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Instructions

1. This is an individual assignment. Your code must completely be your own. You are not to take guidance from any general-purpose code or problem specific code meant to solve these or related problems. Remember, it is easy to detect this kind of plagiarism
  4. **Write only a single main function.** You can call the required functions from the main function.
  4. Name the file as follows: S2021xxxxx\_A012.c
  5. DO NOT zip. **Upload a single .c file** directly to your submission in the common Google classroom.
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Q1 Write a program for solving the knapsack problem using dynamic programming [3]

**Expected Input and Output:**

number of items, n=4

weight of items, w [] =2 3 4 5

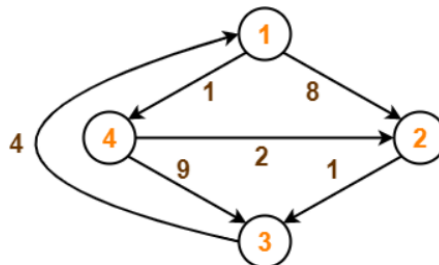
value of items, v [] =3 4 5 6

capacity of knapsack, M=5

maximum attainable value of items=7 by collecting first and second item in the knapsack

Q2 Write a function to find shortest distances between every pair of vertices in a given edge weighted directed Graph. Use Floyd Warshall Algorithm. [3]

*Note: Use adjacency list for graph representation.*



Q3 You are given an integer array representing coins of different denominations and an integer amount representing a total amount of money. Write a function to Return the fewest number of coins that you need to make up that amount. If that amount of money cannot be made up by any combination of the coins, return -1. [4]

Note: You may assume that you have an infinite number of each kind of coin and Solve the problems using Dynamic Programming

**EXAMPLE:**

Input: coins = [1,2,5], amount = 11

Output: 3

Explanation: 11 = 5 + 5 + 1