Pre-Lab #9

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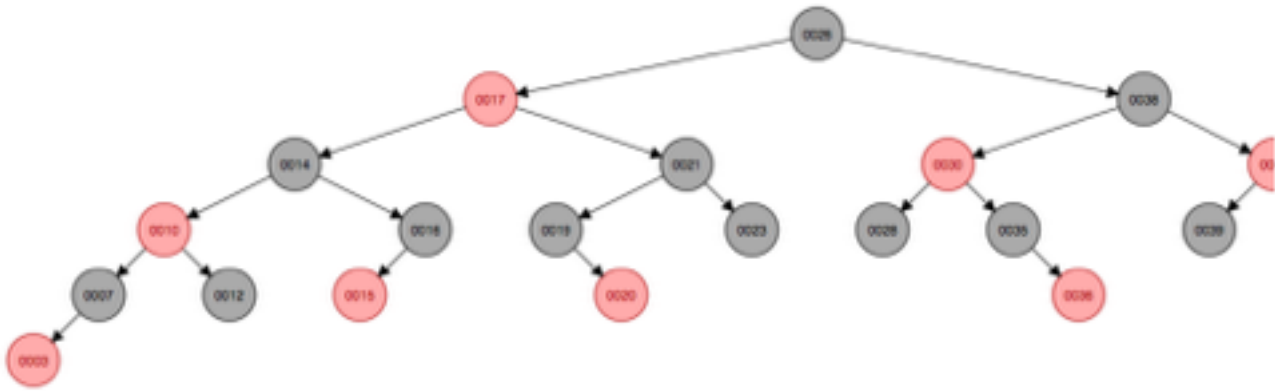
1. Problem Specification

The goal of this pre-lab assignment is to draw a red black tree after the insertion of the element 36 and verify if it is a truly red black tree. Then, for the second part, we need to create a red black tree with elements 41, 38, 31, 12, 19, 8.

2. Results

Part 1:



This is the final red black tree after the insertion of the element 36. At the beginning the element was red but this would cause conflicts according to the red black tree rules, so this didn't make it a red black tree and some rotations was necessary to transform it into a truly red black tree. If the element was black we also wouldn't have a red black tree since we have one rule that defines that every path from the root node to any leaf of a red black tree needs to have the same amount of black nodes, in this case in one of the paths we would have one extra black node so it breaks one of the rules. That's why we need to make some modifications in the red black tree node to have a truly one. The final result was the one showed above.

Part 2: