

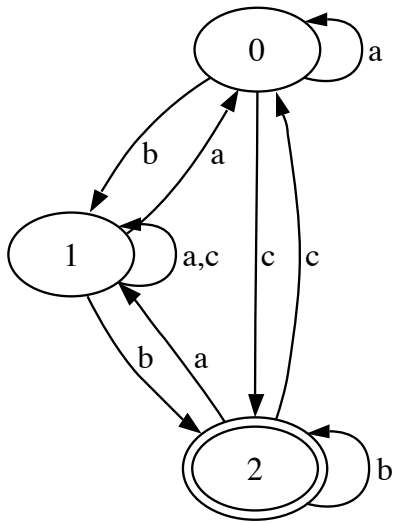
This assignment is due Friday 2009 April 17 in class.

Recently we have studied how DFAs, NFAs, patterns, and regular expressions are all equivalent in their expressive power. On our first exam, you will be asked to design these objects to perform certain tasks, and to convert among these objects. This assignment is a start. For more practice, work exercises from the book (which begin on page 300).

A. Draw an NFA that recognizes the same language as the regular expression

$$(ad + b + c)^*(dda)^* + ac.$$

B. Execute the subset construction to draw a DFA that is equivalent to the following NFA. (The only start state is state 0.)



C. Working over the alphabet $\Sigma = \{a, b\}$, find a regular expression equivalent to the pattern $\tilde{(a^*)}$. (As was mentioned on page 45, implementing $\tilde{}$ in regular expressions is not easy. The point of this exercise is for you to work one example of it.)

D. Do exercise 3 on page 302 of our textbook, on the Hamming distance.

E. Prove identity (9.12) on page 50 of our textbook.