```
N-Queens Problem using hill climbing approach
Enter the number of queens
Enter the number of trials you want to want to try the algorithms
#Trail 1
00*****
* * 0 0 * 0 0 *
* * * * * * *
* * * * * * * *
* * * * * * *
* * * * * * * 0
* * * * 0 * * *
* * * * * * *
The heuristic value of the original board is: 9
Better board found at column 0 with heuristic: 9
* 0 * * * * *
* * 0 0 * 0 0 *
0 * * * * * *
* * * * * * *
* * * * * * *
* * * * * * * 0
* * * * 0 * * *
* * * * * * * *
Better board found at column 0 with heuristic: 9
* 0 * * * * *
* * 0 0 * 0 0 *
* * * * * * *
0 * * * * * *
* * * * * * *
* * * * * * * 0
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 9
* 0 * * * * *
* * 0 0 * 0 0 *
* * * * * * *
* * * * * * *
0 * * * * * *
* * * * * * * 0
* * * * Q * * *
* * * * * * *
Better board found at column 0 with heuristic: 9
* 0 * * * * *
* * 0 0 * 0 0 *
* * * * * * *
* * * * * * *
* * * * * * *
0 * * * * * * 0
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 9
```

```
* 0 * * * * *
* * 0 0 * 0 0 *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * * 0
* * * * Q * * *
0 * * * * * *
Better board found at column 1 with heuristic: 9
* * * * * * *
* * 0 0 * 0 0 *
* 0 * * * * *
* * * * * * *
* * * * * * *
* * * * * * * 0
* * * * 0 * * *
0 * * * * * *
Better board found at column 1 with heuristic: 8
* * * * * * *
* * 0 0 * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
0 * * * * * *
Better board found at column 2 with heuristic: 7
* * 0 * * * * *
* * * 0 * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
Q * * * * * * *
Better board found at column 2 with heuristic : 6
* * * * * * *
* * * Q * Q Q *
* * 0 * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * Q
* * * * 0 * * *
0 * * * * * *
Better board found at column 2 with heuristic : 6
* * * * * * *
* * * 0 * 0 0 *
* * * * * * *
* * 0 * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
```

```
0 * * * * * *
Better board found at column 2 with heuristic: 6
* * * * * * *
* * * 0 * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * 0 * 0 * * *
0 * * * * * *
Better board found at column 2 with heuristic : 6
* * * * * * *
* * * 0 * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
0 * 0 * * * * *
Better board found at column 3 with heuristic : 3
* * * 0 * * * *
* * * * * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
0 * 0 * * * *
Better board found at column 4 with heuristic: 3
* * * 0 * * * *
* * * * * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 * * *
0 * 0 * * * *
Better board found at column 5 with heuristic : 3
* * * 0 * * * *
* * * * * 0 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * Q * * *
0 * 0 * * * *
Better board found at column 5 with heuristic : 3
* * * 0 * * * *
* * * * * * 0 *
* * * * * * *
* * * * * 0 * *
* 0 * * * * *
```

```
* * * * * * * 0
* * * * 0 * * *
0 * 0 * * * *
Better board found at column 5 with heuristic : 3
* * * 0 * * * *
* * * * * * 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * Q
* * * * 0 0 * *
0 * 0 * * * *
Better board found at column 6 with heuristic : 3
* * * Q * * Q *
* * * * * * *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * Q Q * *
0 * 0 * * * *
Better board found at column 6 with heuristic : 3
* * * 0 * * * *
* * * * * * 0 *
* * * * * * *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 0 * *
0 * 0 * * * *
Better board found at column 6 with heuristic : 2
* * * 0 * * * *
* * * * * * *
* * * * * * 0 *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * Q Q * *
0 * 0 * * * *
Better board found at column 7 with heuristic : 2
* * * Q * * * *
* * * * * * *
* * * * * * 0 *
* * * * * * *
* 0 * * * * *
* * * * * * * 0
* * * * 0 0 * *
0 * 0 * * * * *
Soulution Not found...
#Trail 2
* 0 * * * * *
0 * * * * 0 * *
```

```
* * * * * * * 0
* * * 0 * * * *
* * * * 0 * * *
* * 0 * * * 0 *
* * * * * * *
* * * * * * *
The heuristic value of the original board is: 6
Better board found at column 0 with heuristic : 6
* 0 * * * * *
0 * * * * 0 * *
* * * * * * * 0
* * * 0 * * * *
* * * * 0 * * *
* * 0 * * * 0 *
* * * * * * *
* * * * * * *
Better board found at column 0 with heuristic : 5
* 0 * * * * *
* * * * * 0 * *
0 * * * * * * 0
* * * Q * * * *
* * * * 0 * * *
* * 0 * * * 0 *
* * * * * * *
* * * * * * *
Better board found at column 0 with heuristic : 5
* 0 * * * * *
* * * * * 0 * *
* * * * * * * 0
* * * 0 * * * *
0 * * * 0 * * *
* * 0 * * * 0 *
* * * * * * *
* * * * * * *
Better board found at column 0 with heuristic : 5
* 0 * * * * *
* * * * * 0 * *
* * * * * * * 0
* * * 0 * * * *
* * * * 0 * * *
* * 0 * * * 0 *
* * * * * * *
0 * * * * * *
Better board found at column 1 with heuristic : 5
* * * * * * *
* * * * * 0 * *
* 0 * * * * * 0
* * * 0 * * * *
* * * * Q * * *
* * 0 * * * 0 *
* * * * * * *
0 * * * * * * *
```

```
Better board found at column 1 with heuristic : 5
* * * * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * 0 * * * *
* * * * 0 * * *
* * Q * * * Q *
* * * * * * *
0 * * * * * *
Better board found at column 2 with heuristic : 3
* * 0 * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * 0 * * * *
* * * * 0 * * *
* * * * * * 0 *
* * * * * * *
0 * * * * * *
Better board found at column 3 with heuristic: 1
* * Q Q * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * * * * *
* * * * 0 * * *
* * * * * * 0 *
* * * * * * *
0 * * * * * *
Better board found at column 3 with heuristic : 1
* * 0 * * * *
* * * * * 0 * *
* * * * * * Q
* 0 * * * * *
* * * * 0 * * *
* * * * * * 0 *
* * * Q * * * *
0 * * * * * *
Better board found at column 3 with heuristic: 1
* * 0 * * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * * * * *
* * * * Q * * *
* * * * * * 0 *
* * * * * * *
0 * * 0 * * * *
Better board found at column 4 with heuristic : 1
* * 0 * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * * * * *
* * * * 0 * * *
* * * * * * 0 *
```

```
* * * * * * *
0 * * 0 * * * *
Better board found at column 5 with heuristic : 1
* * 0 * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * * * * *
* * * * 0 * * *
* * * * * * 0 *
* * * * * * *
0 * * 0 * * * *
Better board found at column 6 with heuristic : 1
* * 0 * * * *
* * * * * Q * *
* * * * * * * 0
* 0 * * * * *
* * * * Q * * *
* * * * * * 0 *
* * * * * * *
0 * * 0 * * * *
Better board found at column 7 with heuristic : 1
* * 0 * * * * *
* * * * * 0 * *
* * * * * * * 0
* 0 * * * * *
* * * * 0 * * *
* * * * * * 0 *
* * * * * * *
0 * * 0 * * * *
Soulution Not found...
#Trail 3
* * 0 * * * * *
* * * * * * 0 0
* 0 * 0 * * * *
0 * * * * * *
* * * * * 0 * *
* * * * * * *
* * * * Q * * *
* * * * * * *
The heuristic value of the original board is: 4
Better board found at column 0 with heuristic : 4
0 * 0 * * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
* * * * * 0 * *
* * * * * * *
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 4
* * 0 * * * * *
* * * * * * 0 0
```

```
* 0 * 0 * * * *
0 * * * * * *
* * * * * 0 * *
* * * * * * *
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic : 4
* * 0 * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
0 * * * * 0 * *
* * * * * * *
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 4
* * 0 * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
* * * * * 0 * *
0 * * * * * *
* * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 4
* * 0 * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
* * * * * 0 * *
* * * * * * *
0 * * * 0 * * *
* * * * * * *
Better board found at column 0 with heuristic: 4
* * 0 * * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
* * * * * 0 * *
* * * * * * *
* * * * Q * * *
0 * * * * * *
Better board found at column 1 with heuristic : 4
* * 0 * * * * *
* * * * * * 0 0
* 0 * 0 * * * *
* * * * * * *
* * * * * 0 * *
* * * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 1 with heuristic: 4
```

```
* * 0 * * * * *
* * * * * * 0 0
* * * 0 * * * *
* 0 * * * * *
* * * * * 0 * *
* * * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 1 with heuristic : 3
* * 0 * * * * *
* * * * * * 0 0
* * * 0 * * * *
* * * * * * *
* * * * * Q * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 3 with heuristic : 3
* * 0 0 * * * *
* * * * * * 0 0
* * * * * * *
* * * * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 3 with heuristic : 3
* * 0 * * * * *
* * * * * * 0 0
* * * 0 * * * *
* * * * * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 3 with heuristic : 3
* * 0 * * * * *
* * * * * * 0 0
* * * * * * *
* * * 0 * * * *
* * * * * Q * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 4 with heuristic : 3
* * Q * * * * *
* * * * * * 0 0
* * * * * * *
* * * 0 * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
```

```
0 * * * * * *
Better board found at column 5 with heuristic : 3
* * 0 * * * * *
* * * * * * 0 0
* * * * * * *
* * * 0 * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 6 with heuristic: 3
* * 0 * * * * *
* * * * * * 0 0
* * * * * * *
* * * 0 * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 6 with heuristic : 2
* * 0 * * * * *
* * * * * * * 0
* * * * * * 0 *
* * * 0 * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * *
Better board found at column 6 with heuristic: 2
* * 0 * * * * *
* * * * * * * 0
* * * * * * *
* * * 0 * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * 0 * * *
0 * * * * * 0 *
Better board found at column 7 with heuristic : 2
* * 0 * * * * *
* * * * * * * 0
* * * * * * *
* * * Q * * * *
* * * * * 0 * *
* 0 * * * * *
* * * * Q * * *
0 * * * * * 0 *
Soulution Not found...
#Trail 4
* * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
```

```
* * * * * * *
* * 0 * * * *
00****
* * * * * * *
The heuristic value of the original board is: 10
Better board found at column 0 with heuristic : 8
0 * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
* * * * * * *
* * 0 * * * * *
* 0 * * * * *
* * * * * * * *
Better board found at column 0 with heuristic: 7
* * * 0 * * 0 *
0 * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
* * * * * * *
* * 0 * * * * *
* 0 * * * * *
* * * * * * *
Better board found at column 0 with heuristic : 6
* * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* 0 * * * * *
* * * * * * *
Better board found at column 1 with heuristic : 6
* * * 0 * * 0 *
* 0 * * * 0 * *
* * * * 0 * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * * * *
* * * * * * *
Better board found at column 1 with heuristic : 6
* * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* 0 * * * * *
0 * * * * * *
* * 0 * * * *
* * * * * * *
* * * * * * *
Better board found at column 1 with heuristic : 6
* * * Q * * Q *
```

```
* * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* 0 * * * * *
* * * * * * *
Better board found at column 1 with heuristic : 5
* * * 0 * * 0 *
* * * * * Q * *
* * * * 0 * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * * * *
* 0 * * * * *
Better board found at column 2 with heuristic : 5
* * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* * 0 * * * * *
0 * * * * * *
* * * * * * *
* * * * * * *
* 0 * * * * *
Better board found at column 2 with heuristic : 5
* * * 0 * * 0 *
* * * * * 0 * *
* * * * 0 * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * * * *
* 0 * * * * *
Better board found at column 4 with heuristic : 4
* * * 0 * * 0 *
* * * * 0 0 * *
* * * * * * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * * * * *
* 0 * * * * *
Better board found at column 4 with heuristic : 3
* * * Q * * Q *
* * * * * 0 * *
* * * * * * * 0
* * * * 0 * * *
0 * * * * * *
* * 0 * * * * *
* * * * * * *
* 0 * * * * *
```

```
Better board found at column 4 with heuristic: 2
* * * 0 * * 0 *
* * * * * 0 * *
* * * * * * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * 0 * * *
* 0 * * * * *
Better board found at column 5 with heuristic : 2
* * * 0 * * 0 *
* * * * * 0 * *
* * * * * * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * Q * * *
* 0 * * * * *
Better board found at column 5 with heuristic : 2
* * * Q * * Q *
* * * * * * * *
* * * * * * * 0
* * * * * 0 * *
0 * * * * * *
* * 0 * * * *
* * * * 0 * * *
* 0 * * * * *
Better board found at column 5 with heuristic : 2
* * * 0 * * 0 *
* * * * * * *
* * * * * * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * Q Q * *
* 0 * * * * *
Better board found at column 7 with heuristic : 2
* * * Q * * Q *
* * * * * * *
* * * * * * * 0
* * * * * * *
0 * * * * * *
* * 0 * * * * *
* * * * Q Q * *
* 0 * * * * *
Soulution Not found...
```