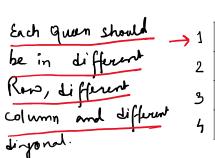
The 4-Queens Problem is a well-known puzzle that involves placing 4 queens on an 4×4 chessboard in such a way that no two queens threaten each other.

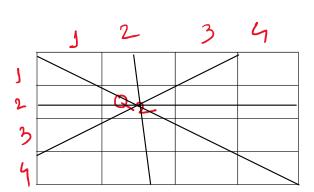
How to Solve the 4 Queen Problem?

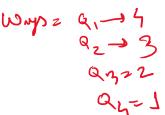
To solve this problem, we will use a backtracking algorithm. Backtracking is a technique where we explore all possible solutions by incrementally building the solution and backtracking whenever we find that the current solution is invalid.



	1	2	3	4
1				
2				
3				
4				

$Q_1 =$	Rowl
Q = 1	
	Row3
-	Row 4.







N-Queen Problem (4x4) – Theory Using Backtracking

The N-Queen problem is a classic backtracking problem where the goal is to place N queens on an N×N chessboard such that no two queens threaten each other. This means:

No two queens can be in the same row, same column, or same diagonal.

In the **4x4 N-Queen problem**, we have to place **4 queens** on a **4x4 board** without any queen attacking another.

Backtracking Approach

Backtracking is a **trial-and-error** method that incrementally builds solutions and **backtracks** when a conflict is detected.

Steps:

- 1. Start from column 0, try placing a queen in each row one by one
- 2. For each attempted position, check if it is safe:
 - No other queen in the same row to the left
 - No other queen in the upper left diagonal.
 - No other queen in the lower left diagonal.

If safe, place the queen and recursively attempt to place the next queen in the next column.

4. If placing a queen leads to no solution, backtrack: remove the queen and try the next position

5. Repeat until all 4 queens are placed successfully

