1. Let $a$, $b$, and $c$ be arbitrary nodes in subtrees $\alpha$, $\beta$, and $\gamma$, respectively, in the left tree in Figure 13.2 in the book. How do the depths of $a$, $b$, and $c$ change when a left rotation is performed on $x$ in the figure?

2. Show the red-black trees that result after successively inserting the keys 41, 38, 31, 12, 19, and 8 into an initially empty red-black tree.

3. Show the red-black trees that result after successively deleting the keys 8, 12, 19, 31, 38, and 41 (in that order) from the final red-black tree in the previous problem.

4. Implement a red-black tree template class. Your implementation should follow the same guidelines as for the Binary Search Tree and should include the same operations.