Walchand College of Engineering, Sangli
Computer Science & Engineering
Third Year
Course: Computer Algorithm Lab

Assignment No. 10

Complexity classes and Approximation algorithms:

1) In defense systems or sensor networks, placing radars/detectors such that none interfere with each other mimics the n-Queen problem.

Implement the n × n Queen problem using backtracking.
Extend the solution for n = 8 and display all possible solutions.
Analyze the time complexity and discuss why it's an NP problem.

2) In wireless networks or exam scheduling, we must assign frequencies/time slots so that no two adjacent nodes (or exams) share the same color.

Implement Graph Colouring using Backtracking.
Input: Graph adjacency matrix.
Output: Minimum number of colors required and coloring assignment.
Verify that adjacent vertices do not share the same color