Data Structures & Algorithms 2
Lab 4

Trees

OBJECTIVES

- Implement operations on Binary Trees, Binary Search Trees, AVL Trees .

Exercise 1

Write efficient functions that take only a pointer to the root of a binary tree T and compute:

- The number of nodes in T
- The number of leaves in T
- The number of full nodes in T (nodes which has non-empty left and right children)
- The depth of T
- The printing of the elements in T

What is the running time of your functions?

Exercise 2

Write a function to generate an N-node random binary search tree with distinct keys 1 through N.

What is the running time of your routine?

Exercise 3

Write a function to generate an AVL tree of height H with fewest nodes. What is its running time?

Exercise 4

Write a non-recursive function to insert a node into an AVL tree.