First of all, the answer is 19082160. I found this with 3 ways which are described in the homework PDF. The first way is the cpp file with using fstream in C++. This way reads the txt file char by char. It took exactly 76 seconds (1 minute and 16 seconds) which is the longest in terms of duration among three ways because the txt file is extremely large and this method(way) couldn't handle it fast. In the second way, I used fopen for reading the file and used getc() for reading all chars in C. This method is also quite slow, but it is relatively faster than the cpp. It took 27 seconds to execute and print the number of occurrences of 'a' as a result. In the final solution, I used memory mapping with mmap function of C programming language. It can be said and concluded that, this way is the fastest among the 3 solutions. Memory mapping in C is faster than others because data is read and written using virtual memory capabilities, hence it does not have to allocate, copy and deallocate data which slows down the system. In addition, mapping a file into memory allows us to use the data as if it has been read. Thus, memory-mapped file provides a mechanism so that applications don't have to read entire data into memory first. However, mmap may result in integral fragmentation. This is its disadvantage.