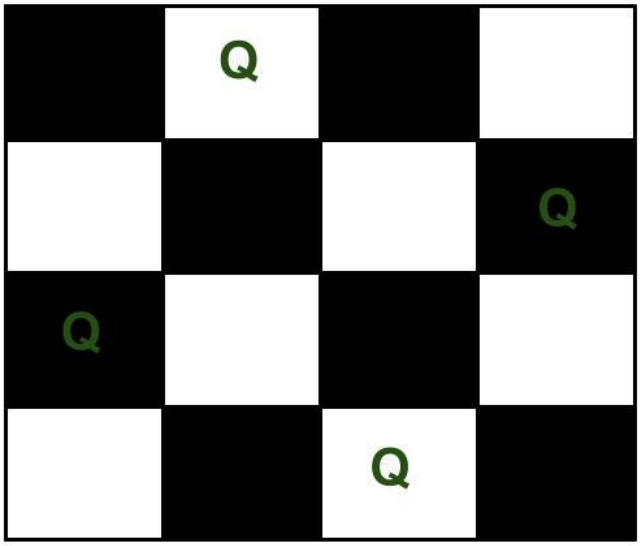
Python Program for N Queen Problem

The N Queen is the problem of placing N chess queens on an N×N chessboard so that no two queens attack each other. For example, the following is a solution for 4 Queen problem.



The expected output is a binary matrix that has 1s for the blocks where queens are placed. For example, the following is the output matrix for above 4 queen solution.

```
{ 0,  1,  0,  0}
 { 0,  0,  0,  1}
 { 1,  0,  0,  0}
 { 0,  0,  1,  0}
```

CODE :

```
global N
N = 4

def printSolution(board):
	for i in range(N):
		for j in range(N):
			print (board[i][j],end=' ')
		print()

def isSafe(board, row, col):

	for i in range(col):
		if board[row][i] == 1:
			return False

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

	for i, j in zip(range(row, N, 1), range(col, -1, -1)):
		if board[i][j] == 1:
			return False

	return True

def solveNQUtil(board, col):

	if col >= N:
		return True

	for i in range(N):

		if isSafe(board, i, col):

			board[i][col] = 1


			if solveNQUtil(board, col + 1) == True:
```

```
                                return True

                        board[i][col] = 0

        return False

def solveNQ():
        board = [ [0, 0, 0, 0],
                        [0, 0, 0, 0],
                        [0, 0, 0, 0],
                        [0, 0, 0, 0]
                        ]

        if solveNQUtil(board, 0) == False:
                print ("Solution does not exist")
                return False

        printSolution(board)
        return True

solveNQ()
```

OUTPUT :

```
0 0 1 0
1 0 0 0
0 0 0 1
0 1 0 0

True
```