

# Assignment No

## N Queens

```
#include <iostream>
using namespace std;

bool isSafe(int **arr, int x, int y, int n)
{
    for (int row = 0; row < x; row++)
    {
        if (arr[row][y] == 1)
            return false;
    }
    int row = x;
    int col = y;
    while (row >= 0 && col >= 0)
    {
        if (arr[row][col] == 1)
            return false;

        row--;
        col--;
    }

    row = x;
    col = y;
    while (row >= 0 && col < n)
    {
        if (arr[row][col] == 1)
            return false;

        row--;
        col++;
    }
    return true;
}

bool nQueen(int **arr, int x, int n)
{
    if (x >= n)
        return true;

    for (int col = 0; col < n; col++)
    {
        if (isSafe(arr, x, col, n))
        {
            arr[x][col] = 1;
            if (nQueen(arr, x + 1, n))
                return true;

            arr[x][col] = 0;
        }
    }
}
```

```

    }
    return false;
}

int main()
{
    int n;
    cin >> n;
    int **arr = new int *[n];
    for (int i = 0; i < n; i++)
    {
        arr[i] = new int[n];
        for (int j = 0; j < n; j++)
        {
            arr[i][j] = 0;
        }
    }

    if (nQueen(arr, 0, n))
    {
        for (int i = 0; i < n; i++)
        {
            for (int j = 0; j < n; j++)
            {
                cout << arr[i][j] << " ";
            }
            cout << endl;
        }
    }
}

```

## Output:

```

1 #include <iostream>
2 using namespace std;
3
4
5 bool isSafe(int **arr, int x, int y, int n)
6 {
7     for (int row = 0; row < x; row++)
8     {
9         if (arr[row][y] == 1)
10            return false;
11     }
12     int row = x;
13     int col = y;
14     while (row >= 0 && col >= 0)
15     {
16         if (arr[row][col] == 1)
17            return false;
18
19         row--;
20         col--;
21     }
22
23     row = x;
24     col = y;
25     while (row >= 0 && col < n)
26     {
27         if (arr[row][col] == 1)

```

[Finished in 2.2s]

input.in

```

1 8

```

output.out

```

1 1 0 0 0 0 0 0
2 0 0 0 0 1 0 0
3 0 0 0 0 0 0 0 1
4 0 0 0 0 0 1 0 0
5 0 0 1 0 0 0 0 0
6 0 0 0 0 0 0 1 0
7 0 1 0 0 0 0 0 0
8 0 0 0 1 0 0 0 0
9

```