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EXP NAME: 8 QUEENS PROBLEM

EXP NO: 1

PROGRAM:

```
import copy
```

```
import copy
```

```
N = 8
```

```
def printSolution(board):
    for row in board:
        for i in range(N):
            print("Q" if row[i] else ".", end=" ")
        print()
    print()
```

```
def isSafe(board, row, col):
    for i in range(row):
        if board[i][col]:
            return False
    for i, j in zip(range(row - 1, -1, -1), range(col - 1, -1, -1)):
        if board[i][j]:
            return False
    for i, j in zip(range(row - 1, -1, -1), range(col + 1, N)):
        if board[i][j]:
            return False
    return True
```

```
def solve(board, row, solutions):
    if row == N:
        solutions.append(copy.deepcopy(board))
        printSolution(board)
        return
    for col in range(N):
        if isSafe(board, row, col):
            board[row][col] = 1
            solve(board, row + 1, solutions)
            board[row][col] = 0
```

```
def eightQueens():  
    board = [[0 for _ in range(N)] for _ in range(N)]  
    solutions = []  
    solve(board, 0, solutions)  
    print(f"Total solutions found: {len(solutions)}")
```

```
eightQueens()
```

OUTPUT:

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

Total solutions found: 92