Design & Analysis of Algorithms

Monsoon Semester III 2020-21

Lab - 4 Due Date: **28 September 2020**

Topics: Backtracking

INTRODUCTION

In the lab, we would be exploring backing tracking algorithm to solve the problems.

EXERCISE

1. Implement a backtracking algorithm for solving N Queen problem. Compute all possible solution for N Queen and also compute the number of backtracks. Perform the experiment from N = 2 to 9. LeetCode Problem

2. Solve a Suduko problem using backtracking approach and count the number of backtracks. LeetCode Problem

$$\begin{bmatrix} 5 & 1 & 7 & 6 & 0 & 0 & 0 & 3 & 4 \\ 2 & 8 & 9 & 0 & 0 & 4 & 0 & 0 & 0 \\ 3 & 4 & 6 & 2 & 0 & 5 & 0 & 9 & 0 \\ 6 & 0 & 2 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 3 & 8 & 0 & 0 & 6 & 0 & 4 & 7 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 9 & 0 & 0 & 0 & 0 & 0 & 7 & 8 \\ 7 & 0 & 3 & 4 & 0 & 0 & 5 & 6 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

3. Given a set of candidate numbers (candidates) (without duplicates) and a target number (target), find all unique combinations in candidates where the candidate numbers sums to target. eg. W : [5, 10, 12, 13, 15, 18] and target = 30. LeetCode Problem