PRACTICAL SUBMISSION RECORD- A.Y. 2025-26

Class: FYMCA Div: B **Semester: I**	**Course Code: MCA01505** **Course Name: DSA Laboratory**	**Batch: F2**
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CO No: CO507.3	**Assignment No: 7**	

Title: To write a C++ program using a **recursive function** to generate all possible solutions of the **4-Queen's problem**, using a **queue data structure** to store and manage the positions of queens.

Code:

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

int board[4];
int countSol = 0;

// Check if queen can
be placed
bool isSafe(int row, int
col) {
   for (int i = 0; i <
row; i++) {
      if (board[i] == col
|| abs(board[i] - col) ==
row - i)
         return false;
   }
   return true;
}

// Recursive function
void solve(int row) {
   if (row == 4) {
      queue<int> q;
      for (int i = 0; i < 4;
i++)

q.push(board[i]);

      cout << "Solution
" << ++countSol << ":
";
      while (!q.empty())
{
         cout <<
q.front() << " ";
         q.pop();
      }
      cout << endl;
      return;
```

```
    }

    for (int col = 0; col <
4; col++) {
        if (isSafe(row,
col)) {
            board[row] =
col;
            solve(row + 1);
        }
    }
}

int main() {
    solve(0);
    return 0;
}
```

Output:

Solution 1: 1 3 0 2
Solution 2: 2 0 3 1