Data Structure Lab (CSE 207)

Lab 9: Tree (BST)

Submission Guidelines:

1. You cannot use any **readymade function** from the java data structure library for the lab assignment. The purpose of the course is to learn how to build the function provided in the library.
2. You are supposed to do this assignment on your own. While you may discuss the problem with other students, you are not allowed to copy any part of the code from other students or to copy from any other source. Any form of **plagiarism** will not be tolerated. If there is substantial overlap between the codes submitted by two students, both will get reduction in the course grade.
3. The project name should be your enrolment ID, e.g. '**E18CSEXXXlab9.java**'. Only submit **single java** file on LMS.
4. Your code should be commented properly. Every method should be indicated.
5. The assignment should be **shown to lab instructor** in the next lab session and **must be submitted** on LMS by **Wednesday, Oct. 2, 2019.**

Every assignment submitted by the student would carry

- name of the student
- Enrolment number
- Batch number

It should also carry the following statement:

"***I have done this assignment on my own. I have not copied any code from another student or any online source. I understand if my code is found similar to somebody else's code, my case can be sent to the Disciplinary committee of the institute for appropriate action.***"

Lab Assignment 1

In this assignment you will required to construct a Binary Search Tree (BST) of customer names and their age with the **following operations**:

- Insertion: Add a new customer in BST.
- Deletion: Delete a customer from BST.
- Printing: Display the all customer information in alphabetical order with their age.

Hint: Recursive code will be easy.

Code Syntax:

```
Class CustomerTree
{
        string name;
```

```
    int age;
    CustomerTree left, right;
}
```

- For printing the list, the code will be **P**. Your program should print the customer information in alphabetical order with their age in the consecutive lines in "output.txt".

  Customer_details(CustomerTree root){}

- For insertion, the code will be **I**, followed by space separated **name of customer name and their age** to be add in BST.

  Add_customer(CustomerTree root, string name, int age){}

Sample Input

```
I Biren 18
I Ram_Kishan 36
I Johny_Dep 56
I Abbi_Narayan_singh 23
P
```

Sample output

```
Abbi_Narayan_singh 23
Biren 18
Johny_Dep 56
Ram_Kishan 36
```

Test your program with your own data. Print the tree after every insertion to test whether your program is printing the names in correct order.

Lab Assignment 2

In this assignment you will required to construct a Binary Search Tree of integer numbers with the **following operations**:

- Print the Pre order, In order and Post order traversal of the tree.
- Print the largest value on the tree.
- Print the sum of all the elements of the binary search tree.

Hint: Recursive code will be easy.

Reference:

For visualization of BST: https://www.cs.usfca.edu/~galles/visualization/BST.html