

## CS214 – Lab10 (Week12): The Knapsack Problem

### Objective:

- To develop working knowledge of the concepts learned from Lectures
- To appreciate algorithm design with the Knapsack Problem Algorithms
- To develop algorithmic thinking in programming simple algorithms

### Activities:

1. Given a bag with maximum capacity of 20LB. Show an approach to an optimal solution for each Knapsack Problem case below. Compare key computations, if any, in the approach(es) you applied.  
  
CASE 1    itemA: 12LB,\$30; itemB: 7LB,\$20; itemC: 25LB,\$40  
CASE 2    itemA: 12LB,\$30; itemB: 7LB,\$40; itemC: 8LB,\$10  
CASE 3    itemA: 12LB,\$30; itemB: 7LB,\$40; itemC: 1LB,\$5
2. There are 4 items: A weights 2LB has profit \$40, B weights 5LB has profit \$30, C weights 10LB has profit \$50, and D weights 5LB has profit \$10. Compute the maximum total profit you can take from any of the 4 items with a knapsack weight 16LB. You cannot take any portions of an item but the whole.