CITS3001 Algorithms, Agents and Artificial Intelligence

Labsheet 1: string algorithms

1. Implement and analyse each of the pattern-matching algorithms from Lecture 3:
   a. the naïve algorithm;
   b. Rabin-Karp (the general version);
   c. Knuth-Morris-Pratt;
   d. Boyer-Moore.

   For each algorithm:

   - implement it in a language of your choice, and test it appropriately;
   - derive worst-case and best-case data for its performance;
   - argue as formally as you can that the algorithm is correct.

2. Implement and analyse the two LCS algorithms from Lecture 3:
   a. a naïve algorithm that directly implements the recursive rules;
   b. the dynamic programming algorithm.

   Consider the same issues for each algorithm as in the previous question.