CS 3305/W02: Data Structures

Assignment 9 - AVL Trees   Due 10/20/2022 @ 11:59 PM   (100 points total)

Assignment 09 – PART 1   Draw AVL Tree   (50 points) :

Objective of this assignment is to reinforce understanding of AVL Trees. You will draw an AVL Tree on paper, given the following events:

Begin with an empty AVL Tree
Insert the following integers, in this order   8, 26, 49, 14, 1, 20, 35
Show the resulting tree **after each insertion**, and
1. make clear any rotations that must be performed,
2. show the resulting tree after that rotation

Note: This is a different format for the deliverable. You may draw your AVL Trees by hand on paper and then scan the images into a word document. Phones have great scanning apps. Save doc as a file named, LastName-A9-Part-1-DrawAVL.docx or .pdf and submit it to D2L.

Assignment 09 – PART 2   AVL Tree   (50 points) :

Objective of this assignment is to reinforce understanding of AVL Trees.   You may use the Java Libraries for solving this problem. No files or data are provided for this part of the assignment. Recall, there is an Error in the Text Book, listing 25.5 for BST.java

Write a complete test program to test if the AVLTree class in Listing 26.3 on page 972 of the Liang textbook meets all requirements of an AVL Tree.

Note you have additional class dependencies as follows:

AVL extends BST, BST extends AbstractTree and AbstractTree implements Tree

You will need the following files
        Tree.java   // listing 25.3
        AbstractTree.java // listing 25.4
        BST.java   // listing 25.5

Do not forget to include author header in each submitted file as shown, <u>no header, no points!</u>

```
// Name:        <your name>
// Class:       CS 3305/ put your section number after the /
// Term:        Fall 2022
// Instructor:  Sharon Perry
// Assignment:  9-Part-2-AVL
```

Capture a **READABLE** screenshot(s) of your program output and paste into a word/pdf document. Readable means readable! Screenshots ***should not be an entire desktop*** – use some type of snipping tool. <u>After your output screenshots, copy and paste the source code for your program into the word/pdf doc.</u> Save doc as a file named   LastName-A9-Part-2-AVL.docx or .pdf.   Last step is to upload word/pdf and .java files to D2L.

MAKE SURE YOUR CODE HAS COMMENTS ! We are getting submissions without comments in the code. No comments = (-20) points *per Part of the assignment*