Week 2

Design and Analysis of Algorithm Lab [DSE 2243]

1) Write a program to implement Knapsack problem using brute-force design technique and analyze its time efficiency.
Knapsack Problem: Given *n* items of known weights $w_1, w_2 \ldots w_n$ values $v_1, v_2, \ldots v_n$ and a knapsack of capacity *B*, find the most valuable subset of items that fit into the knapsack.

2) Write a program for assignment problem by brute-force technique. Analyze its time efficiency.

3) Write a program for depth-first search of a graph. Identify the push and pop order of vertices.

4) Write a program for breadth-first search of a graph.

Additional Questions:

a) Write a program to check whether a graph is bipartite or not using:

i) DFS to check for bipartite

ii) BFS to check for bipartite

Note: A graph is said to be bipartite if all its vertices can be partitioned into two disjoint subsets X and Y so that every edge connects a vertex in X with a vertex in Y.