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In-Lab 6 Report

In my initial hash table implementation, the word search produced the correct results for each grid size and printed out the words in the correct format. My first hash table implementation ran relatively slowly. It processed the 250x250 grid on the first list of words in just over 4 minutes and the 300x300 grid on the second list of words in about 30 seconds. The -O2 flag improved run time by a significant amount. Before using it, the 250x250 grid took 2 minutes longer than it did after using it. After submitting the pre-lab, I began trying to optimize my hash table by adding a rehash function. The 250x250 grid is now processed in under 10 seconds and I am working on further improvements.

For a grid with r rows and c columns, my word search ran in $\Theta(r * c)$ time. Since the maximum word size and the number of directions to be searched are both constant, the loops through each row and column take the most time.

While implementing my hash table, I ran into a problem initializing the vector holding my hash table. My code was segfaulting and it took me a while but eventually I found the problem to be that I was indexing my vector before I had initialized all of the values. Once I fixed that problem the I did not encounter many more.

This in-lab was my first exposure to writing shell scripts. I found it challenging at first but once I read through the tutorial a second time, I gained a better understanding and was able to figure it out. I feel that shell scripts can become very useful and look forward to learning more about them.