

ARTIFICIAL INTELLIGENCE

LAB ASSIGNMENT – 2

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N-Queens:

Code:

```
import java.util.*;
import java.util.Arrays;

public 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]).re
placeAll(", ", ""));
}
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] = '-';
    }
}

public static void main(String[] args)
{
    char[][] mat = new char[N][N];
    for (int i = 0; i < N; i++) {
        Arrays.fill(mat[i], '-');
    }
    nQueen(mat, 0);
}
}

```

OUTPUT :

