Instructions

1. This is an individual assignment.

2. Your code must completely be your own. You are not to take guidance from any general-purpose code or problem specific code meant to solve these or related problems. Remember, it is easy to detect this kind of plagiarism

3. First TWO PROBLEMS are COMPULSORY. There is a partice Question which is optional. Carefully read all problems.

4. **Write only a single main function**. You can call the required functions from the main function.

4. Name the file as follows: S2021xxxxx_A05.c

5. DO NOT zip. **Upload a single .c file** directly to your submission in the common Google classroom.

Q1. Given two AVL trees T1 and T2, where the largest key in T1 is less than the smallest key in T2, Join (T1, T2) returns an AVL tree containing the union of the elements in T1 and T2. Write a Join function that runs in time O (log n), where n is the size of the resulting AVL tree.   [5]

Q2 Construct a red-black tree by inserting the keys 41, 38, 31, 12, 19, 8 into an initially empty red-black tree. Perform necessary rotation and re-coloration operation   [5]

Challenge Yourself

Practice Question:

1. Write an insert () function to implement insertion in a B tree of order 4 (or 2-4 tree) with 10 key values (no. of elements in the tree =10). Perform split () whenever required maintaining the property of tree and print the inorder traversal of the tree. From the above tree delete the root node and print the inorder traversal of the final tree.