

Benchmarking:

1. REREAD_ON_QUERY == False
 - a) Using Dictionary that stores all the lines in the file
 - i. Time complexity = $O(1)$
 - ii. **Execution time = 0.31ms**
 - b) Sort the lines in the file and do a binary search
 - i. Time complexity = $\log(n)$
 - ii. **Execution time = 0.52 ms**
2. REREAD_ON_QUERY==True
 - a) Using linear search
 - i. Time complexity = $O(n)$
 - ii. **Execution Time = 48 ms**

Execution time for different file sizes at worst case:

1. 1,000,000 lines :
 - b) REREAD_ON_QUERY == False
 - i. **Execution time = 0.53 ms**
 - c) REREAD_ON_QUERY == True
 - i. **Execution time = 137 ms**
2. 10,000 lines :
 - d) REREAD_ON_QUERY == False
 - i. **Execution time = 0.47 ms**
 - e) REREAD_ON_QUERY == True
 - i. **Execution time = 2.3 ms**