

CMPT-225 Jan Manuch

Recommended Labs – Monday, July 17, 2006

The goal of this lab is to get familiar with the representations of binary trees.

Task 1. Write a program for class BST implementing the following interface.

```
interface BSTInterface <T extends KeyedItem>
{
    public T searchItem(long key);
    public void insertItem(T item);
    public void deleteItem(long key);
    public int height(); // computes the height of the tree
}
```

The implementation should use the binary search tree as underlying data structure. In other words, your class BST should have only one data member: reference to a `TreeNode<T>` object representing the root of the BST (initially, when BST is empty, this reference should point to `null`).

You can use the fragments of the code presented on lectures (they can be now downloaded from the course website directly, so you don't have to retype them). Test that your implementation works correctly: design a tester class and convince yourself that your code works properly.

Task 2. Rewrite each recursive method in the program to its iterative version. Do it one method at a time, and test your code after each modification. You can modify the `TreeNode` structure so that it also contains a reference to the parent (as we have done on the lecture).