# Assignment 4-DSA

BST, Heap, AVL, Deadline: 17-07 EOD
MM:100(20 x 5) marks
Bonus: 20 marks

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Instructions:

1. Plagiarism is not allowed. Also copying code from the internet or any other source is not allowed. If found, you will be given zero marks.
2. Submit all code in a single zip file with your roll number as file name. Example: MP19CS001.zip
3. Inside the zip, every file should be named as illustrated below:
    a. <roll_number>_<question_number>.<file_type>
    b. Example: If your roll number is MP19CS001 and the solution is for question 1, then file name will be : MP19CS001_Q1.py
4. Include a readme file.
5. You are only allowed to code in C, C++, and python.

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Questions:

1. WAP to implement BST given a binary tree and preserving the structure of the given binary tree.
2. WAP to find the third largest element in the BST. (BST must be a user input in inorder traversal).
3. Convert a minHeap to maxHeap.
4. WAP to verify whether a given binary search tree is also an AVL tree.
5. WAP to merge and sort 'k' sorted arrays efficiently using a min-heap.
6. (Bonus Question) WAP to count the number of possible BSTs that can be made using the numbers in range 1 to n. Note: “n” is a user input and while making BST, all the numbers(range 1 to n, both inclusive) should be used.