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Project Report: Red Black Trees

Through this project I have learned how running time does really matter, because before I would only write really small projects and it would usually compile in less that a second, and I thought that what we are learning about running times didn't really apply to me because I had never written programs that took longer than a second. The first time I ran this program, I had a lot of for loops and made my program really slow, it would insert all the words in the dictionary into the red black tree but it would take about a minute, and then also when searching for words it would take a long time. I learned that I was inserting into the RBT incorrectly initially because when I printed out the tree, the root was the last word from the dictionary, so I realized that every time I would read a word, I made it the root, and then made the current root a child of the new root. Overall, the program was not working, so I had to change the code around and make the rotations actually happen whenever I try to insert a new node into the tree. I learned that print statements are helpful to see how my logic is working with the program.

After I fixed everything, I was extremely surprised to find how quickly the program ran, it finished adding everything into the tree and checking all the words in less than 1 second. The system time print statement I have says that the whole program runs in about 700 milli-seconds.