Task 8. Solve N-Queen problem using backtracking

Solve the following N-Queen problem using backtracking

```
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 0, 0, 0]
```

Input Format:

Index of nodes and edges of problem graph.

Output Format:

Sequence of visited nodes of problem graph

Sample Code:

```
# Python program to solve N Queen
# Problem using backtracking

global N
N = 4

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


# A utility function to check if a queen can
# be placed on board[row][col]. Note that this
# function is called when "col" queens are
# already placed in columns from 0 to col -1.
# So we need to check only left side for
# attacking queens
def isSafe(board, row, col):

	# Check this row on left side
	for i in range(col):
		if board[row][i] == 1:
			return False

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

	# Check lower diagonal on left side
	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):
        # base case: If all queens are placed
        # then return true
        if col >= N:
                return True

        # Consider this column and try placing
        # this queen in all rows one by one
        for i in range(N):

                if isSafe(board, i, col):
                        # Place this queen in board[i][col]
                        board[i][col] = 1

                        # recur to place rest of the queens
                        if solveNQUtil(board, col + 1) == True:
                                return True

                        # If placing queen in board[i][col
                        # doesn't lead to a solution, then
                        # queen from board[i][col]
                        board[i][col] = 0

        # if the queen can not be placed in any row in
        # this column col then return false
        return False

# This function solves the N Queen problem using
# Backtracking. It mainly uses solveNQUtil() to
# solve the problem. It returns false if queens
# cannot be placed, otherwise return true and
# placement of queens in the form of 1s.
# note that there may be more than one
# solutions, this function prints one of the
# feasible solutions.
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

# driver program to test above function
solveNQ()
```