

CENG 322  
Homework 3  
Report  
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## Results

# of threads	1	2	4	8	16	32	64
seconds	7.271493	3.922896	3.2558664	2.989990	2.662433	2.285640	1.7501951

Provided 10 books by me and provided English stop words.

## Discussion

Possible reasons to these results longness can be because of my search algorithm. I can use more better algorithm for search. Like Binary search. Also I could reduce word checking by looking into the first letter of a word, I reduced complexity a little by adding when word found in the keywords breaks the loop. Since keywords are ordered, I could search only that part of the keywords. Like binary search. I read some CTRL+F algorithms. I learned new algorithms by this homework. I did not use them because I did not want to change homework's originality. This time calculation not contains file read, to lowercase and break up to words operations. Only contains search and return result operations. Its time reduced while going up until 4 threads. In 4 threads CPU bound started. Above thread numbers because of CPU bound, it can not do all threads at once. And also context switching occurs, this also the reason of time stability while number of threads increasing after 4 threads. My algorithm like this, we have X books, and we have Y stop words. Outer loop works X times, inner loop works Y times. Then I break book into the # of threads parts to search faster. For example, if we have 4 threads, I break books into 4 parts, so all threads look different book areas for all words in that area. All threads start at the same time. Every thread searches for all keywords. The main reason for my results are search algorithm used in thread function. For time results correctness, I run program 5 times and took average of them.