

Homework 2  
CS 4481

1. (10 points) Consider the regular expression  $(ab|ac)^*$ .
  - (a) Use Thompson's construction to construct an NFA.
  - (b) Convert the NFA to a DFA.
  - (c) Minimize the DFA.
  
2. (10 points) Prove that the regular expressions  $(0|1)^*$  and  $(0^*|10^*)^*$  are equivalent by showing that their minimized DFAs differ only by state names. You must show all steps of constructing the minimized DFAs.
  
3. (10 points) Construct a DFA for each of the following C language constructs, and then build the corresponding classifier, transition and token type tables for the table-driven implementation for each of them.
  - (a) Integer constants
  - (b) Identifiers
  - (c) Comments
  
4. (10 points) For the integer constants DFA in the previous exercise, build a direct-coded scanner.