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Div : A , Batch : A1

Practical 5

```
def is_safe(board, row, col, n):
    # Check column above
    for i in range(row):
        if board[i][col] == 1:
            return False

    # Check upper left diagonal
    for i, j in zip(range(row - 1, -1, -1), range(col - 1, -1, -1)):
        if board[i][j] == 1:
            return False

    # Check upper right diagonal
    for i, j in zip(range(row - 1, -1, -1), range(col + 1, n)):
        if board[i][j] == 1:
            return False

    return True

def solve_queens(board, row, n):
    # If we reached the end, all queens are placed
    if row == n:
        return True

    # If queen is already placed in this row, skip to next row
    if 1 in board[row]:
        return solve_queens(board, row + 1, n)

    for col in range(n):
        if is_safe(board, row, col, n):
            board[row][col] = 1
            if solve_queens(board, row + 1, n):
                return True
            board[row][col] = 0  # Backtrack
```

```
    return False

def print_board(board):
    print("\nSolution found:\n")
    for row in board:
        print(" ".join("Q" if cell == 1 else "." for cell in row))

n = 8
board = [[0 for _ in range(n)] for _ in range(n)]

try:
    row = int(input("Enter row (0–7) for the first Queen: "))
    col = int(input("Enter column (0–7) for the first Queen: "))

    if 0 <= row < n and 0 <= col < n:
        board[row][col] = 1
        if solve_queens(board, 0, n):
            print_board(board)
        else:
            print("No solution found from the given starting position.")
    else:
        print("Invalid input. Row and column must be between 0 and 7.")
except ValueError:
    print("Invalid input. Please enter numeric values.")
```

OUTPUT :

```
PS C:\Users\darsh\Desktop\DAA>  c:; cd 'c:\Users\darsh\Desktop\DAA]'; & 'c:\Program Files\Python313\python.exe'
'c:\Users\darsh\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '63768' '--'
'c:\Users\darsh\Desktop\DAA]\pract4.py'
Enter row (0–7) for the first Queen: 0
Enter column (0–7) for the first Queen: 0

Solution found:

Q . . . . . .
. . . . Q . . .
```

. . . . . Q

. . . . . Q . .

. . Q . . . . .

. . . . . Q .

. Q . . . . . .

. . . Q . . . .

PS C:\Users\darsh\Desktop\DAA]> c:; cd 'c:\Users\darsh\Desktop\DAA]'; & 'c:\Program Files\Python313\python.exe' 'c:\Users\darsh\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '55076' '--' 'c:\Users\darsh\Desktop\DAA]\pract4.py'

Enter row (0–7) for the first Queen: 1

Enter column (0–7) for the first Queen: 1

Solution found:

Q . . . . . .

. Q . . . . . .

. . . Q . . . .

. . . . . Q . .

. . . . . Q

. . Q . . . . .

. . . . Q . . .

. . . . . Q .

PS C:\Users\darsh\Desktop\DAA]> c:; cd 'c:\Users\darsh\Desktop\DAA]'; & 'c:\Program Files\Python313\python.exe' 'c:\Users\darsh\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '55085' '--' 'c:\Users\darsh\Desktop\DAA]\pract4.py'

Enter row (0–7) for the first Queen: 1

Enter column (0–7) for the first Queen: 0

Solution found:

Q . . . . . .

Q . . . . . .

. . . Q . . . .

. . . . . Q . .

. . . . . Q

. Q . . . . . .

. . . . Q . . .

. . Q . . . . .