

CSE505 – Fall 2012
Assignment 4: Iterators and Generics in Java
Assigned Mon, Oct 29
Due Mon, Nov 12

1 [50%]. Consider the class definition for a binary search tree of integers discussed in class. See file <http://www.cse.buffalo.edu/LRG/CSE505/Java/TreeDriver.java> for details. Extend this program with a class definition for `Iter` which defines an external iterator on the binary search tree, with the following two operations:

`done()` – a boolean method which checks whether the iterator has more elements;
`next()`—yields the next element in the sequence.

Using this external iterator, define a boolean function, `lazyequal`, which tests whether two binary search trees have the same sequence of integers in ascending order. The function `lazyequal` should behave as follows: it should obtain one integer from each tree, in alternating fashion, and should return false as soon as there is a disagreement.

Submit the file **TreeDriver.java** containing your Java code using the online code submission tool. See the Announcements page of the course website for instructions on how to use this tool.

2 [10%]. Run your completed `TreeDriver.java` through JIVE and save the state of the object diagram (using the “Stacked with Tables” format) at the point when `lazyequal:1` has assigned the variable `RESULT` to a value but its contour has not yet been deleted. Save the image in a file called **ObjectDiagram.png** and submit it online using the online code submission tool.

3 [40%] Consider the class definition of a generic binary search tree of integers discussed in class. See file <http://www.cse.buffalo.edu/LRG/CSE505/Java/GenericTreeDriver.java> for details. Generalize the iterator of part 1 as well as the function `lazyequal` so that they work on a generic binary search tree.

Submit the file **GenericTreeDriver.java** containing your Java code using the online code submission tool

End of Assignment 4