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P1 Design

For this project I used openMP to try to parallelize the serial program delivered in the Milestone. From the Profiler I used I could see that the majority of the computation was going into DFA::Compute() which does the computation on a string to see if the string is acceptable. The way the function works is that it will compute every substring that ends with the end of the line. The inner for loop doesn't meet the conditions for parallelization so I attempted to run several threads of computations starting at different initial character positions. I also tried to parallelize reading files so there could be multiple Compute() calls going at once. For reasons unknown to me sometimes there would be double frees so I scraped that. From the milestone I completely redid all my data structures opting to use maps and not have to deal with a messy tangle of pointers. Below is a plot of the runtimes of the Serial and Parallel programs. Across the board Serial was faster, probably because I couldn't parallelize much of my program, with running multiple files and several lines in parallel with many files and large files parallelization should become worth it.