

Queens Combinations - 2d As 2d - Box Chooses

point Combination .1

↳ level → box

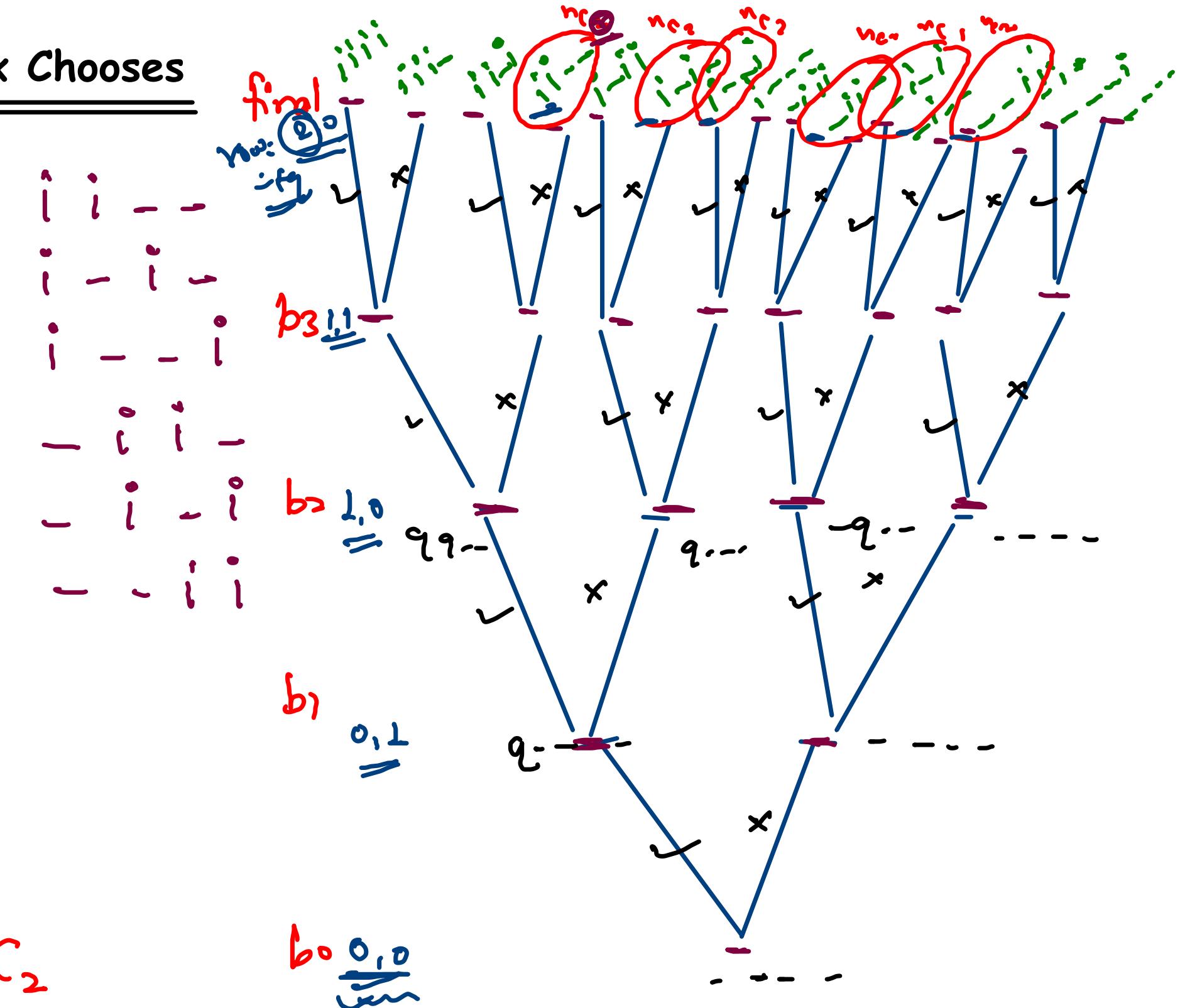
option → choice of
items i.e.

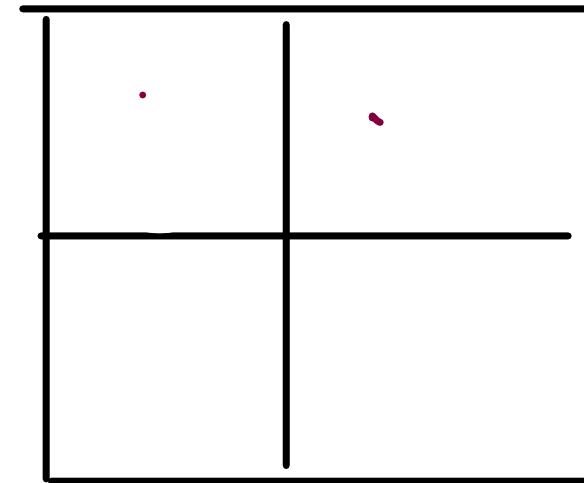
Yes or No

$${}^4C_2 \text{ (for identical item)}$$

$$= \frac{4!}{2! 2!} = \frac{4 \times 3 \times 2!}{2! \times 2!} = 12$$

$4C_2$





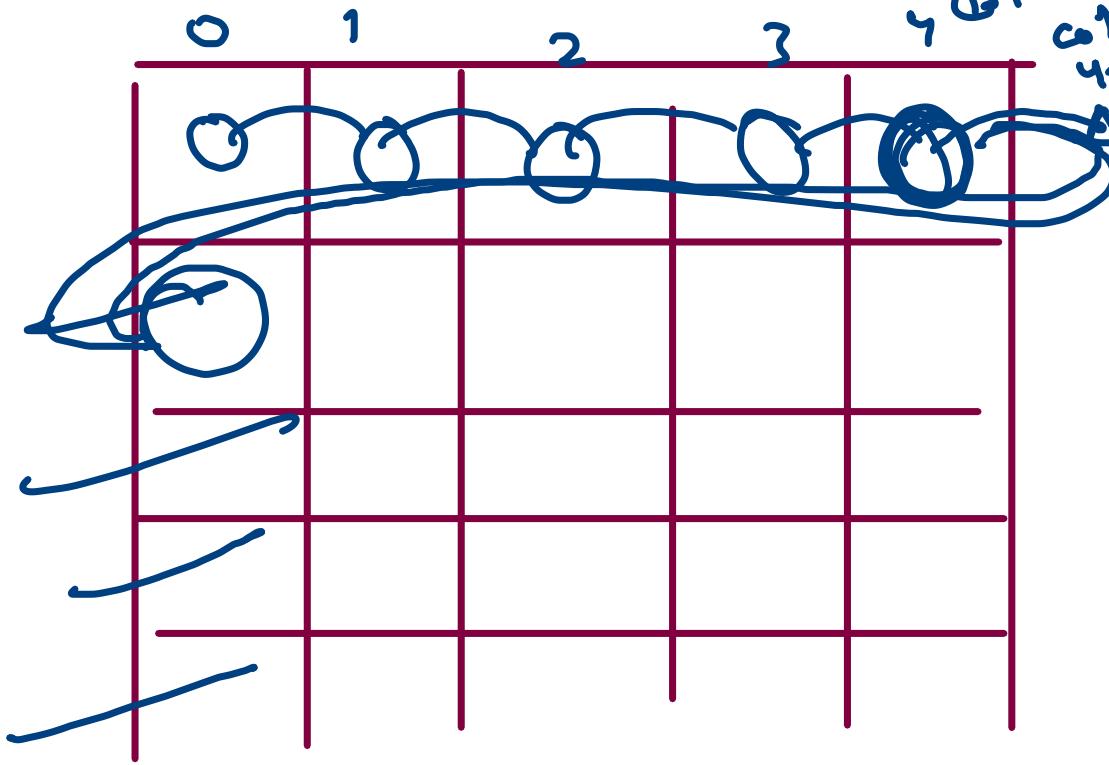
2×2 boxes

g] Items (Identical)

$$tq = 5$$

$$\begin{matrix} \text{row} = 0 \\ \text{col} = 4 \\ \text{row} + \text{col} = 4 \\ \text{row} + \text{col} = 5 \end{matrix}$$

Index and of
bond



$$\text{corow} = tq$$

possible arrangement \rightarrow

q	q
-	-

q	-
q	-

q	-
-	q

-	q
q	-

-	q
-	q

-	-
q	q

$$g_f (\text{col} + 1 = tq) \{$$

Yes \Rightarrow
No \Rightarrow $\text{row} = \text{row} + 1$
 $\text{col} = 0$!

$\} \text{ else } \{$

$$\begin{matrix} \text{row} = \text{row} \\ \text{col} = \text{col} + 1 \end{matrix}$$

2

Queens Permutations - 2d As 2d - Queen Chooses : $n \times n$ chess board, n queens
 non identical, all possible arrangements to place n queens in $n \times n$ chessboards.

Revise permutation

9-tors → level

boxes → option

asf → array

$${}^4 P_2 = \frac{4!}{2!}$$

= 12

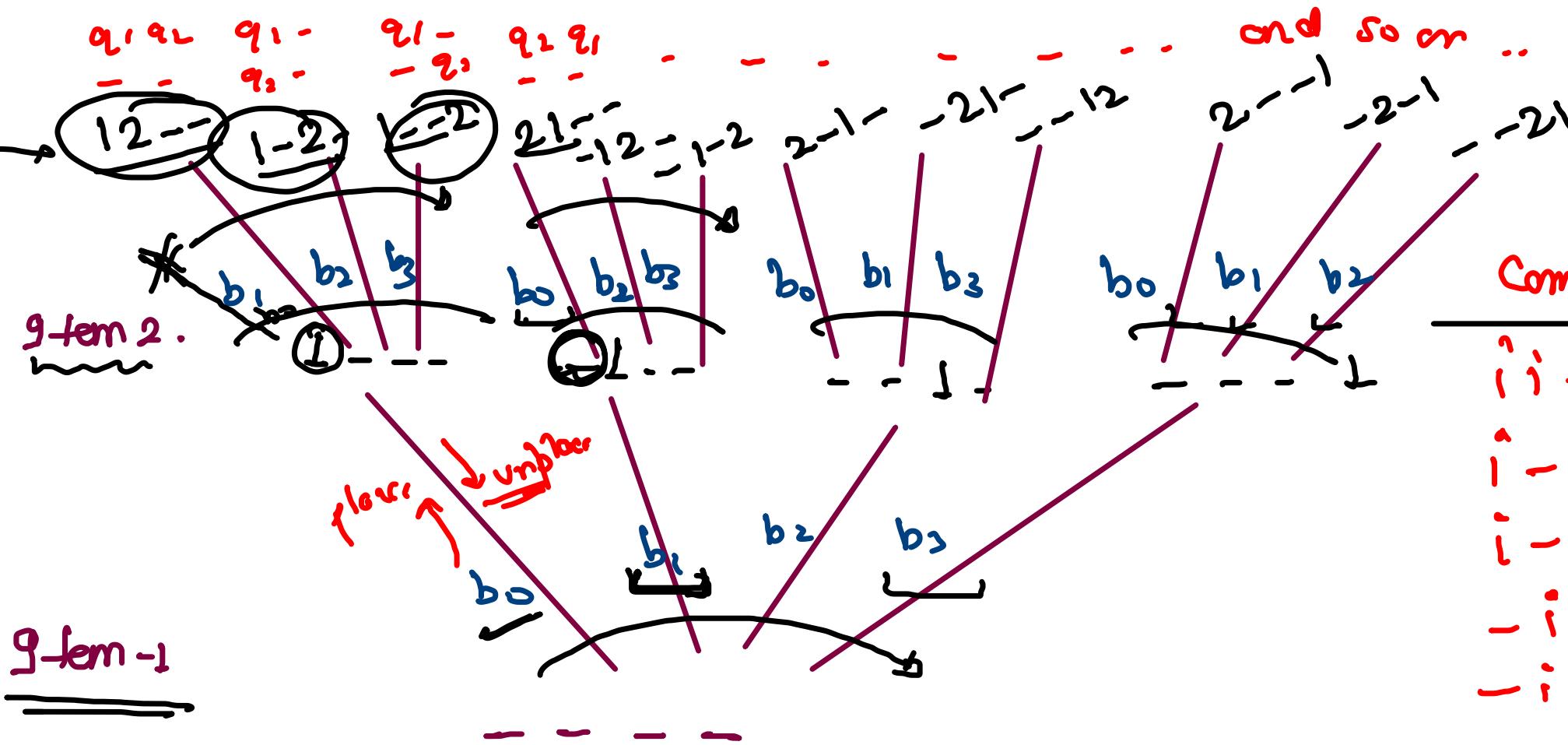
Combination

qpsf

+q

box

9-tors-1



Permutation

12--
1-1--
1--1-
1---1
-111--
-11-1
---111

12--	21--
1-2-	2-1-
1--2	2--1
-12-	-21-
-1-2	-2-1
--12	--21

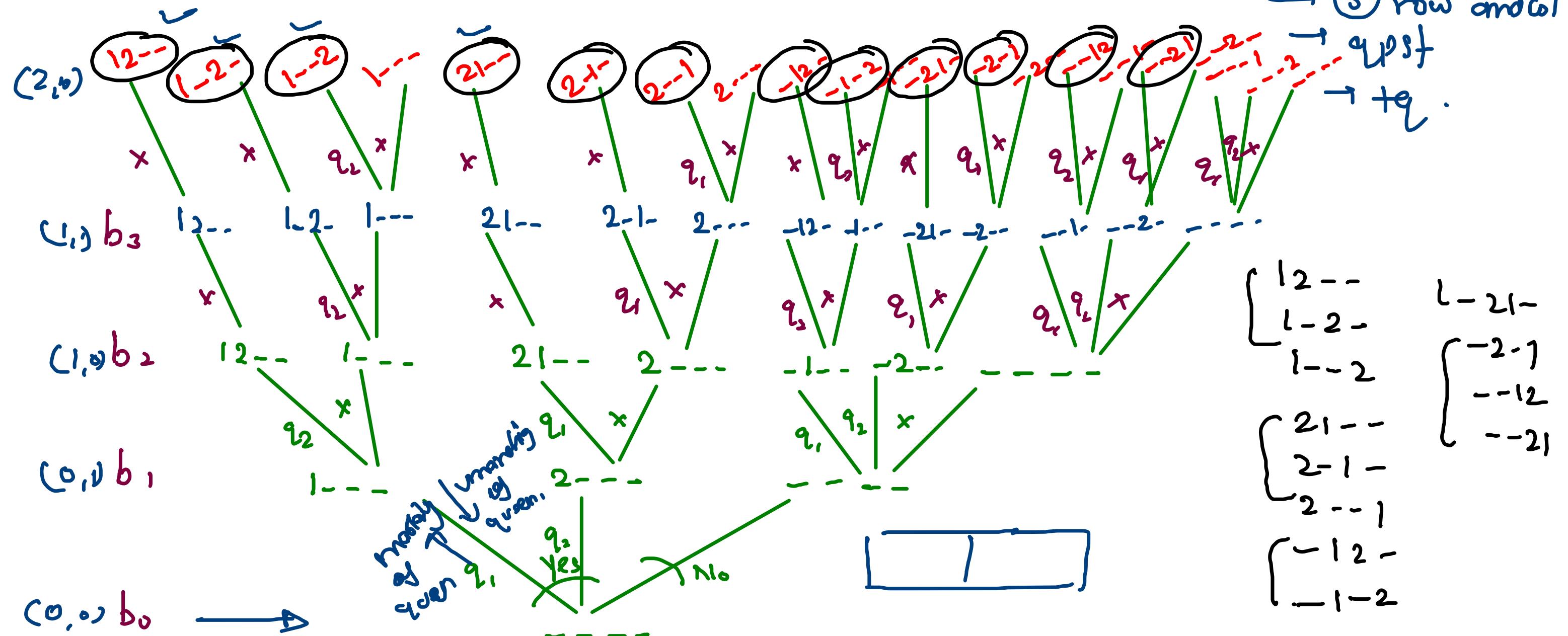
Queens Permutations - 2d As 2d - Box Chooses : $n \times n$ chessboard, n queens (non-identical)

Revise →

level → box
option → gtrn.

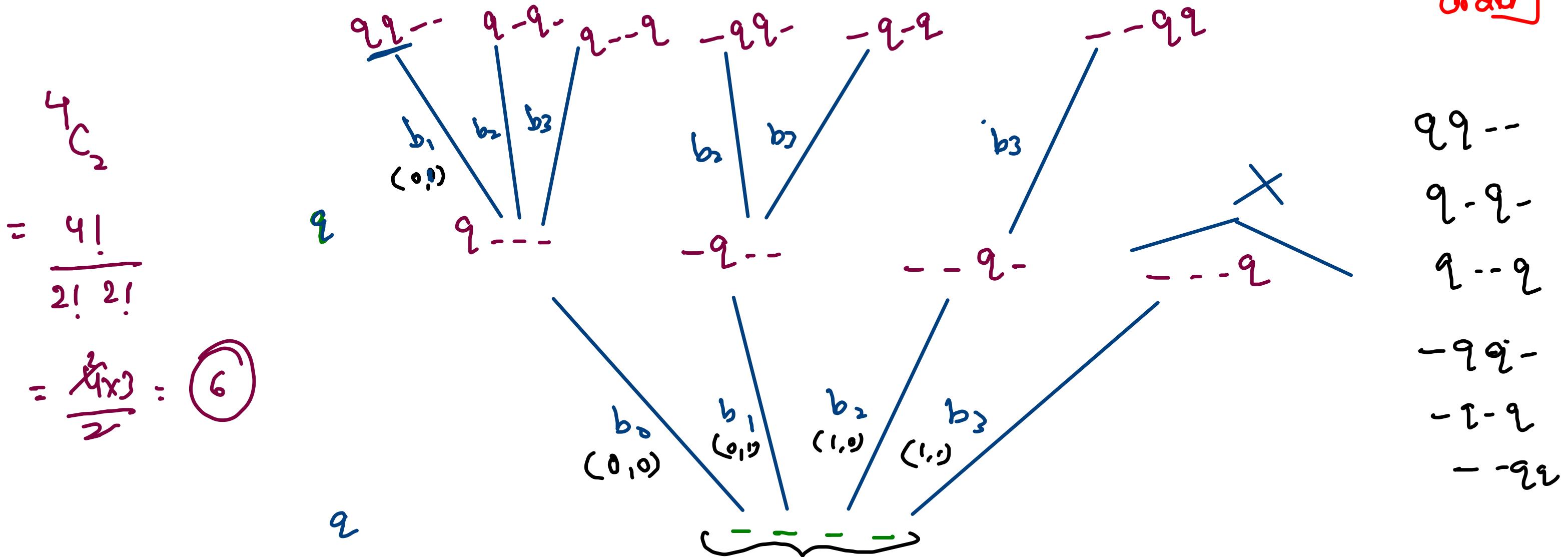
permutation.

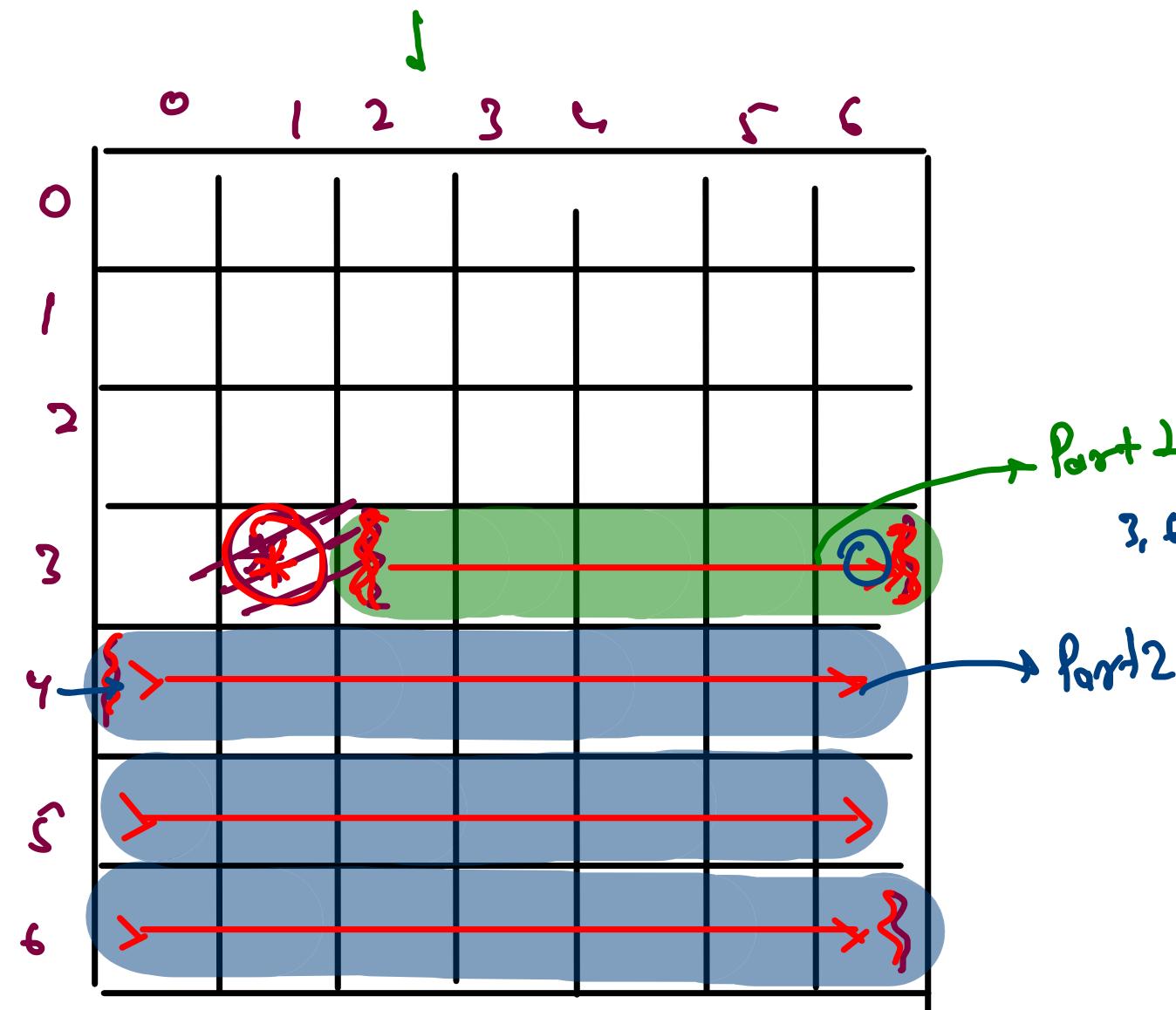
point all possible arrangements to place n queen in $n \times n$ board.



Queens Combinations - 2d As 2d - Queen Chooses ; $n \times n$ chessboard, n identical queens. print all possible arrangements to place n queen in $n \times n$ chessboard.

Revise → { combination
level → 9fem
option → boxes }
↳ select boxes in sorted order]





part 1 →

```
for(int r = row, c = col + 1; c < tq; c++)
```

Post →

```
for(int r=800*�+1; r<99; r+1){
```

```
for(int c = 0; c < tq; c++)  
    // provide opportunity to all
```

} (3,7)

2

	0	1	2	3	4
0	0	1	2	3	4
1	5	6	7	8	9
2	10	11	12	13	14
3	15	16	17	18	19
4	20	21	22	23	24

Box No is available, $\{0, 1, 2, \dots, 24\}$

How to find row and col-

$$\text{row} = \frac{\text{box No}}{\text{total Columns}}$$

$$\text{col} = \text{box No \% total Columns}$$

$$n = \text{total rows} == \text{total columns}$$

$$r = \text{box No} / n$$

$$c = \text{box No \% } n$$

	0	1	2	3	4
0	0	1	2	3	4
1	5	6	7	8	9
2	10	11	12	13	14
3	15	16	17	18	19

$$\text{total Rows} = 4$$

$$\text{total Col} = 5$$

	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

$r \rightarrow$

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

Combination

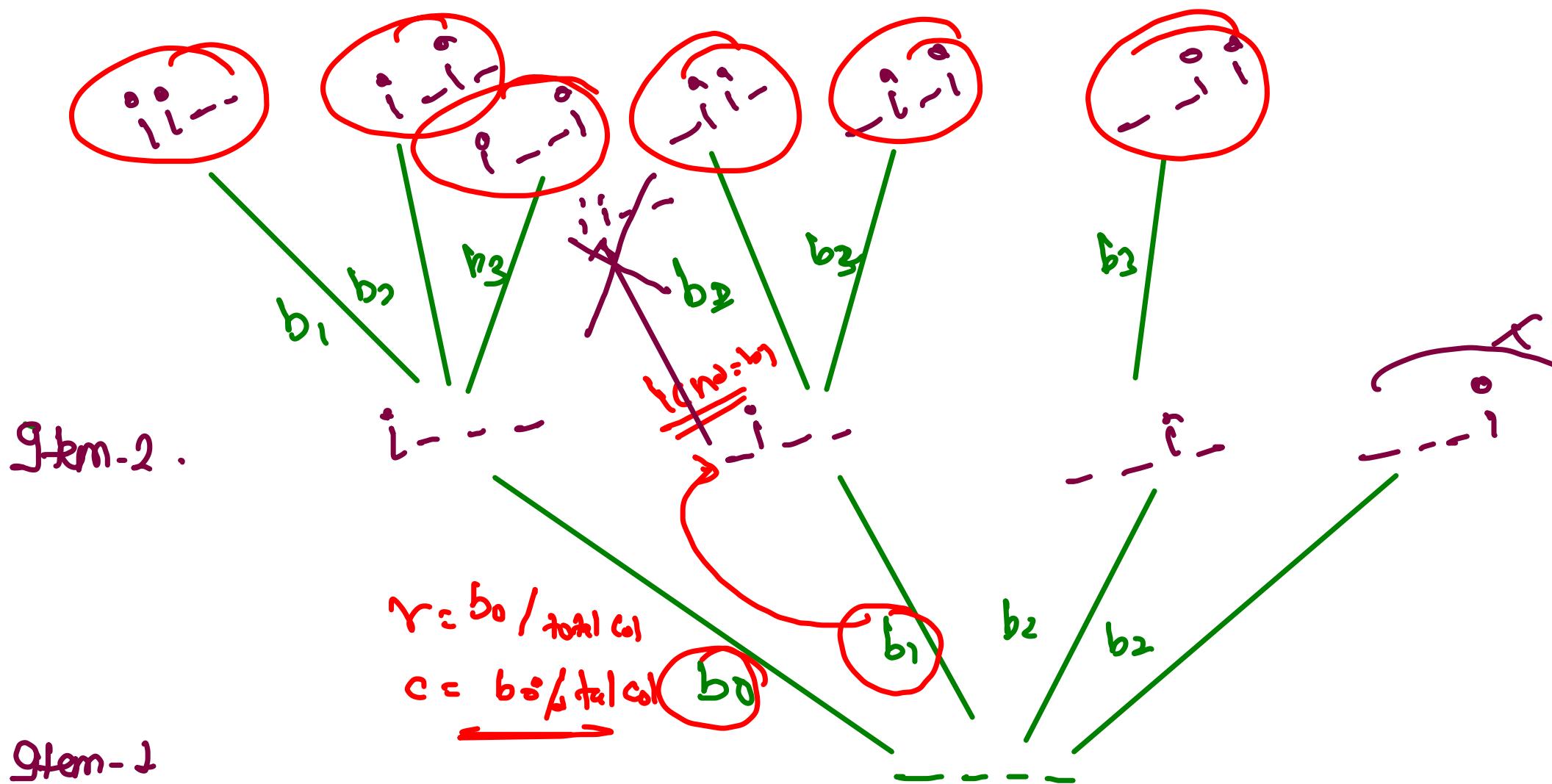
level \rightarrow 9 items

option \rightarrow Boxes

$b_1 = 4$ boxes

$r = 2$ gtems

$$C_2 = \frac{4!}{2! 2!} = 6$$



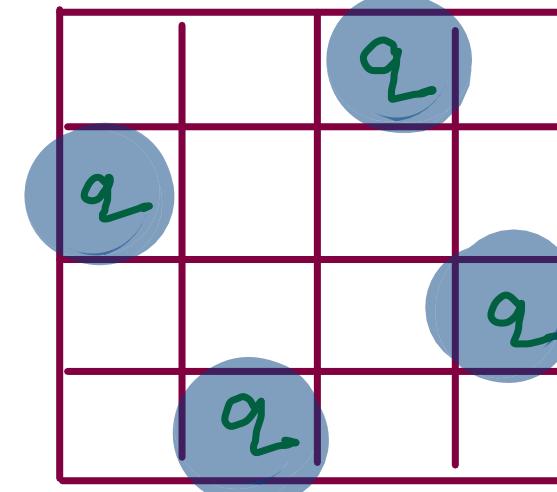
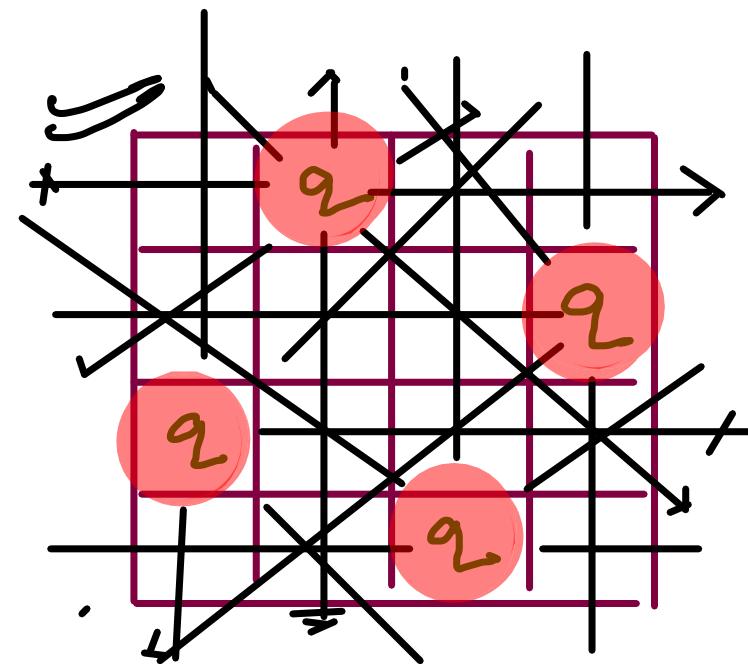
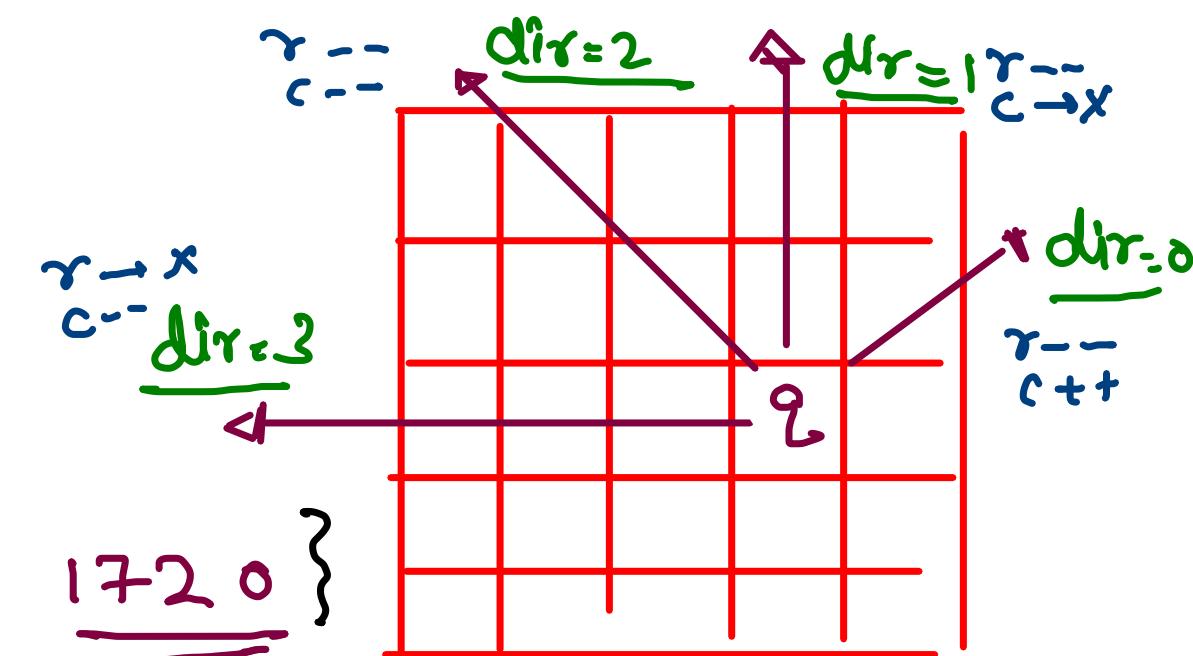
Nqueens Combinations - 2d As 1d - Queen Chooses :-

Total box = 16
queens = 4.

$$16 \times 15 \times 14 \times 13 \times 12 / (12 \times 11 \times 10 \times 9) = 14 \times 130 = 1720$$

$n \times n$ - box
 $n=4$, 4×4 box

2 valid possibility.



queen. combination
isSafe to place ??
place
unplace

Nqueens Permutations - 2d As 1d - Queen Chooses

Total box $\rightarrow n \times n = 4 \times 4 = 16$

total queens = $n = 4$.

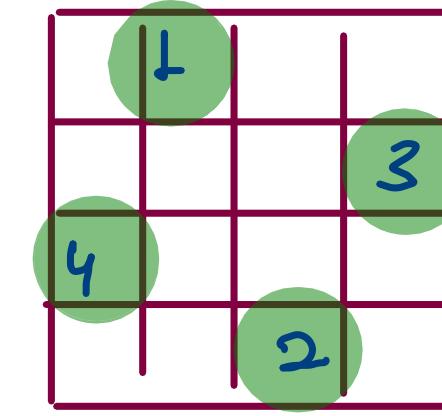
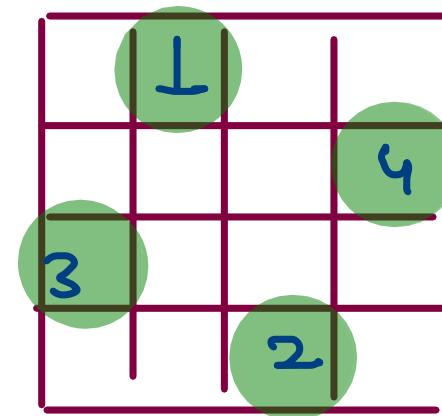
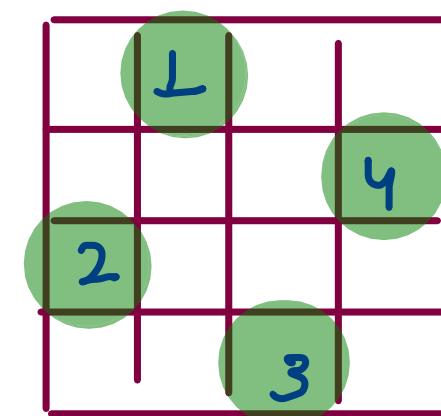
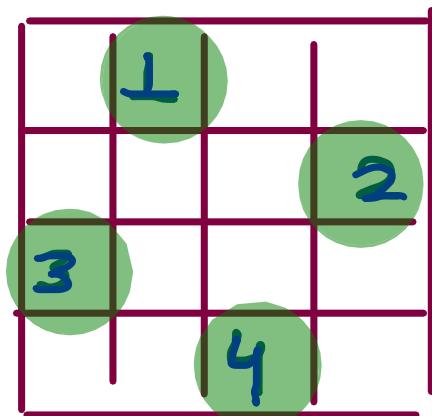
Total permutation = ${}^{16}P_4 = \frac{16!}{12!} = 16 \times 15 \times 14 \times 13 = 43680$ possibility.

↳ valid permutation (safety of queen) = $\binom{16}{4}$ combination [permute,

$$= 4! + 4!$$

$$= 28 \text{ permutation}$$

4×4] 4 queen.

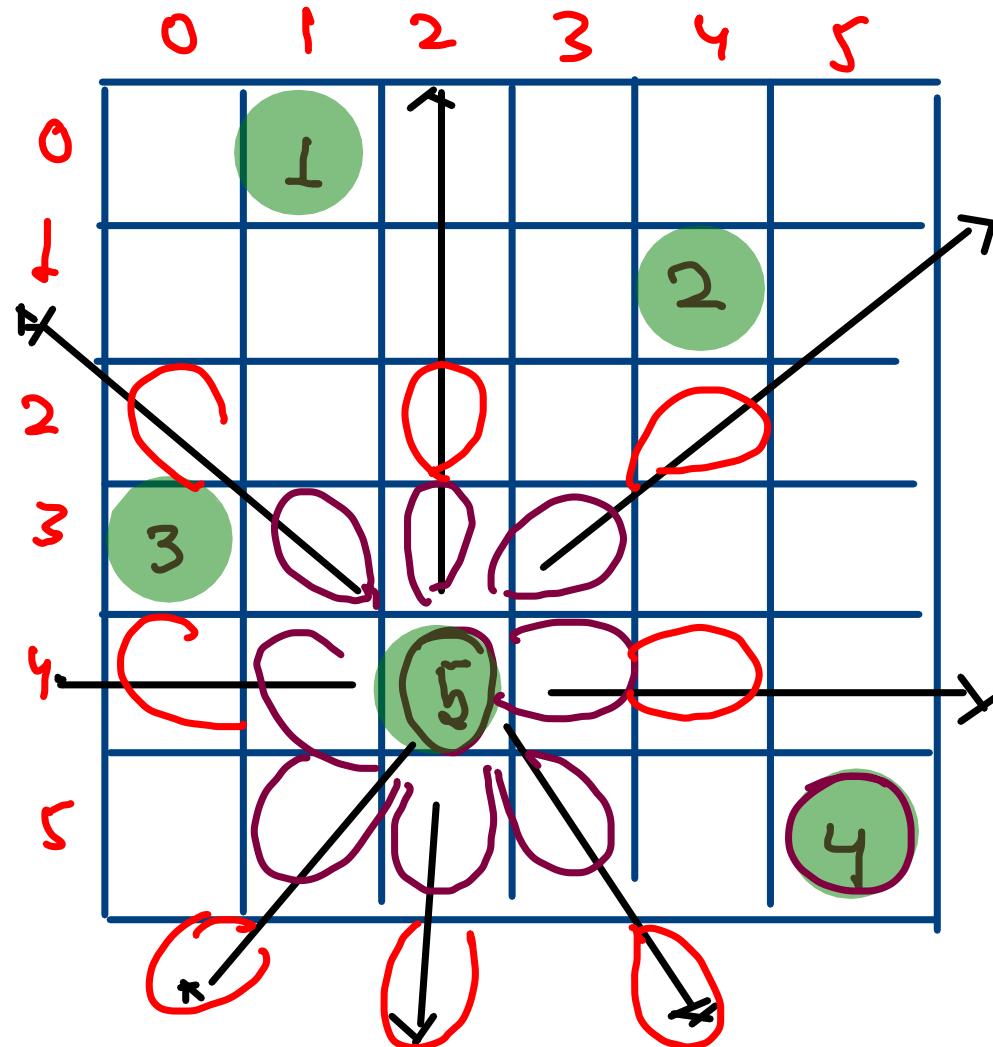


cmd
so on.

for valid answer

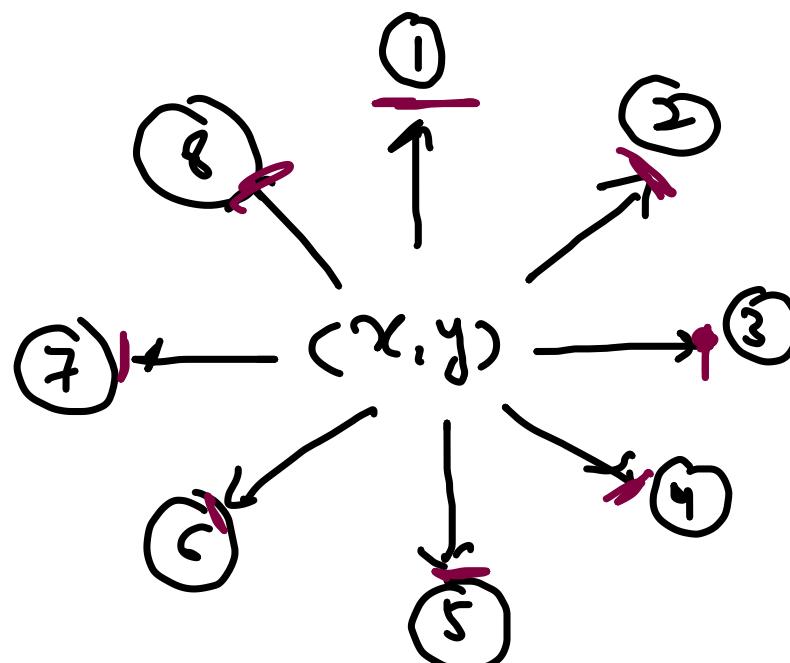
level \rightarrow queens
options \rightarrow box

8s Queen Safe



x, y are
coordinates of

math.



At radius 1

- ① $(x-1, y)$
- ② $(x+1, y)$
- ③ $(x, y-1)$
- ④ $(x, y+1)$
- ⑤ $(x+1, y+1)$
- ⑥ $(x+1, y-1)$
- ⑦ $(x-1, y-1)$
- ⑧ $(x-1, y+1)$

At radius 2

- $(x-2, y)$
- $(x-2, y+2)$
- $(x, y+2)$
- $(x+2, y+2)$
- $(x+2, y)$
- $(x+2, y-2)$
- $(x, y-2)$
- $(x-2, y-2)$

$$x\text{dir} \rightarrow \{-1, -1, 0, 1, 1, 1, 0, -1\}$$

$$y\text{dir} \rightarrow \{0, 1, 1, 1, 0, -1, -1, -1\}$$

Radius?

Begin with 0 and end at n } $\max(\text{radius})$

Knights

