Practical No 5

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Code :

```python
def solveNQueens(n: int, first_queen_col: int):

    col = set()

    posDiag = set()

    negDiag = set()


    res = []

    board = [["."] * n for _ in range(n)]


    def backtrack(r):

        if r == n:

            res.append(["".join(row) for row in board])

            return


        for c in range(n):

            if c in col or (r + c) in posDiag or (r - c) in negDiag:

                continue


            col.add(c)

            posDiag.add(r + c)

            negDiag.add(r - c)

            board[r][c] = "Q"


            backtrack(r + 1)


            col.remove(c)
```

```python
            posDiag.remove(r + c)
            negDiag.remove(r - c)
            board[r][c] = "."

    col.add(first_queen_col)
    posDiag.add(0 + first_queen_col)
    negDiag.add(0 - first_queen_col)
    board[0][first_queen_col] = "Q"

    backtrack(1)  # Start with the second row
    return res


if __name__ == "__main__":
    n = 8
    first_queen_col = 1
    board = solveNQueens(n, first_queen_col)[0]
    for row in board:
        print(" ".join(row))
```

Output :-

```
C:\Users\USER\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\USER\Desktop
. Q . . . . . .
. . . Q . . . .
. . . . . Q . .
. . . . . . . Q
. . Q . . . . .
Q . . . . . . .
. . . . . . Q .
. . . . Q . . .

Process finished with exit code 0
```