Assignment 2

Available Since: May 8, 2014   Due Date: May 15, 2014, 12:00 a.m.

You are permitted and encouraged to work in groups of two.

Exercise 1: 5 Points

(a) What is the longest term resulting from pre-, post- or inorder in the tree above?

(b) Show that the structure of a binary tree is uniquely determined by its pre- and inorder numbers.

(c) Is the structure of a binary tree also determined by its pre- and postorder numbers?

Exercise 2: 15 Points

Implement the Reingold-Tilford algorithm presented in the lecture. Ensure linear-time complexity of your implementation!

- use BinaryTreeGenerator, and use graph.firstNode() as the root of the tree
- use class name lastname1.lastname2.a02.ReingoldTilford
- consider using y.base.NodeMap to store contour lists and x-offsets
Test the efficiency of your implementation by generating random trees, node number between 1,000 and 25,000 (step width 200). Measure your running times (not those of the generator) and create a plot (i.e. using gnuplot, R, Excel) that documents your results. Submit the plot together with the theoretical exercises and the implementation via svn.

General Hints:

- See the previous assignment for instructions on setting up the environment and checking out the project.
- For more information on the yFiles library used in this project, check docs.yworks.com/yfiles/doc/developers-guide/.
- Feel free to extend the project with further functionality.