Assignment Overview

Recall our discussion in lecture of the Rabin-Karp string pattern matching algorithm. For this writing assignment, you are going to put yourselves in the shoes of the inventors of Rabin-Karp and write a paper presenting your invention. As such, you will need to thoroughly describe the algorithm and how it can be implemented. Further, you will need to compare it to other string pattern matching algorithms to establish its merit.

Your paper should be between 4 and 6 pages double-spaced using 1 inch margins and 12pt Times New Roman font.

Your paper should be comprised of the following sections:

\* Your introduction should summarize the problem of string pattern matching. It should also provide a preview of your approach, and describe what your proposed solution can provide that other solutions could not.

\* You should then present your approach. Here, you should describe Rabin-Karp in detail, both the algorithm itself, and how it can be implemented. You can assume your audience to have a technical background (a good assumption would be the average student about to take 1501). Someone with basic knowledge of programming and data structures should be able to understand and implement Rabin-Karp based on your description alone.

\* You should then describe work related to your problem. To overview other approaches to string pattern matching, you should discuss both KMP and the Boyer-Moore mismatched character heuristic as described in lecture. Briefly describe them, and explain what merits of Rabin-Karp.

\* Finally, you should present your conclusions and "future work". First, you should again highlight the contributions of Rabin-Karp. After this, you should point out any shortcomings that still exist with Rabin-Karp as directions for future work in solving the string pattern matching problem (assuming that you will continue to work on new and improved string pattern matching algorithms, what properties would you strive for in your next algorithm that Rabin-Karp cannot provide?).

Notes

\* The use of figures/graphics/images/code IS NOT ALLOWED. You must describe mergesort purely in English prose.

\* Even though Rabin-Karp was first presented in 1987, you do not need to position your paper within that timeframe. In building up motivation for the problem, you can use modern examples. In describing how Rabin-Karp could be implemented, you can assume the use a modern computing environment (i.e., a POSIX-compatible operating system that can compile and run Java code).