Lab 10: AVL vs Splay

Data Structures and Algorithms

In this lab, we will have to showdown between AVL and Splay tree

Consider the AVLvsSplay.java given with assignment. In That file, there are codes for measuring performance of AVL tree in ordered build (very bad case in normal BST) and random build. Alongside, there are code for measuring ordered access (uniform distribution access) and gaussian access (normal distribution access). However, there is only mock code for AVLTree (as well as SplayTree).

Your first task: Search the Internet to find code for AVLTree and SplayTree. Then modify them such that we can call add and insert method.

Now, with AVLTree and SplayTree ready, you can perform a little experiment. Note that in order to have good numbers, you may have to adjust the variables **start**, **stop**, and **step** to fit the power of your machine. Make them as high as you are willing to wait!

Your second task: Perform the experiment to fill in the data table in the next page. You have to add more code in part of Splay tree. Don't forget to fill then in n column with the actual numbers (e.g. put 1000 on top of start).

Your third task: In your own words, explain the numbers from the experiments. Discuss the rate of growth, the different between two trees, why one is faster than the other, etc.

Your discussion: _____

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Instruction: Hand in 2 items: 1. Your AVLvsSplay.java with class AVLTree and SplayTree. You may separate AVLTree and SplayTree into their own classes. 2. This document with the answer filled in.

AVL Tree

n	Ordered Build			Random Build		
	build	Ordered access	Gaussian access	build	Ordered access	Gaussian access
start						
start+step						
start+2steps						
start+3steps						
start+4steps						
start+5steps						
start+6steps						
start+7steps						
start+8steps						
start+9steps						

Splay Tree

n	Ordered Build			Random Build		
	build	Ordered access	Gaussian access	build	Ordered access	Gaussian access
start						
start+step						
start+2steps						
start+3steps						
start+4steps						
start+5steps						
start+6steps						
start+7steps						
start+8steps						
start+9steps						