

Assignment 3

Issue Date: November 5, 2018

Due Date: ∞

Σ 0 Points

Compiler Construction

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From Regular Expressions to Deterministic Finite Automata

Exercise 1: Constructing a DFA

(0 Points)

Consider the regular expression $(01 \mid 10 \mid 00)^* 11$.

- Use Thompson's construction to construct an NFA for this RE.
- Convert the NFA to a DFA.
- Minimize the DFA.

Exercise 2: Equivalence of REs

(0 Points)

One way of proving that two REs are equivalent is to construct their minimized DFAs and then compare them. If they differ only by state names, then the REs are equivalent. Use this technique to check the following pair of REs and state whether or not they are equivalent.

$(0 \mid 1)^*$ and $(0^* \mid 10^*)^*$

Exercise 3: Table-Driven Scanners

(0 Points)

Construct a DFA for identifiers as described in the lecture. Then, build the corresponding tables CharCar, δ , and Type for a table-driven implementation.