LaSalle College
Felix Soumpholphakdy

March 11, 2019
Advanced Data Structure: 420-J13-AS

Practice Set 6

Theory

1. What are interfaces?
2. What is the **IComparable** interface?
3. How do we add constraints on type parameters?
4. What is a sorted set?

Programming

A. Create an **Card** class that implements **IComparable**. It must have at least two attributes, one for its suit and one for its number. Implement the CompareTo method to prioritise sorting by suit first, then by number. Test your class by adding elements to any data structure then sorting it.
B. Implement the 2 other tree traversal methods **PreOrderTreeWalk** and **PostOrderTreeWalk** in **BinarySearchTree<T>**.
C. Implement **TreeMaximum(x)** which finds the greatest element in the subtree rooted at node x.
D. Use TreeMaximum to implement **TreePredecessor(*x*)** which finds the predecessor of a node *x*.
E. Implement **Transplant(*u*, *v*)** which replaces the subtree rooted at node *u* by the subtree rooted at node *v*.
F. Use **Transplant** to implement **TreeDelete(*k*)** which tries to find a node containing key *k* and delete that node. After the deletion the tree must maintain its invariant property.

HackerRank

https://www.hackerrank.com/interview/interview-preparation-kit/trees/challenges