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1. Did your implementation produce the correct results? Did you have to reformat your output?
  - o Yes, my implementation did produce the right results... eventually. At first, my implementation resulted in the output of the same word several times. This was easily fixed by adding a break statement to my inner most for loop. I didn't have to reformat the output, because I read the prelab thoroughly before starting it and knew what the expectations were.
2. How much faster was your program with the -O2 flag?
  - o Without the -O2 flag, my program found all of the words in 14.17 seconds. With the -O2 flag, my program found all of the words in 4.36402 seconds for the same parameters!
3. What was the speed of your implementation? How fast did it run on the 250x250 grid using words.txt as the dictionary file? What about words2.txt and the 300x300 grid? -- If you ran it on a different machine other than the ones in Olsson 001, specify so.
  - o I ran my program on my MacBook Air. Without the -O2 flag, my program found all of the words in 14.17 seconds for the 250x250 grid and in 6.17462 seconds for words2.txt and the 300x300 grid.
4. What is the big-Theta running speed of your program? We are really only interested in the word search part, not the part where you populate the hash table. Please do this in terms of  $r$  (rows),  $c$  (columns), and  $w$  (words). You can assume that the maximum word size is some small constant. Only consider the word-search component of the program, and not the file reading or hash table creation time.
  - o Since the maximum word size is a constant, the big-theta running speed is  $r$  (rows) \*  $c$  (columns) \*  $w$  (words).
5. What problems did you encounter when implementing this lab?
  - o I had a global variable named size and a parameter variable named size. When I would assign size a name, it wouldn't assign the value to the global variable. This was troublesome because I needed size (size of hash table) throughout my program. But I did some debugging and figured out what was wrong and fixed it by changing the name of my global variable.
6. How did your shell scripting writing go? What do you think of shell scripts so far?
  - o Shell scripting for me was a lot of trial and error, but I eventually got it to work. Reading the wiki was horrible, but necessary. After programming shell scripts, I'm a little more appreciative of C++, haha.