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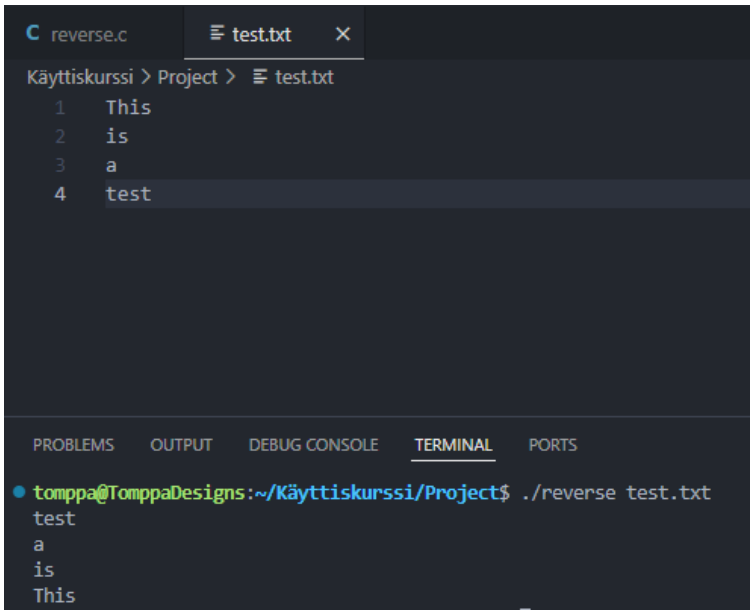
Project 1: Warmup to C and Unix programming

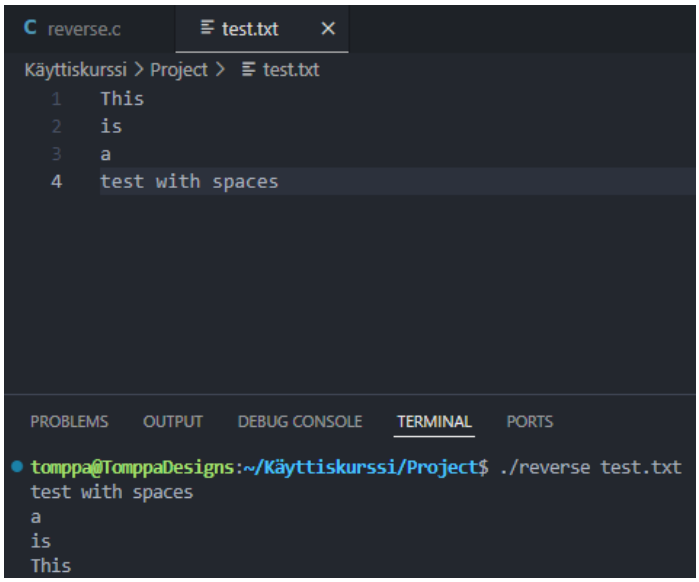
In this mini project, we did a simple reverse program. The program basically reverses the lines of a given file or input stream and prints it to the terminal or stores it into a file. We managed to get the whole program to use dynamic memory allocation so that the user can input an infinitely long line and infinitely long lines. All the assumptions and errors in the assignment description are taken into account. Also all 3 different ways of running the program are implemented.

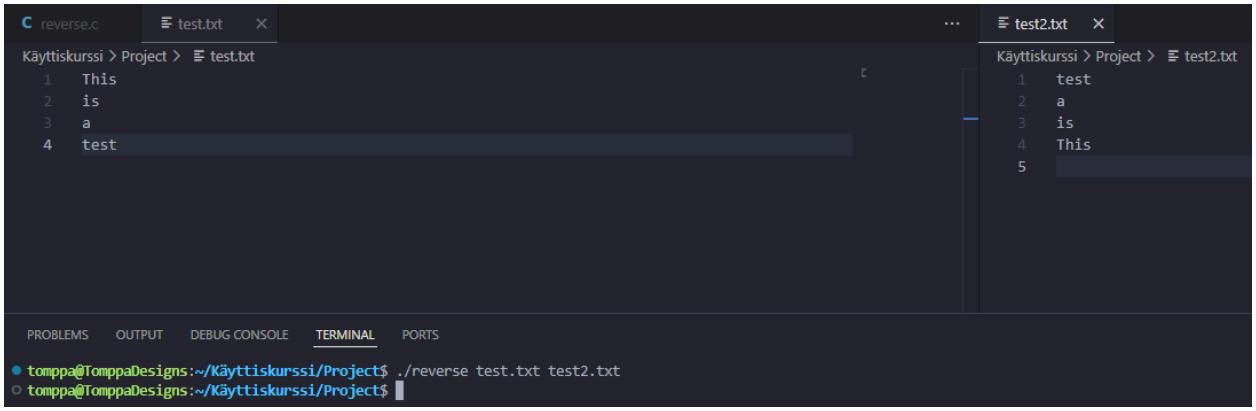
Our first version had static memory so that it could only read lines that are a maximum of 256 characters and also it couldn't store more than 256 rows of text. We used this to get the functional part working but then encountered problems when trying to get the memory allocation dynamic. We then decided to read character by character rather than line by line. Also in the first version, when running with no arguments, it would stop with the input “q” but we wanted it to stop with the user hitting enter as there might be a scenario where the user wants to put just “q” into the input stream to be reversed.

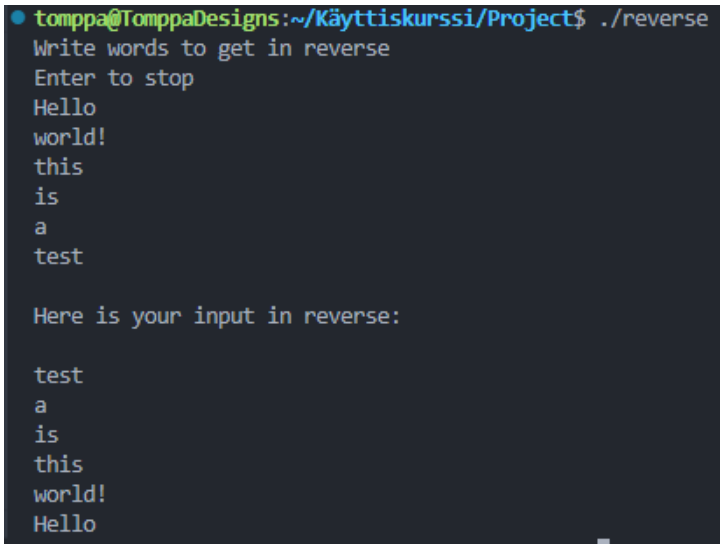
The way the code works is that it reads either the input stream or files lines character by character and dynamically allocates more memory if the character or line amount goes over 1024. The code checks for when the line has ended and a new line has started to function properly. With no arguments, the code stops running when the user hits just enter without any text. The filename variable was set to 256 characters long as most operating systems do not allow filenames longer than this so we put that as the memory allocated for them. We also ran all different scenarios with valgrind and it gave no errors and all the memory was freed correctly.

Here are a few images of how the program works:









The source code for this project is found here: