PrairieLearn CS 225, Sp25 Assessments Gradebook PE4#6 Che Liu ▼

Question 1: Tree Traversal Iterator

Implement an iterator for a binary tree that only iterates over **non-NULL** values in the tree using a **inorder right-to-left** traversal. Recall that this traverses the **right subtree first**, followed by the current node and then the left subtree.

As an example, if we have the following starting tree:

```
6
/ \
NULL 5
/\ /\
0 NULL 3 NULL
```

The inorder right-to-left traversal iterator visits nodes in this order: 5, 3, 6, 0.

Although the Tree class is templated and can hold data of any type, we will only test with pointer types.

Complete the following functions in tree.hpp:

- Tree<T>::Iterator constructor
- Tree<T>::Iterator::operator++
- Tree<T>::Iterator::operator* (note: calling operator* on an end iterator should return a default value of type T)

The following Iterator functions are implemented for you:

- Tree<T>::Iterator::operator!=
- Tree<T>::begin()
- Tree<T>::end()

Partial credit is available for a working iterator that includes all values in the tree (full credit requires only non-NULL values).

Potentially Useful References

- stack reference
- queue reference
- Reference root

While developing this code remember to use all the tools you have seen in the lab and mp, including valgrind.

Developing with VSCode workspaces

To open a terminal: click the button with three horizontal lines in the top left -> Terminal -> New Terminal.

To build your code: Follow the same method as our labs and mps.

- `mkdir build`
- `cd build`
- `cmake ..`

Once you have done that, you can compile and run your code using `make` and `./main` to compile and execute respectively.

Graded files

The only file that will be submitted for grading on this problem is tree.hpp

Save only

Open workspace

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 Practice Exam 4

Assessment overview

Total points: — /30
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