

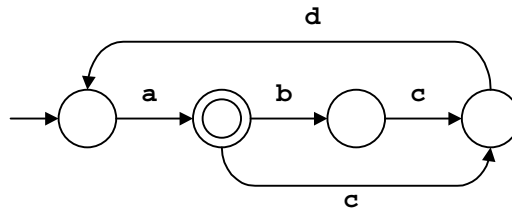
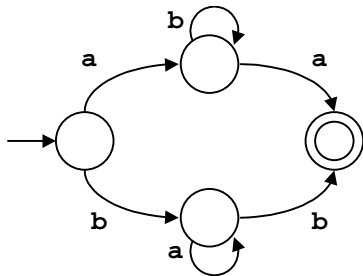
CSCI 447 – Summer 2003

Assignment 1: Scanning Theory

Professor: Muhammed F. Mudawwar

Due Date: Tuesday, June 17, 2003

1. Write regular expressions for the following character sets
 - a. All strings of lowercase letters that begin and end in a .
 - b. All strings of one or more digits that contain no leading zeros.
 - c. All strings of one or more digits that represent even numbers.
 - d. All strings of a 's and b 's that contain no three consecutive b 's.
2. Draw DFAs that accept the following:
 - a. Four reserved words **case**, **char**, **const**, and **continue**
 - b. All strings of a 's and b 's that contain an even number of a 's and an even number of b 's
 - c. $(a | (bc)^*d)^+$
3. Write regular expressions that correspond to the following DFAs:



4. Write a regular expression for a C comment surrounded by $/*$ and $*/$. Individual $/$ and $*$ may appear inside the comment, but not $*/$.
5.
 - a. Use the variation of Thompson's construction, described in the lecture notes, to convert the regular expression $(aa | b)^*(a | bb)^*$ into an NFA.
 - b. Convert the NFA of part (a) into a DFA using the subset construction method.
 - c. Minimize the DFA obtained in part (b).