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Backtracking

INTRODUCTION

- One of the most general technique.

- Search for set of optimal solutions

- Satisfies the constraints.

- Variation of exhaustive search

- Search is refined by eliminating certain possibilities.

- Faster than exhaustive search.

- Applications:

✓ N- queens problem

✓ Hamiltonian problem

✓ Sum of subset problems

✓ Knapsack problems

✓ Graph coloring

N-Queen's Problem

- Consider n*n chessboard on which we have to place n queens so that no two queens attack each other by being in the same row or column or diagonal.

Algorithm:
N queen (k, n)
{
For i=1 to n do
{
If(place(row, column))then
{
Board[row] column
If(row = n) then
Print board(n)
else
Queen (row+1, n)
}
}

```
Place(row, column)
{
For i← 1 to row-1 do
{
If(board[i]=column) then
Return 0
Elseif((board[i] – column)-(i-row))then
Return0
}
return1
```