UCS415 – Design and Analysis of Algorithms

Lab Assignment 4

Write a program to implement the following using backtracking approach:

- We need to find out all the possible arrangements in which N queens can be seated in each row and each column so that all queens are safe. The queen moves in 8 directions and can directly attack in these 8 directions only.
- Given a set[] of non-negative integers and a value sum, the task is to print the subset of the given set whose sum is equal to the given sum.

  Input: set[] = {1,2,1}, sum = 3

  Output: [1,2],[2,1]

- Given an undirected graph and a number m, the task is to color the given graph with at most m colors such that no two adjacent vertices of the graph are colored with the same color.

  Input: graph = {0, 1, 1, 1},
  {1, 0, 1, 0},
  {1, 1, 0, 1},
  {1, 0, 1, 0}

  Output: Solution Exists: Following are the assigned colors: 1 2 3 2

  Input: graph = {1, 1, 1, 1},
  {1, 1, 1, 1},
  {1, 1, 1, 1},
  {1, 1, 1, 1}

  Output: Solution does not exist