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HW4

Memory Mapping & File Reading

In this homework, I wrote 3 files. The first one is CPP, written with C++ programming language. The other 2 is C file, which are written with C programming language. In CPP file, first I included the fstream class to use ifstream while opening and reading the file. First, I opened the file and read character by character until the end of the file. If I see any character 'a', I increase the count number by one. Then, I print the count and close the file. In first C file, I did the same thing but this time I opened the file with FILE and again I read character by character until the end of the file. If I see any character 'a', I increase the count number by one and print the result, then I closed the file. In the last C file, I used mmap() function which is shown in the recitation 6 for mapping between a process address space and files. Now, I can access the file like an array, without abstraction of reading and writing the file. I made a for loop to search in the array. If I see any character 'a' in the array, I increase the count number by one and print the result. When I compared the methods, I saw that first one the CPP is the slowest, I need to wait a lot to see the result. The last one mapping method is the fastest method with approximately 5 second, compared to other methods, I don't need to wait a lot. (1^{st} -> 2^{nd} ->3^{rd} from slower to faster). Memory mapping is the fastest way because, with this way I don't need to write or read the whole file. I don't need to use I/O operations. With using the I/O operations, reading the file is slower than mapping. In the conclusion, I saw that

using the mmap function is the most efficient method to use, compared the I/O functions.