考試科目	資料結構 4162	所別	資訊管理學系/科技組	考試時間	2月27日(六) 第三節

1. Find the longest common subsequence of two strings X[0..m-1] and Y[0..n-1], where X and Y are two strings with length m and n, respectively. Let L[i,j] be the longest common subsequence of X[0..i] and Y[0..j].

   (10%) Specify the recurrence relation of L[i,j] for dynamic programming

   (20%) Consider X = AABBSCHAAA, Y = BABCSCA. Show the values of L[i,j] in a two dimension array

2. Build an AVL binary search tree by inserting the following keys.

   15, 3, 12, 7, 35, 28, 16, 13, 29, 20, 2, 38, 18, 22, 36

   (20%) Show the construction step by step. (Hint: rebalance tri-nodes when the difference of heights of sub trees is larger than 1)

3. Consider a hash table storing the following keys:

   105, 9, 25, 54, 42, 26, 33, 36, 29, 41, 22, 12, 8, 53.

   (20%) Let N=23. h(k) = k mod 23 and d(k) = 11- k mod 11. Show the hash table that handles collision with double hashing.

4. Below is the cost between two places (undirected).

   Taidong, Kaoshiung, 450; Taidong, GreenIsland, 800; Kaoshiung, Kenting, 400; Taipei, Kaoshiung, 650; Taipei, Taidong, 750; Taipei, Haulian, 500; Hualian, Taidong, 350; Hualian, GreenIsland, 850; Taidong, Kenting, 300; Taipei, Taichung, 400; Taichung, Nanto, 300; Nanto, Hualian, 400

   (10%) Draw an undirected graph that includes all the above information with vertices (labeled with the place name) and edges (labeled with the cost)

   (20%) Represent the graph using the structure of adjacency matrices

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。