

CSCI 301 - Assignment 7, Fall 2024

Your name here

Modify the .tex source file for this document, adding your answers below each question. This is an individual assignment. See the syllabus for the collaboration policy.

Any finite automata you draw should be drawn in L^AT_EX using Tikz. Please see A6 for guidance and examples.

- (5 points) Give a regular expression describing each of the following languages over $\Sigma = \{0, 1\}$:
 - $\{w : \text{the first and last symbols of } w \text{ are not equal}\}$
 - $\{w : w \text{ has an even number of 1's}\}$
- (5 points) Design an NFA that accepts the language described by the regular expression $((0 \cup 1)(11)^* \cup 0)^*$.
- (5 points) Prove that the language $\{\epsilon, 0, 1, 00, 11, 000, 111, 0000, 1111, \dots\}$ is regular.
- (5 points) Give a regular expression that describes the language accepted by the following DFA:

