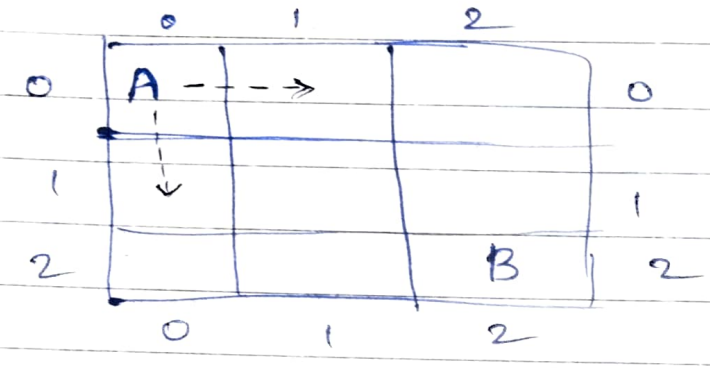
Backtracking

→ Technique for solving problems recursively by building solution incrementally.

1) Maze problem :

⇒

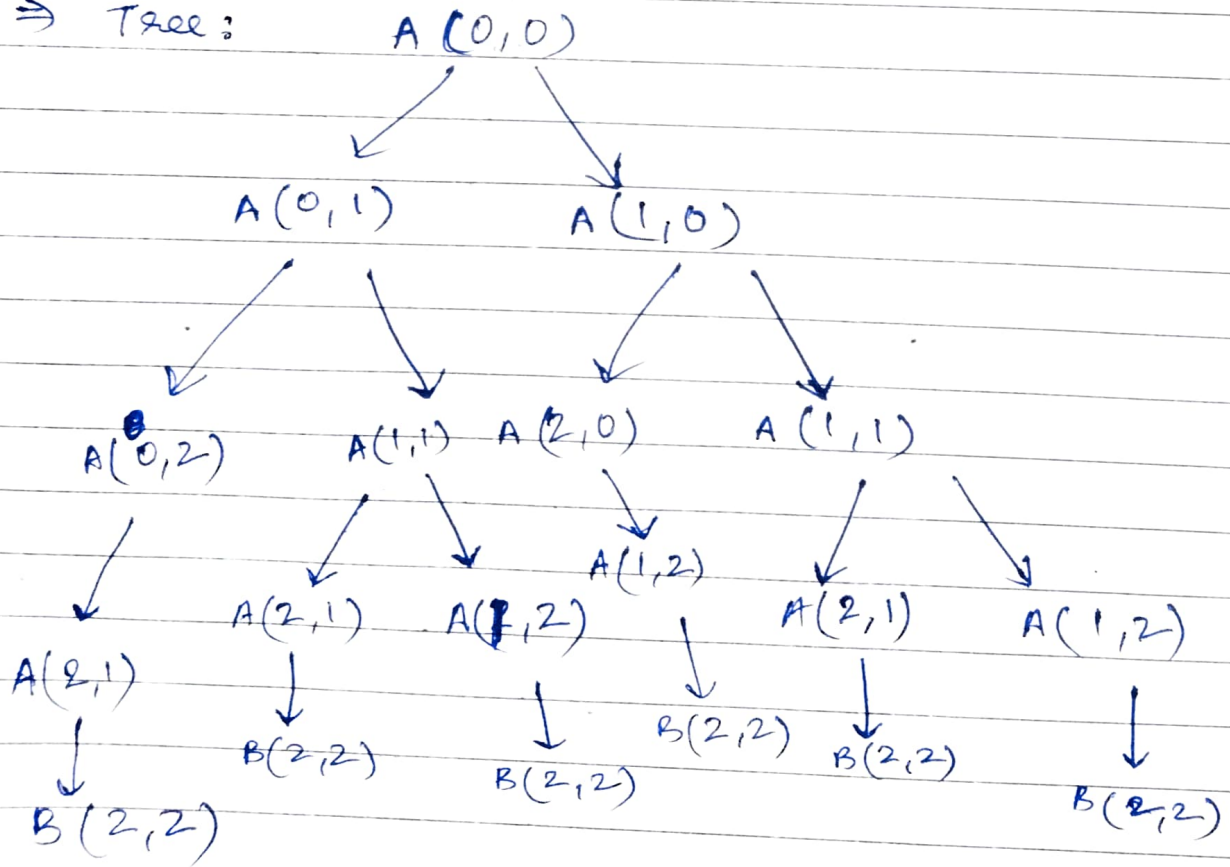


You can travel in only R & D directions

(0,0) → (2,2)

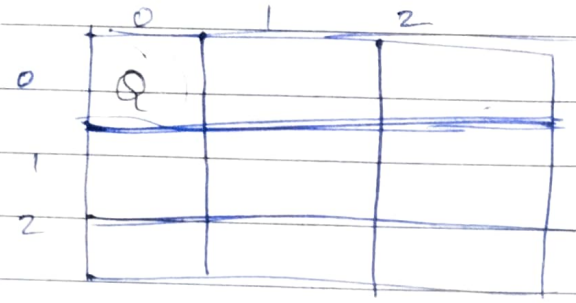
⇒ Possibilities: RRDD, DDRR, RDDR & RDRD

⇒ Tree:



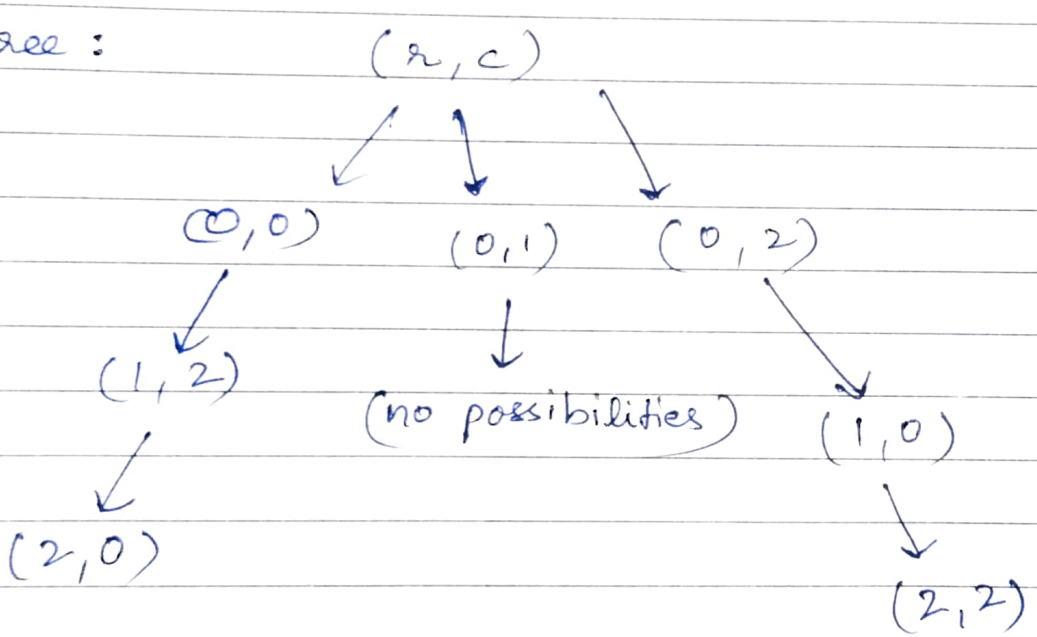
2) N - Queens :

⇒ Given N×N board, place N queens on it :



⇒ There won't be more than 1 queen in single row, colum & diagonal.

⇒ Tree :



⇒ Approach :

i) Take base case i.e. when all queens are placed correctly

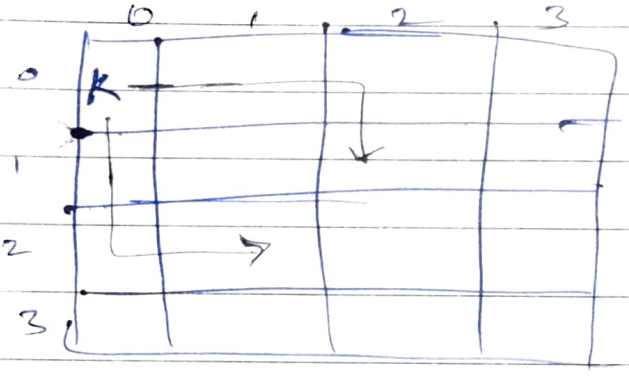
ii) Start placing them in all columns of current row (run a loop).

iii) Check the validity & backtrack.

(iv) To check validity, check row-wise & diagonally if any other queen is present. If it is present return false else return true.

3) N-knights :

⇒



⇒ Tree: