Assignment on Greedy, Dynamic and Divide and Conquer

1. Illustrate the operation of merge sort on the array A = {3, 41, 52, 26, 38, 57, 9, 49}. Explain the algorithm neatly step by step. Also give a graphical view of the solution.

2. Find an optimal solution to the knapsack instance n, m, $(p_1, p_2, p_3, \cdots, p_n)$, and $(w_1, w_2, w_3, \cdots, w_n)$. Greedy strategy to get the optimal solution is to consider the objects in order of non-increasing density. Arrange the objects according to insertion sort before applying greedy technique.

3. Find an optimal solution to the knapsack instance n, m, $(p_1, p_2, p_3, \cdots, p_n)$, and $(w_1, w_2, w_3, \cdots, w_n)$. Obtain the optimal solution using dynamic programming after rearrangement of profits using selection sort.

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