**21-April -2021 Lab Exercises**

1. Create an AVL Tree to store the characters/alphabets by strictly following AVL properties. Write suitable routines for insertion, deletion and display operations. In addition, write suitable routines for the following operations too:
   1. Find the grandparent of the node having maximum value in AVL tree.
   2. Find the parent’s sibling for the node having minimum value in AVL tree.
   3. Display the longest path in the tree possessing maximum height.
   4. Difference between the height of left sub tree and right sub tree of the given node. (To check whether it is balanced)
   5. Returning the address of the parent and grandparent once the node gets deleted.
2. Create a Telephone dictionary which consists of Telephone number, Name and Address of the customer (Use AVL tree for implementation). Perform the following operations:
   1. Insert into the dictionary whenever new customer comes.
   2. Delete the entry from the dictionary if the customer leaves.
   3. If name is given as input, corresponding telephone number and address needs to be retrieved.
   4. Change of address can be provided to the customers (But change of customer name and telephone number should not be provided. Use telephone number as key)
   5. Suitable display operations for every operation stated above.
   6. Display of names in the dictionary if partial match in the name occurs (partial match occurs for 3 letters – Assume name can be a maximum of 7 characters)