Heaven's Light is Our Guide

Rajshahi University of Engineering and Technology

Department of Computer Science and Engineering

Course No: CSE.2202

Course Title: Sessional based on CSE.2201 (Computer Algorithms)

Report On: Lab Final Problem 6

Submitted To

Dr. Md. Ali Hossain, Associate Professor, Dept. of CSE, RUET

Biprodip Pal, Assistant Professor, Dept. of CSE, RUET

Submitted By

Md. Ariful Islam
Roll No: 1803046
Section: A
Department: CSE

Date: 09-08-2021

Problem 6:

Algorithm:

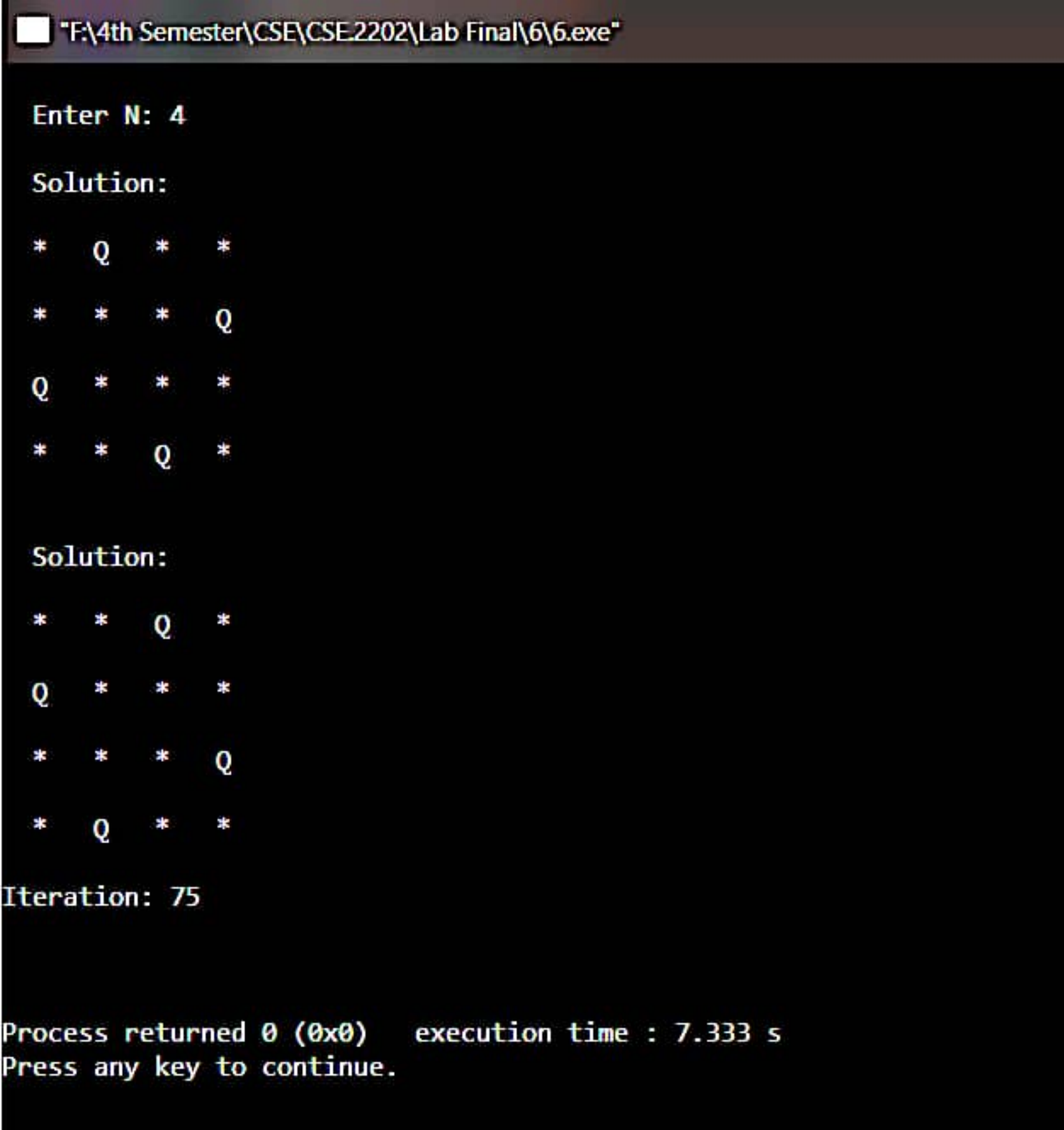
```
① IsSafe ( k, i) {

    for ( j := 1 to k-1) {

        if(x[j] = i) or
            abs (x[j] - i) = abs (j - k) then,

            return false ;
        }
    return true;

}

ii) NQueens (k, n) {

    for ( i = 1 to n) {
        if (IsSafe) then {
            x[k] = i ;
        if (k = n) print output;
        else NQueen (k+1, n); } }

}
```

Code :

```
#include <bits/stdc++.h>
using namespace std;
typedef long long ll;
int arr[50] = 0;
vector <int> xy;

bool issafe (int x, int y, int &n){
    bool result = true;
    int f = 1;
    for (int k = x-1; k > 0; k--){
    if (arr[k] = y){ result = false;
    break }

    if ((x+y) = = arr [k] + k) && y < n){
        result = false;
        break;
    }
    if (y > 1 && arr[k] = (y-f)) {
        result = false;
        break;
    } f += 1;
}
```

```
    return result;
}

void NQ(int a,int &n){
for(int i=1; i<=n; i++){
  if(isafe(a,i,n)){
      arr[a]=i;
    if(a==n){
      cout<<"\nSolutions:"<<endl;
  for(int j=1;j<=n;j++){
    for(int k=1;k<=n;k++){
      if(arr[j]==k){
        cout<<"Q  ";
      }
    else{ cout<<"*  ";}
    }
  cout<<endl;
  }
  else{ NQ(a+1,n)}
}
}
}
```

```
int main(){
    int n;
    cout << "Enter N: ";
    cin >> n;
    if (n >= 4){
        NQ(1,n);
    }
    return 0;
}
```


"F:\4th Semester\CSE\CSE.2202\Lab Final\6\6.exe"
Enter N: 4
Solution:
* Q * *
* * * Q
Q * * *
* * Q *
Solution:
* * Q *
Q * * *
* * * Q
* Q * *
Iteration: 75
Process returned 0 (0x0) execution time : 7.333 s
Press any key to continue.