**CS302: Homework 6**

Branching out, now in color.

**Exercise 1.**

I was able to combine the code from Project 4 and the supporting code package to create a modified program, Project 6. Once I translated the package’s implementation, it was not that difficult to finish. I had to add color to the nodes and implement the associated functions to flip the colors, do rotations, and move nodes left or right.

There were no guidelines on how to generate the random numbers, so I followed the previous assignment’s guideline of 200 being the maximum value.

Add 157 to tree

Add 5 to tree

Add 125 to tree

Add 59 to tree

Add 20 to tree

Add 81 to tree

Add 79 to tree

Add 146 to tree

Add 145 to tree

Add 97 to tree

Preorder Traversal

79[black], 20[black], 5[black], 59[black], 146[black], 125[red], 97[black], 81[red], 145[black], 157[black],

Remove 20 from tree

Preorder Traversal

125[black], 79[black], 59[black], 5[red], 97[black], 81[red], 146[black], 145[black], 157[black],

One mistake I found was mistyping a == instead of a != and that prevented me from removing a node. Took me a while to find that one.

A picture containing object, black

Description automatically generatedA picture containing black, different

Description automatically generated

Figure 2: Removal of 20

Figure 1: Finished tree