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Batch: B3

Practical 8: Design and implement a solution for a problem of placing eight chess queens on an 8×8 chessboard so that no two queens threaten each other. Thus, a solution requires that no two queens share the same row, column, or diagonal.

Code:

```
#include<iostream>
```

```
using namespace std;
```

```
int grid[10][10];
```

```
void print(int n) {
```

```
    for (int i = 0; i <= n-1; i++) {
```

```
        for (int j = 0; j <= n-1; j++) {
```

```
            cout<<grid[i][j]<< " ";
```

```
        }
```

```
        cout<<endl;
```

```
    }
```

```
    cout<<endl;
```

```
    cout<<endl;
```

```
}
```

```
bool isSafe(int col, int row, int n) {
```

```
    for (int i = 0; i < row; i++) {
```

```
    if (grid[i][col]) {  
        return false;  
    }  
}
```

```
for (int i = row, j = col; i >= 0 && j >= 0; i--, j--) {  
    if (grid[i][j]) {  
        return false;  
    }  
}
```

```
for (int i = row, j = col; i >= 0 && j < n; j++, i--) {  
    if (grid[i][j]) {  
        return false;  
    }  
}  
return true;  
}
```

```
bool solve (int n, int row) {
```

```
    if (n == row) {  
        print(n);  
  
        return true;  
    }
```

```
    bool res = false;  
    for (int i = 0; i <= n-1; i++) {  
        if (isSafe(i, row, n)) {
```

```

        grid[row][i] = 1;

        res = solve(n, row+1) || res;

        grid[row][i] = 0;

    }
}
return res;
}
int main()
{
    ios_base::sync_with_stdio(false);
    cin.tie(NULL);

    int n,count;

    cout<<"Enter the number of queen"<<endl;
    cin >> n;

    for (int i = 0;i < n;i++) {
        for (int j = 0;j < n;j++) {
            grid[i][j] = 0;
        }
    }

    bool res = solve(n, 0);

    cout<<count;

    if(res == false) {
        cout <<endl<<"Solution is not possible" << endl; //if there is no possible solution
    } else {
        cout << endl;
    }
}

```

```
}
```

```
return 0;
```

```
}
```

Output:

```
C:\Users\susha\Documents\DAA Lab\N-Queen practical 8.exe
Enter the number of queen
2
0
Solution is not possible

-----
Process exited after 2.604 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\susha\Documents\DAA Lab\N-Queen practical 8.exe
Enter the number of queen
4
0 1 0 0
0 0 0 1
1 0 0 0
0 0 1 0

0 0 1 0
1 0 0 0
0 0 0 1
0 1 0 0

0

-----
Process exited after 2.899 seconds with return value 0
Press any key to continue . . .
```

