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Trusted

Code

JupyterLab Python (Pyodide)

```
[1]: N = 8

def print_board(board):
    for row in board:
        print(" ".join("Q" if col else "." for col in row))
    print("\n")

def is_safe(board, row, col):
    for i in range(row):
        if board[i][col]: # Check column
            return False
        if col - (row - i) >= 0 and board[i][col - (row - i)]: # Check left diagonal
            return False
        if col + (row - i) < N and board[i][col + (row - i)]: # Check right diagonal
            return False
    return True

def solve(board, row, solutions):
    if row == N: # Base case: all rows have queens
        solutions.append([row[:] for row in board])
        return

    for col in range(N):
        if is_safe(board, row, col):
            board[row][col] = True
            solve(board, row + 1, solutions)
```

```
for col in range(N):
    if is_safe(board, row, col):
        board[row][col] = True
        solve(board, row + 1, solutions)
        board[row][col] = False # Backtrack

def eight_queens():
    board = [[False] * N for _ in range(N)]
    solutions = []
    solve(board, 0, solutions)

    print(f"Total solutions: {len(solutions)}")
    for solution in solutions:
        print_board(solution)

eight_queens()
```

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