SSN College of Engineering

Department of Information Technology

UIT2201 — Programming and Data Structures

2022 – 2023

Exercise — 12

July 5, 2023

- This homework is due by 10PM on July 12, 2023
- Grace period may be given up to midnight of July 12, 2023
- You can upload only one ZIP file
- The naming convention is "<Your first name (first letter capital and all the other letters small)>-UIT2201-ex-12.zip"
- Judicious use of Python features and standard modules, version control using 'git', adhering to Python coding standards are expected
- You are expected to use PSP0.1 process for all the code that you write!

The purpose of this exercise is to understand the design of Tree ADT with various operations.

Part A

1. Provide an implementation of Binary Search Trees with various operations of Insert, Delete, Find, Findmin and Findmax. Use Linked Binary Tree for the implementation.

2. Write a Python code to implement AVL tree, a self-balancing binary search tree. Ensure that the balance factor of the tree nodes is maintained during insertion, if not perform appropriate single rotation or double rotation to maintain the same.