (0-9) varry karega.

③ 3rd mat  $\rightarrow (0,6) \rightarrow (2,8)$

7

④ 4th mat  $\rightarrow (3,0) \rightarrow (5,2)$

8

⑤ 5th mat  $\rightarrow (5,3) \rightarrow (5,5)$

9

⑥ 6th mat  $\rightarrow (5,6) \rightarrow (5,8)$

Now

for 1st mat  $\rightarrow ((0,0) \rightarrow (2,2)) / 3 \rightarrow (0,0) * 3 \rightarrow (0,0)$

⑦ 7th mat  $\rightarrow (6,0) \rightarrow (8,2)$

2nd mat  $\rightarrow ((0,3) \rightarrow (2,5)) / 3 \rightarrow (0,1) * 3 \rightarrow (0,3)$

⑧ 8th mat  $\rightarrow (6,3) \rightarrow (8,5)$

3rd mat  $\rightarrow ((0,6) \rightarrow (2,8)) / 3 \rightarrow (0,2) * 3 \rightarrow (0,6)$

⑨ 9th mat  $\rightarrow (6,6) \rightarrow (8,8)$

4th mat  $\rightarrow ((3,0) \rightarrow (5,2)) / 3 \rightarrow (1,0) * 3 \rightarrow (3,0)$

Start index  
(P.K) of 4th matrix

5th mat  $\rightarrow ((5,3) \rightarrow (5,5)) / 3 \rightarrow (1,1) * 3 \rightarrow (3,3)$

Starting index

6th mat  $\rightarrow ((5,6) \rightarrow (5,8)) / 3 \rightarrow (1,2) * 3 \rightarrow (3,6)$

Original index

7th mat  $\rightarrow ((6,0) \rightarrow (8,2)) / 3 \rightarrow (1,3) * 3 \rightarrow (3,9)$

of 9th matrix

row = (row / 3) \* 3;

col = (col / 3) \* 3;

8th mat  $\rightarrow ((6,3) \rightarrow (8,5)) / 3 \rightarrow (1,4) * 3 \rightarrow (3,12)$

of 9th matrix



### Traversal in $3 \times 3$ matrix

9th mat

	0	1	2
0	(6, 0)	(6, 1)	(6, 2)
1	(7, 0)	(7, 1)	(7, 2)
2	(8, 0)	(8, 1)	(8, 2)

```
for (int i=0; i<3; i++)
    for (int j=0; j<3; j++)
        cout << (i+r) << " " << (j+c) << endl;
```

103 n = n + p - l n = ④

$$\text{EKC} \quad n = n + m + \left(\frac{n}{3} * \frac{m}{3}\right)$$

for  $n \geq m$

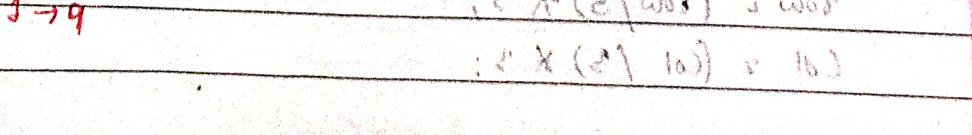
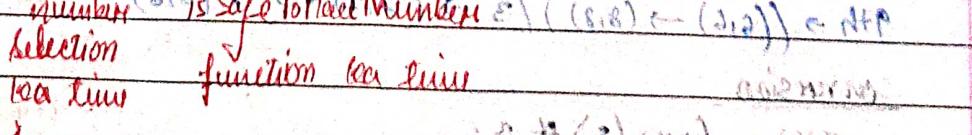
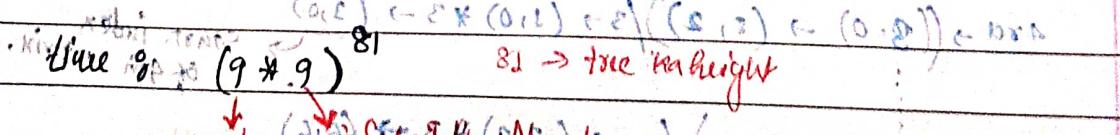
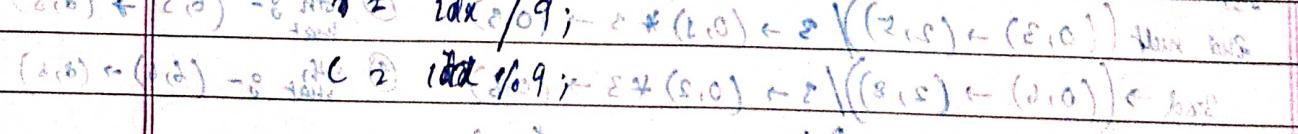
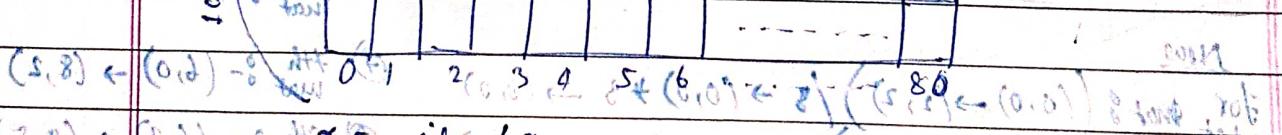
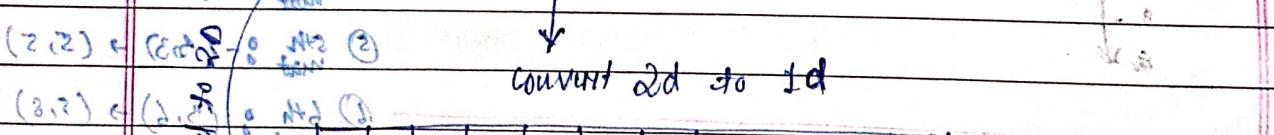
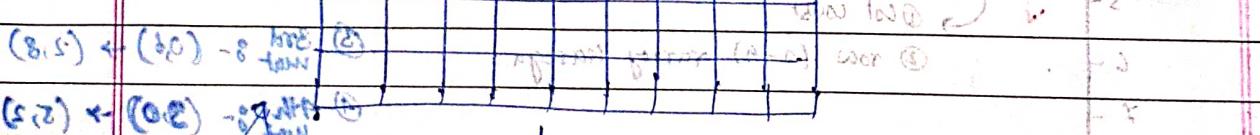
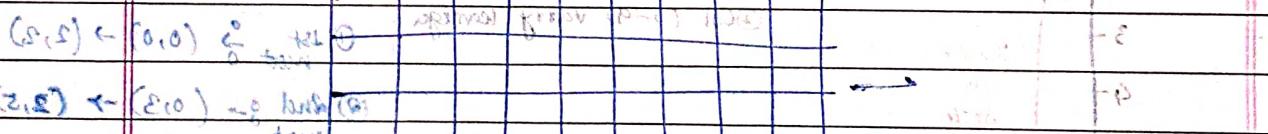
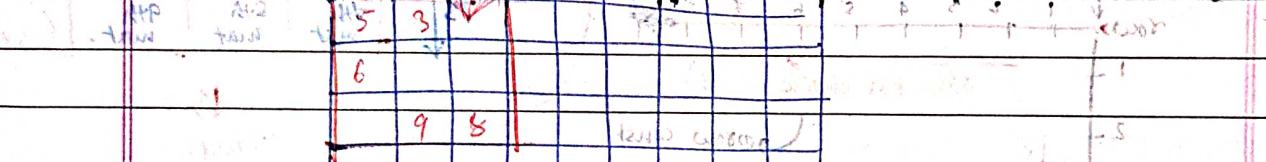
$$n + n + n$$

element traverse in row =  $m$

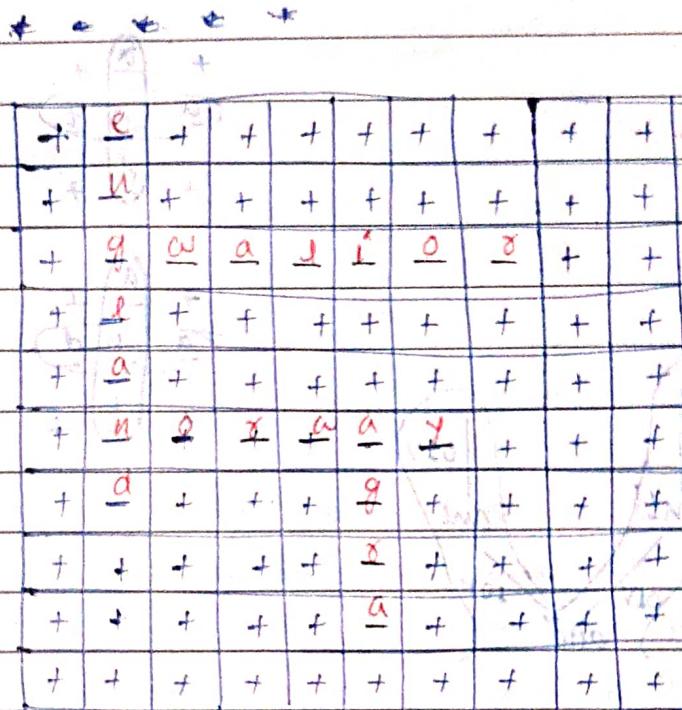
element traverse in col =  $m$

element traverse in  $3 \times 3$  mat =  $\left(\frac{n}{3} * \frac{m}{3}\right)$

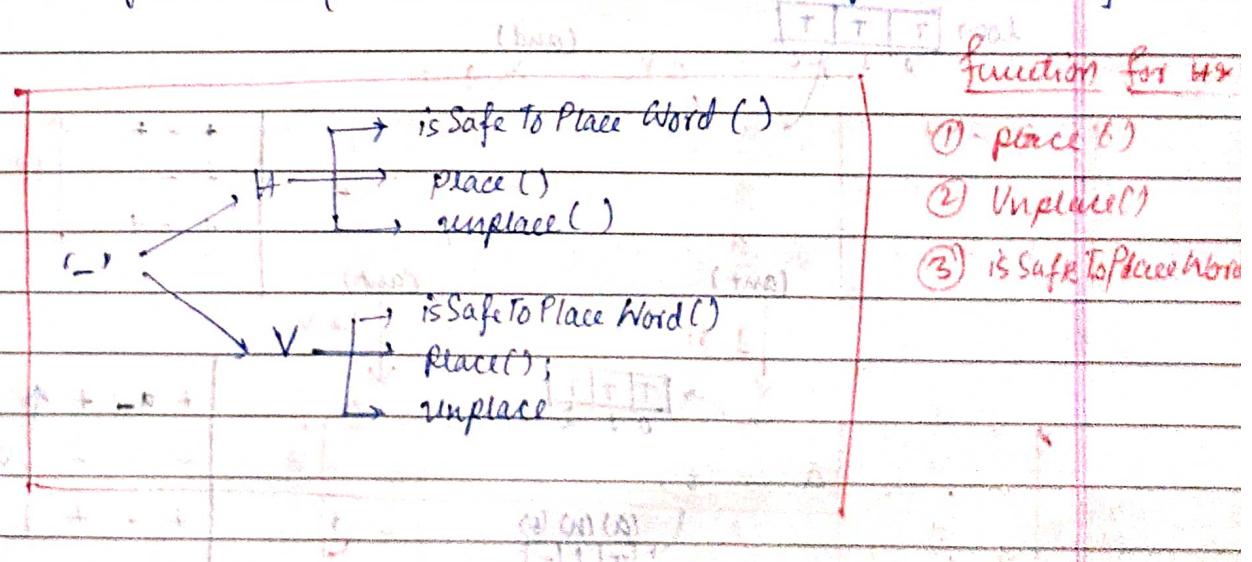
$$20 \mid 3n \rightarrow$$



\* Problem: Crossword puzzle. (Hacker rank, Recodring)



String[] str = {"agra", "norway", "england", "gawlion"};



她說：「我會去的，我會去的。」

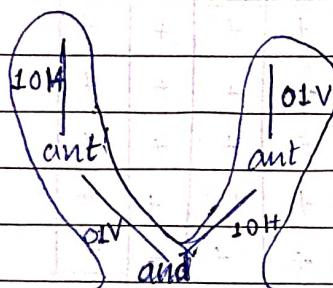
I think we had the best time ever at the beach.

2000 2005 2010 2015 2020 2025 2030 2035 2040

word  $\{ \text{and} \}$  and, ant  $\{ \}$

$$\begin{matrix} 0 & 1 & 2 \\ 0 & + & - & + \\ 1 & - & - & - \\ 2 & + & - & + \end{matrix}$$

$$\begin{matrix} + & (a) & + \\ (a) & n & t \\ - & d & + \end{matrix}$$

$$\begin{matrix} + & (a) & + \\ (a) & n & d \\ - & t & + \end{matrix}$$


$+ - +$  { and }

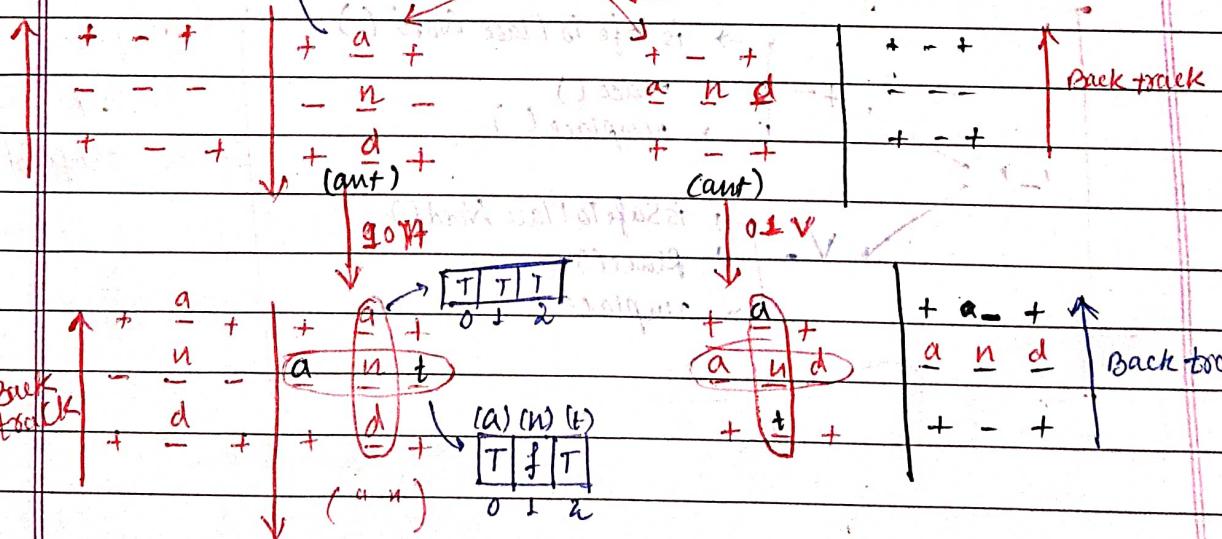
{ ant }

loc  $\rightarrow$ 

T	T	T
0	+	1

$+ (\text{and}) +$

O1V  $\leftarrow$  goH



place()

① jo kisi word ke character ko hum board me place karenge. iss word ke character ke index ke kisi ek boolean array (location) me true mark kar denge. aur iss boolean array ko hum unplaced function ~~me pass~~ ke argument ke pass kar denge. backi hum uss character ko remove karne jo humne place kara ho.



Program: arr  $\rightarrow [10 \ 20 \ 30 \ 40 \ 50 \ 60 \ 70]$

make two different set, SetA & SetB such that

- (1)  $\sum \text{SetA} \geq \sum \text{SetB}$
- (2)  $\text{SetA} \cap \text{SetB} = \emptyset$
- (3)  $\text{SetA} \cup \text{SetB} = 10, 20, 30, 40, 50, 60, 70$ .

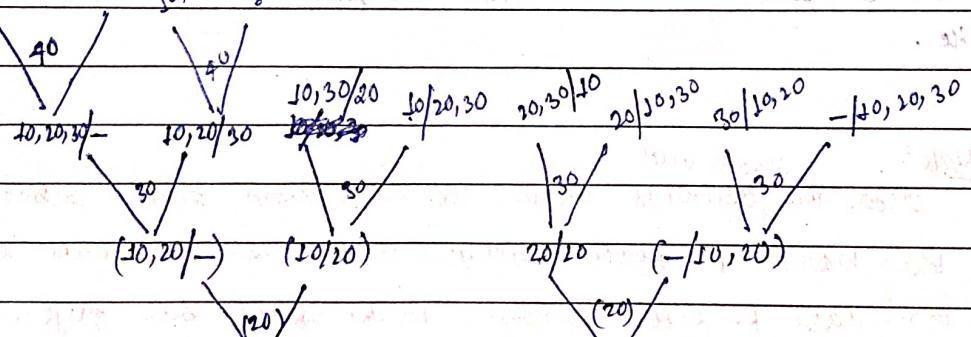
$10, 20, 30, 40, 50, 60, 70$

(Minimum)

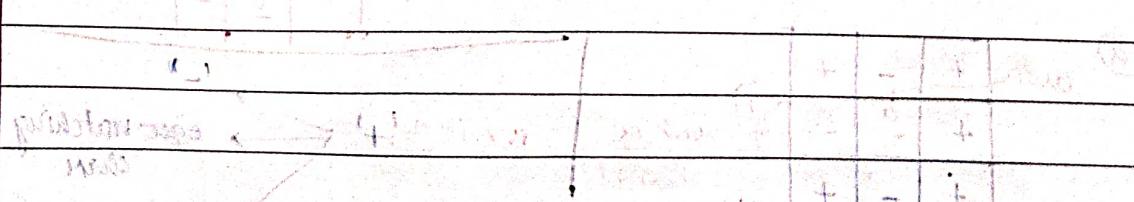
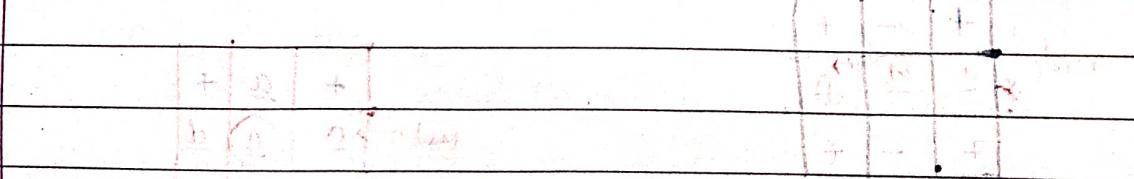
maximum sum of all numbers should be minimum sum of all numbers.

maximum sum of all numbers should be minimum sum of all numbers.

maximum sum of all numbers should be minimum sum of all numbers.



(-/-)



10, 20, 30, 40, 50, 60, 70

Program to find K subset with equal sum

arr → 1, 2, 3, 4, 5, 6 , K = 3

Sum of array = 1 + 2 + 3 + 4 + 5 + 6

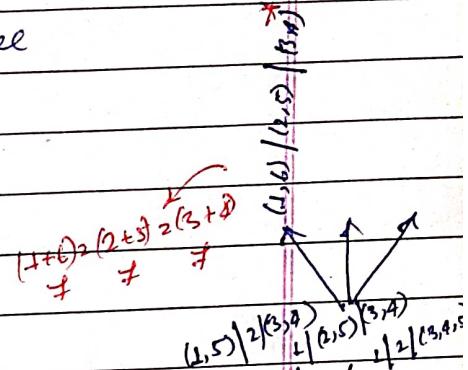
= 21

$$\text{Avg} = \frac{21}{3} = 7$$

Subset of K should be

$$[7] \neq [7]$$

sum of one  
subset



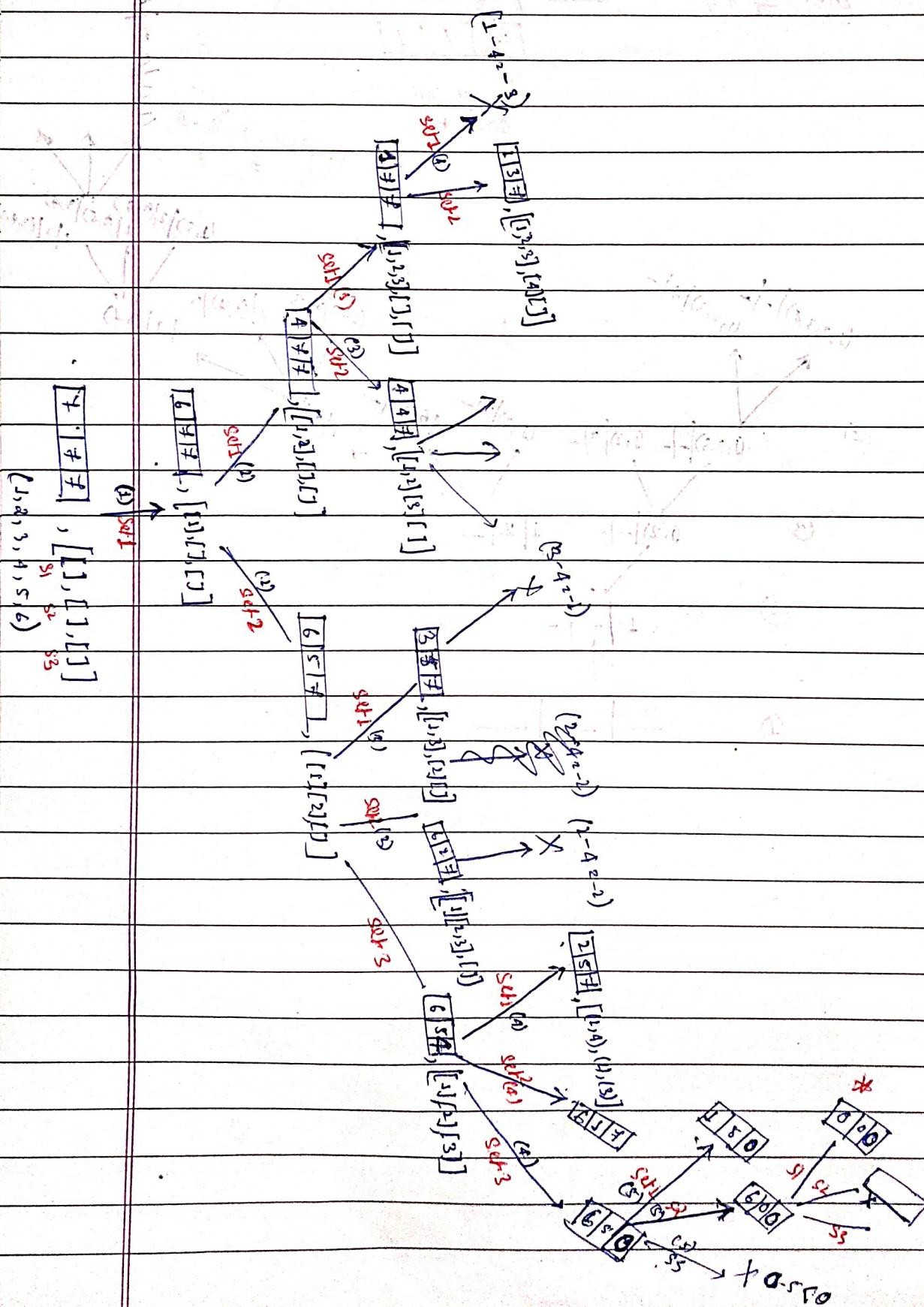
$$(1, 2, 3, 4) - | - (1, 2, 3) | 4 -$$

④

③

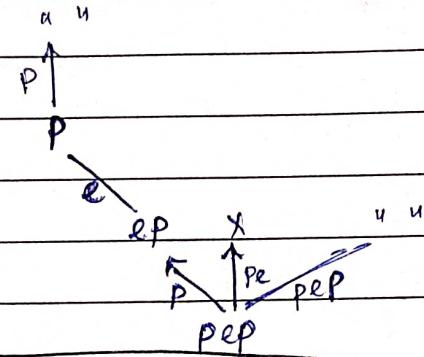
②

①



problem: All palindromic partition

$\text{Stx} \rightarrow \text{Pep}$



cdliugui

ocding

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coccidiogni

(b)

epcoedi

1

— 1 —

卷之三

十一

三

卷之三

卷之三

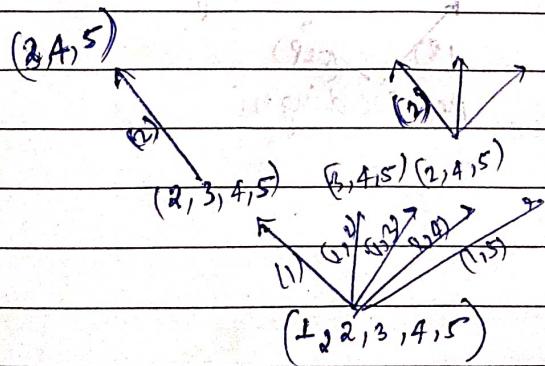
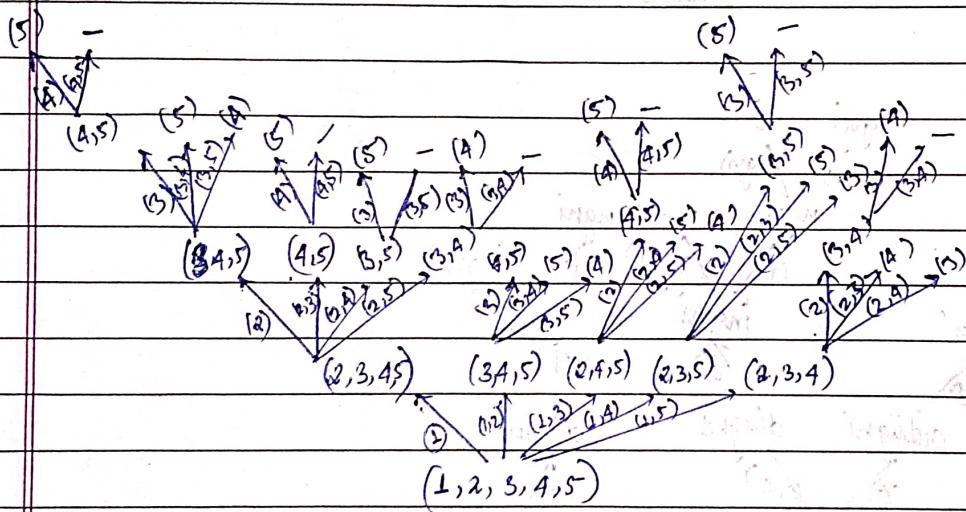
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Problems: Friends pairing II





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Problem: K partition

$n = 3 \quad k = 2$

~~(1, 2, 3)~~ | - ~~(1, 2)~~ | ~~3~~ ✓ ~~(1, 3)~~ | ~~2~~ ✓ ~~1 | (2, 3)~~ ~~1 | 2~~ ✓

~~(1, 2)~~ | - ~~1 | 2~~ ✓

~~1 | -~~

- | -

Program: Largest Number possible After At Most K Swaps

1 2 3 4 5 6  $\neq$   $K = 3$

for  $K = 1$

~~1 2 3 4 5 6  $\neq$~~

~~2 1 3 4 5 6  $\neq$~~

1 2 3 4 5 6  $\neq$ ,  
max =  $\neq$

swap 1 &  $\neq$

$\neq$  2 3 4 5 6 1

for -  $K = 2$

7) 2 3 4 5 6 1  
↑ | max = 6

swap 2 & 6

7 6 3 4 5 2 1

test case

1 9 1 8 7 5  $\neq$   
max = 9

$K = 1$

$K = 2$

9 1 1 8 7 5  $\neq$