CPSC 406: EC Project (Interterm 2024)

DUE JANUARY 25th , 11:59PM
*To be completed individually

Objective

Write a C++, Java, or Python program that takes the specification for a NFA as input and outputs the specification for an equivalent DFA. The NFA input specification will be passed as a command line argument consisting of a file name which will be of the following format:

Line 1: A list of states, Q, separated by tabs.

Line 2: A list of the symbols in Σ, separated by tabs. The Empty string will not be explicitly included. You can assume that the state names do not also appear in the alphabet.

Line 3: The start state, $q_0 \in Q$.

Line 4: The set of valid accept states, F, separated by tabs.

Line 5: The token BEGIN to denote the start of the transition function

Line 6 to line before last: The transition function. Each line will be of the form $s, x = s^f$. This is translated to mean that reading symbol x in state s causes a transition to state s^f. The string EPS will be used to represent an epsilon transition.

Last Line: The token END to denote the end of the transition function.

The output should be to a text file with the extension .DFA. The output should have the same format as above. You may use the symbol EM to represent the empty state, $\varnothing$. If $\{1\}$ and $\{2\}$ are states in the NFA that are combined in the DFA, represent the state with the string $\{1,2\}$.

Grading will be based on correctness and elegance of solution. Make sure to develop an OO solution. Comment your code. You should provide a README as well with any instructions for building or running.

Submission Instructions

Create a zip file named *your name* project.zip which includes your source code and README. Submit the zip file to Canvas by the deadline above. Remember that no late work will be accepted. Be prepared to demo in class on sample inputs provided by the instructor.