**Lab Assignment 9**

**(Week 6 – Lab A and Lab B)**

**Q1.** Write a program to construct an AVL tree by inserting following elements (one by one): 10, 20, 30, 40, 50, 45, 35, 25, 15, 5, 8, 18, 28, 38, and 48. Display the in-order traversal of the constructed AVL tree. Now, one by one delete following elements: 38, 50, and 10 from the AVL tree. Further, display the in-order traversal of the updated AVL.

**Q2.** It is desired to check whether given BST is an AVL Tree or not. Write a program to perform the desired task.

**Q3.** It is desired to insert following elements {10, 20, 30, 40, 50, 45, 35, 25, 15, 5, 8, 18, 28, 38, and 48} into (a) B Tree of Order (double pass) 3, and (b) B Tree of Degree (single pass) 2. Write a program to construct both the B Trees by inserting the mentioned elements one by one. Traverse each node of the B Tree in pre-order and display all information/key stored in a node while traversal. Further you need to delete following elements (one by one) from both B Trees: 18, 50, 25, 30, and 28. After deletion, traverse each node of the B Tree in pre-order and display all information/key stored in a node while traversal.

**Q4.** It is desired to insert following elements {10, 20, 30, 40, 50, 45, 35, 25, 15, 5, 8, 18, 28, 38, and 48} into B+ Tree of Order 3. Write a program to construct the B+ Trees by inserting the mentioned elements one by one. Traverse each node of the B+ Tree in pre-order and display all partitioning information stored in a node while traversal. Further you need to delete following elements (one by one) from the constructed B+ Trees: 18, 50, 25, 30, and 28. At leaf level, traverse each node and print all keys/information stored in the data nodes