**ARTIFICIAL INTELLIGENCE**

**LAB ASSIGNMENT – 1**

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**Q)** **1.WRITE A PROGRAM TO SOLVE ANY 2 PLAYER GAME SCENARIOS**

**EX: 8 PUZZLE PROBLEM**

**CODE :**

import java. util.Arrays;

class Main

{

public static final int N = 8;

private static boolean isSafe(char mat[][], int r, int c)

{

for (int i = 0; i < r; i++)

{

if (mat[i][c] == 'Q') {

return false;

}

}

for (int i = r, j = c; i >= 0 && j >= 0; i--, j--)

{

if (mat[i][j] == 'Q')

{

return false;

}

}

for (int i = r, j = c; i >= 0 && j < N; i--, j++)

{

if (mat[i][j] == 'Q')

{

return false;

}

}

return true;

}

private static void printSolution(char mat[][])

{

for (int i = 0; i < N; i++) {

System.out.println(Arrays.toString(mat[i]).replaceAll(",", ""));

}

System.out.println();

}

private static void nQueen(char mat[][], int r)

{

if (r == N)

{

printSolution(mat);

return;

}

for (int i = 0; i < N; i++)

{

if (isSafe(mat, r, i)) {

mat[r][i] = 'Q';

nQueen(mat, r + 1);

mat[r][i] = '4';

}

}

}

public static void main(String[] args)

{

char[][] mat = new char[N][N];

for (int i = 0; i < N; i++) {

Arrays.fill(mat[i], '4');

}

nQueen(mat,0);

}

}

**OUTPUT :**

java -cp /tmp/VRha0U9NAm Main

[Q 4 4 4 4 4 4 4]

[4 4 4 4 Q 4 4 4]

[4 4 4 4 4 4 4 Q]

[4 4 4 4 4 Q 4 4]

[4 4 Q 4 4 4 4 4]

[4 4 4 4 4 4 Q 4]

[4 Q 4 4 4 4 4 4]

[4 4 4 Q 4 4 4 4]

[Q 4 4 4 4 4 4 4]

[4 4 4 4 4 Q 4 4]

[4 4 4 4 4 4 4 Q]

[4 4 Q 4 4 4 4 4]

[4 4 4 4 4 4 Q 4]

[4 4 4 Q 4 4 4 4]

[4 Q 4 4 4 4 4 4]

[4 4 4 4 Q 4 4 4]

[Q 4 4 4 4 4 4 4]

[4 4 4 4 4 4 Q 4]

[4 4 4 Q 4 4 4 4]

[4 4 4 4 4 Q 4 4]

[4 4 4 4 4 4 4 Q]

[4 Q 4 4 4 4 4 4]

[4 4 4 4 Q 4 4 4]

[4 4 Q 4 4 4 4 4]

[Q 4 4 4 4 4 4 4]

[4 4 4 4 4 4 Q 4]

[4 4 4 4 Q 4 4 4]

[4 4 4 4 4 4 4 Q]

[4 Q 4 4 4 4 4 4]

[4 4 4 Q 4 4 4 4]

[4 4 4 4 4 Q 4 4]

[4 4 Q 4 4 4 4 4]

[4 Q 4 4 4 4 4 4]

[4 4 4 Q 4 4 4 4]

[4 4 4 4 4 Q 4 4]

[4 4 4 4 4 4 4 Q]

[4 4 Q 4 4 4 4 4]

[Q 4 4 4 4 4 4 4]

[4 4 4 4 4 4 Q 4]

[4 4 4 4 Q 4 4 4]

[4 Q 4 4 4 4 4 4]

[4 4 4 4 Q 4 4 4]

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[Q 4 4 4 4 4 4 4]

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[4 4 4 4 4 4 4 Q]

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