CS-205, Assignment –VI

Assignment Date: 04/08/2017 **Submission Deadline: 10/09/2017**

A. Given a list of N coins, their values ($\mathbf{V_1}$, $\mathbf{V_2}$, … , $\mathbf{V_N}$), and the total sum **S**. Write a dynamic programming to find the minimum number of coins the sum of which is **S** (we can use as many coins of one type as we want), or report that it's not possible to select coins in such a way that they sum up to **S**. When solution is possible also provide exact number of coins of each denomination.

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B. You have to enter into puzzler's house. Puzzler's house contains (m*n) numbers of rooms. Where m is the number of rows and n is the number of columns. Rooms are arranged in m by n matrix like structure. Your want to reach room (m,n) starting from room (0,0) in minimum cost. There is a cost associated with every room (take it as input). You are allowed to move downward, rightward or diagonally. For example from room (i,j) you can reach to room (i+1,j) or (I,j+1) or (i+1,j+1). Write a dynamic programming to find out the total minimum cost and the required move at each step.

Example Input:
Value of m=4 and n =3 and cost corresponding to each room is given in matrix format

row	column	0	1	2
0		**1**	2	4
1		10	**5**	7
2		12	9	**3**
3		6	4	**7**

Output:
Total cost: 1+5+3+7=16
Move: diagonal, diagonal, downward

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C. You have a set of n integers. Write a dynamic programming which finds two sets (Set1 and Set2) from these n integers such that it minimizes difference between |Sum(Set1) – Sum(Set2)|, where Sum(S) denotes sum of all elements belong to set S.

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