CSCI2010U – Laboratory #8
Binary Trees

Introduction

This lab has one activity that relates to programming binary trees. To complete this lab you will need to visit the course website and download the required Lab 8 resources:

- BTNode.java
- BinaryTree.java
- Demo.java

Activity 1: Add a new method called spin() (4 marks)

Add a method to the BinaryTree class that *"spins"* the tree.

To spin the tree, swap the children of every node in the tree. If done properly, this will reverse the order that elements are visited in an inorder traversal. Once again, add a method to BinaryTree to check to make sure root itself is not null then call a BTNode method to do all the work.

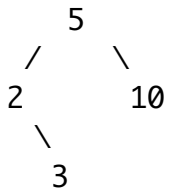
Once you've written the methods, you can use the printInOrder() method to test your work.

Activity 2: Improving the toString() method (6 marks)

The current toString() method in the BinaryTree class displays a tree in the following form:

```
5 -> 2 [left]
2 -> 3 [right]
5 -> 10 [right]
```

Modify this method to produce a tree output similar to the following:



A couple of helper methods that may help you implement the new toString() method are:

- treeHeight(BTNode current) – calculates the height for the sub-tree at root current.
- maxTreeWidth(BTNode current – calculates the maximum width for the sub-tree at root current.

What needs to be submitted?

Please submit the following Java source files on Blackboard:

- BTNode.java
- BinaryTree.java
- Demo.java

You do not need to submit your Eclipse project file.