Experiment 2: 8-Queen Program

Aim:

Implement an Algorithm in Python for solving 8-Queen Problem.

Python Program:

```
from pprint import pprint
N = 8

def solveNQueens(board, col):
        if col == N:
        pprint(board)
        return True
        for i in range(N):
        if isSafe(board, i, col):
                board[i][col] = 1
                if solveNQueens(board, col +
1):
                        return True
                board[i][col] = 0
        return False

def isSafe(board, row, col):
        for x in range(col):
        if board[row][x] == 1:
                return False
        for x, y in zip(range(row, -1, -1),
range(col, -1, -1)):
        if board[x][y] == 1:
                return False
        for x, y in zip(range(row, N, 1),
range(col, -1, -1)):
        if board[x][y] == 1:
                return False
        return True

board = [[0 for x in range(N)] for y in
range(N)]
if not solveNQueens(board, 0):
        print("No solution found")
```

Output:

```
[[1, 0, 0, 0, 0, 0, 0, 0],
 [0, 0, 0, 0, 0, 0, 1, 0],
 [0, 0, 0, 0, 1, 0, 0, 0],
 [0, 0, 0, 0, 0, 0, 0, 1],
 [0, 1, 0, 0, 0, 0, 0, 0],
 [0, 0, 0, 1, 0, 0, 0, 0],
 [0, 0, 0, 0, 0, 1, 0, 0],
 [0, 0, 1, 0, 0, 0, 0, 0]]
```

Result:

Code has been Implemented successfully.