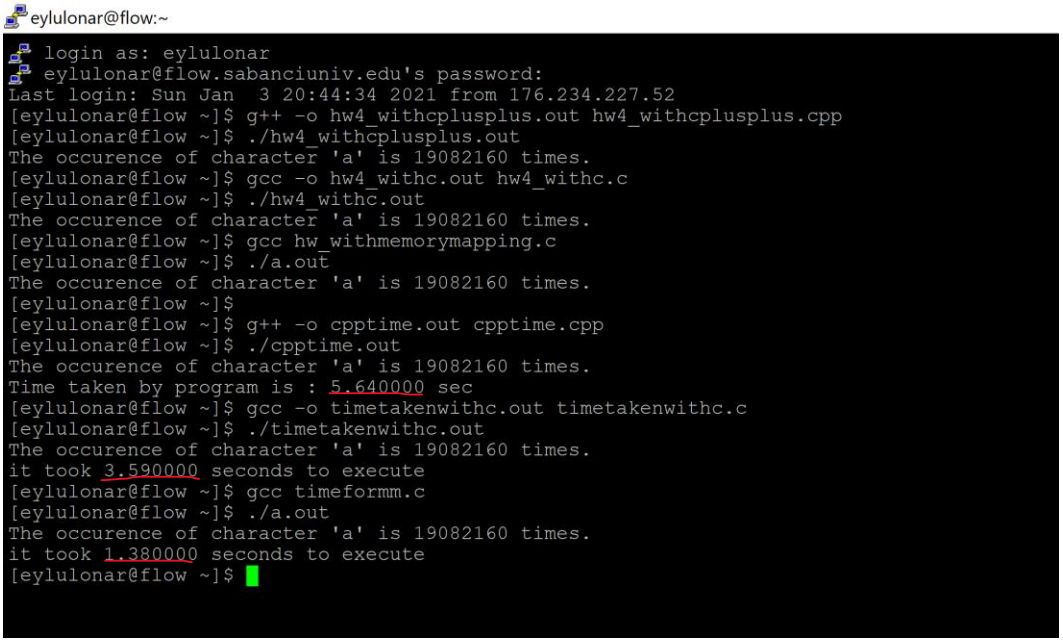
CS 307 HW4- REPORT **Eylül ONAR 25320**

In this homework, we are asked to read a file "loremipsum.txt" with distinct methods and compare their time efficiency, the importance of the file size and analyze the advantage and disadvantages of these methods. The main idea is to show that there exist different techniques where we can read a file in C or C++ and we can use different functions and libraries or use memory mapping to read a file to the memory. First of all, by using “clock() function” on each methods, I measured the execution time of each program. For C++ program, by including the header <bits/stdc++.h> and for C programs, by including the header <time.h>. I did not include these calculations into the submission file homework4.zip as it is not asked, but in order to analyze each execution time, I created extra three programs to show:



As it is seen above, “cpptime.cpp”, “timetakenforc.c” and “timeformm.c” programs (last three outputs) are made in order to examine each execution time. It can be concluded that C++ file handling has the slowest running time (5.64 s) whereas C file handling with memory mapping has the fastest running time (1.38 s). File operations with memory mapping is much faster because of the virtual memory technique. It increments the main memory capacity in the disk and allows the main memory to execute programs with a larger size. "loremipsum.txt" file has a size of 266 MB that may be considered as a large file size and may take longer time than the files with smaller size. Some computers may have a memory size of 8 or 16 GB in RAM and if the user wants to download a file with a large size such as games, the file cannot be directly loaded, and we should create a virtual memory that makes it easier and quicker to execute.

Furthermore, while comparing the C++ and C languages, we can use “\n” both in C and C++ but, “endl” is only supported by C++ and not the C language. Using endl inserts a new line and flushes the stream whereas \n only inserts a newline. Thus, if we use endl in C++, it will take more time for the execution and we should avoid it unless flushing is required. Even though the running time in C++ is slower than C, we may prefer to use fstream over fopen. C is a lower level language than C++ and there are also potential security concerns when dealing with strings passed from external sources.