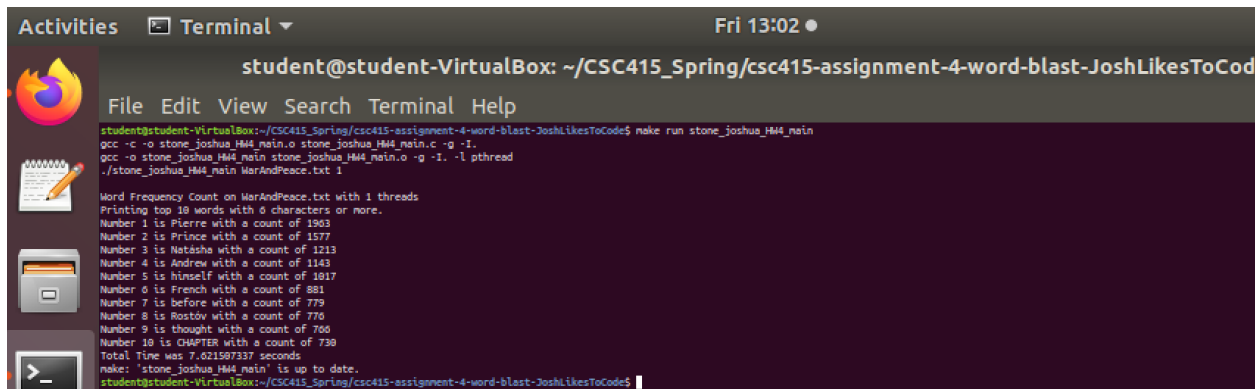For this project, with the help of threads, I parsed through a text file and stored the words that had a

minimum of six characters and their frequencies. I then displayed the top 10 words that had the most

frequency within the text file. Some of the issues that I had with this assignment were with where I was

suppose to place the mutex locks. Since I was writing to a global data structure I wrapped each "add()"

call within a mutex lock and unlock. I also discovered that each time I needed to increment a word's

count, that I too should use a mutex lock and unlock. Another issue I had with this assignment was

sorting the data. I tried to at first implement a kind-of quick sort, but was having issues with getting to

the word_counts. I decided to take a simpler approach by just thinking out the logic of sorting the word

container and storing it's top 10 in another data structure, which worked quite well. I did program runs

with 1, 2, 4, and 8 threads and the results scale quite nicely. With 8 threads the program ran in under a

second. Screen shots of these runs are below:

1 Thread:

2 Threads:

Word Frequency Count on WarAndPeace.txt with 2 threads
Printing top 10 words with 6 characters or more.
Number 1 is Pierre with a count of 1063
Number 2 is French with a count of 583
Number 3 is himself with a count of 526
Number 4 is Moscow with a count of 525
Number 5 is Natásha with a count of 480
Number 6 is Napoleon with a count of 457
Number 7 is Prince with a count of 416
Number 8 is before with a count of 392
Number 9 is people with a count of 369
Number 10 is Andrew with a count of 346
Total Time was 3.297026715 seconds

4 Threads:

Word Frequency Count on WarAndPeace.txt with 4 threads
Printing top 10 words with 6 characters or more.
Number 1 is Pierre with a count of 564
Number 2 is Natásha with a count of 331
Number 3 is French with a count of 331
Number 4 is Nicholas with a count of 247
Number 5 is himself with a count of 243
Number 6 is people with a count of 201
Number 7 is before with a count of 195
Number 8 is Moscow with a count of 195
Number 9 is Princess with a count of 189
Number 10 is without with a count of 181
Total Time was 1.439230808 seconds

8 Threads:

Word Frequency Count on WarAndPeace.txt with 8 threads
Printing top 10 words with 6 characters or more.
Number 1 is Pierre with a count of 269
Number 2 is Natásha with a count of 229
Number 3 is people with a count of 145
Number 4 is Nicholas with a count of 145
Number 5 is himself with a count of 117
Number 6 is history with a count of 115
Number 7 is Princess with a count of 100
Number 8 is without with a count of 99
Number 9 is French with a count of 97
Number 10 is before with a count of 88
Total Time was 0.568222412 seconds