N_QUEEN PROBLEM

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REG NO: 22BCE9292 SLOT :L7+L8

1)Solve N queen problem

```python
import numpy as np
import sys
global N
N=8



def issafe(matrix,row,col):

    # for the left diagonal
    for i,j in zip(range(row, -1,-1), range(col, -1,-1)):

        if matrix[i][j]==1:

            return False
    #left diagonal down

    for i,j in zip(range(row,N,1),range(col,N,1)):
        if matrix[i][j]==1:
                You, 3 minutes ago • Uncommitted changes
            return False

    #for the right diagonal
    for  i, j in zip(range(row, N ,1) ,range(col,-1 ,-1)):
        if matrix[i][j]==1 :
            return False
    #right diagonal up
    for  i, j in zip(range(row, -1 ,-1) ,range(col,N,1)):
        if matrix[i][j]==1 :
            return False
    #checking in the particular row
    for i in range(col):
        if matrix[row][i]==1:
            return False
    return True
```

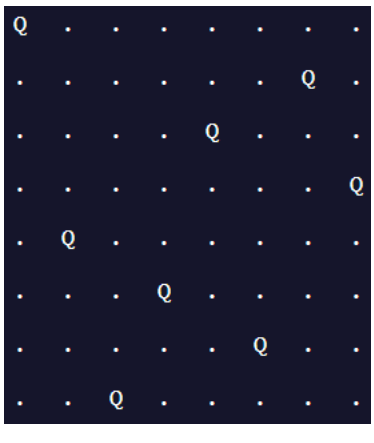
```
def solveNqueen(matrix,column_to_solve):
    if column_to_solve>=N:
        return True

    for i in range(N):
        if issafe(matrix,i,column_to_solve):

            matrix[i][column_to_solve]=1

            if solveNqueen(matrix,column_to_solve+1)==True:
                print("wait for some time")

                return True


            matrix[i][column_to_solve]=0

    return False

def printmatrix(matrix):
    for  i in range(N):
        print("\n")
        for j in range(N):
            if matrix[i][j]==1:
                print(" Q ",end=" ")
            else:
                print(" . ",end=" ")

def printreversedmatrix(matrix):
    for  i in range(N):
        print("\n")
        for j in range(N):
            if matrix[j][i]==1:
                print(" Q ",end=" ")
            else:
                print(" . ",end=" ")

def matrix_mirror(matrix):
    for i in range(N-1,-1,-1):
        print("\n")
        for j in range(N-1,-1,-1):
            if matrix[j][i]==1:
                print(" Q ",end=" ")
            else:
                print(" . ",end=" ")
```

```
def start():
    print("started")

    matrix=np.zeros((N,N))

    if solveNqueen(matrix,0):
        printmatrix(matrix)
        print("\n\n posiblity 2\n")
        printreversedmatrix(matrix)
        print("\n\n posiblity 3\n")
        matrix_mirror(matrix)
        print("\n\n posiblity 4\n")
        matrix_mirror(matrix)




        print("\n\n\n\n")


    print(matrix)

start()
```

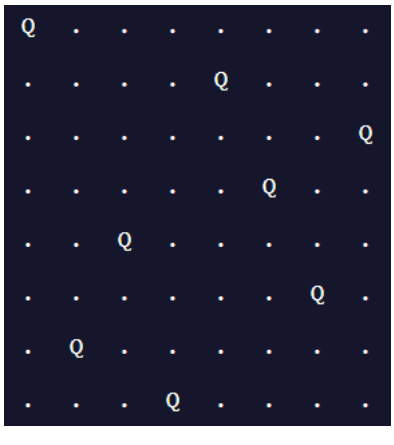
OUTPUT:

8 QUEEN

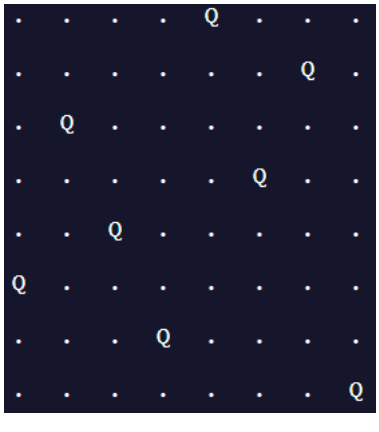
Possiblity:1



Possiblity:2



Possiblity:3



Possiblite:4