Computing Systems Lab

IT69101

(Autumn 2010)

Assignment #5 01/09/2010

Instructions:

- For all programs in this assignment, consider the input data files you have followed in Assignment #3.
- You should display the final tree using *GraphViz* for each execution of Problem 1 and 2.

1. Define four functions to perform AVL rotations with respect to a pivot node *pivot.

*void leftToLeft(*pivot);*

*void leftToRight(*pivot);*

*void rightToLeft(*pivot);*

*void rightToRight(*pivot);*

Also define the following function to compute balance factor of any node *node in a binary search tree. (You can consider the function define in Assignment #4, 1(d)).

*int computeBF(*node);*

With the help of these functions, construct a height balanced binary search tree for a given set of data starting from an empty height balanced binary search tree. (You may define any other function(s), if necessary).

2. Starting from an empty red-black tree and a given set of data, create a red-black tree. You should define all the necessary functions, which may require to conform with the properties to be satisfied for a red-black tree during the construction.

3. Using the implementation in Assignment #3 and #5 (Problem 1 and 2), fill-up the following table with at least 10 runs for different data set.

Input		Binary Search Tree		AVL Tree		RB Tree	
Run No.	Size	Memory used	Execution time	Memory used	Execution time	Memory used	Execution time
1							
10							

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