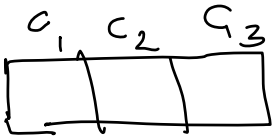
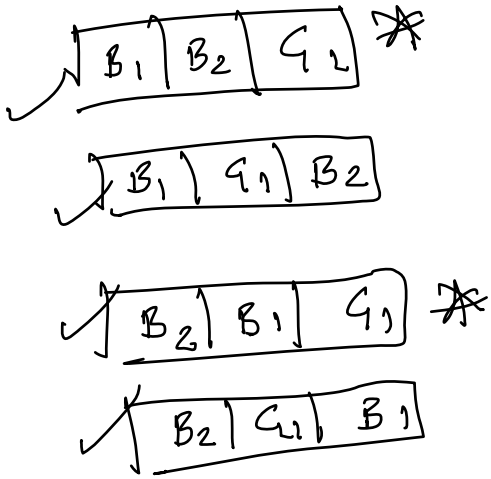
* Backtracking (UNIT-3)

- problem solving strategy (algo design technique)
- used when you have multiple solutions to a problem expressed as a n-tuple $(x_1, x_2, \ldots x_n)$ & you want all the solutions to be considered
- Uses brute force approach (try all possibilities)

Ex: 3 Students => B_1, B_2, G_1

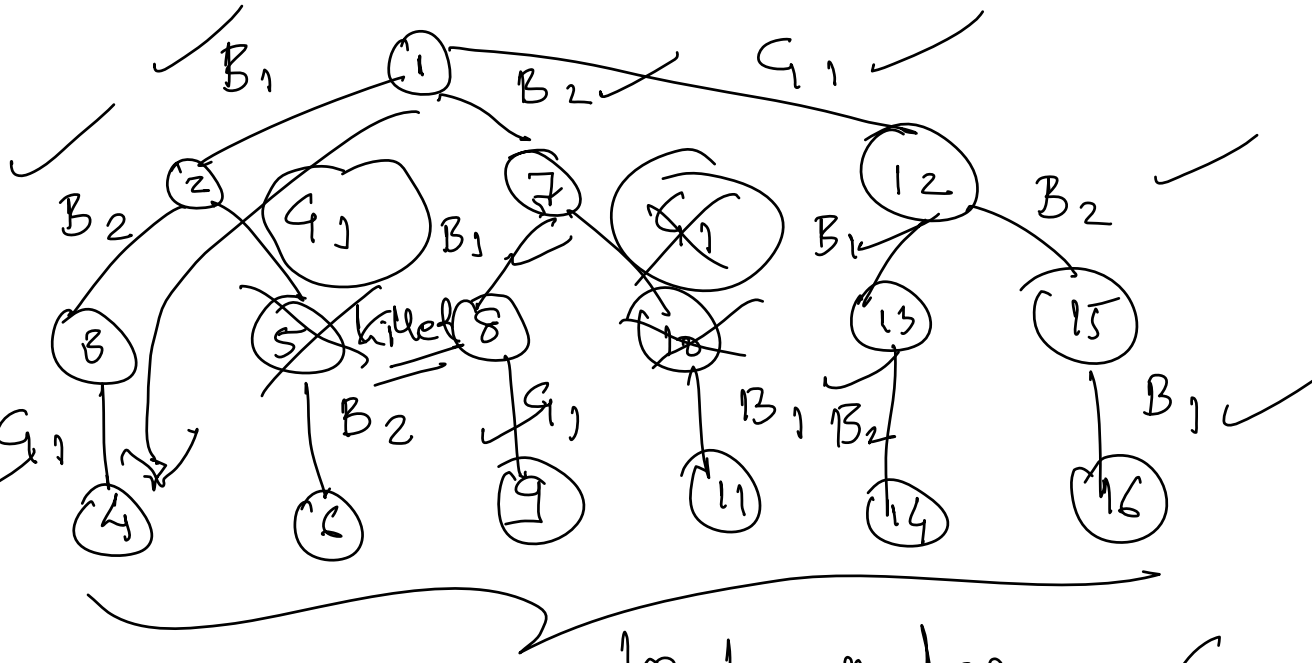




$n = 3 \quad 3! = 6$

- Soln => State space tree

State Space Tree (DFS) ⇒ Approach



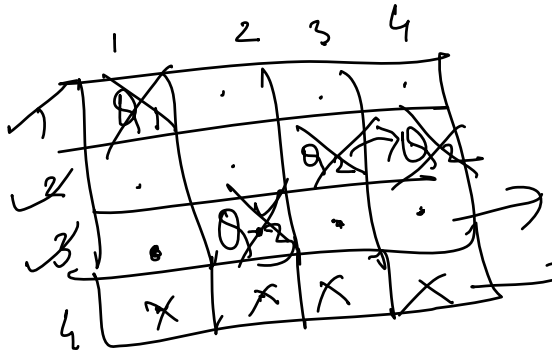
* Backtracking : Criterion funn / Bounding funn

Ex: Bounding funn ⇒ No girl should be sitting at 2nd place

↓ Soln

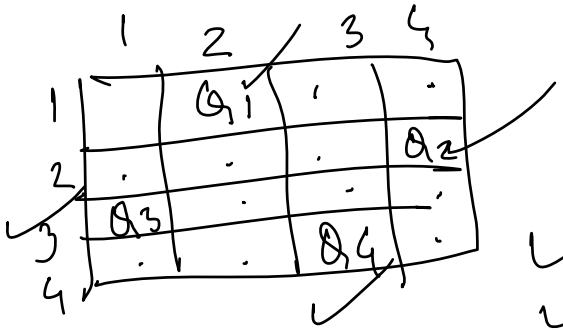
4 ways Soln's can be obtained

* 4 - Queen's



no locatn for Q_3

no locatn for Q_4



4!

$(Q_1\ Q_2\ Q_3\ Q_4)$

2 4 1 3