

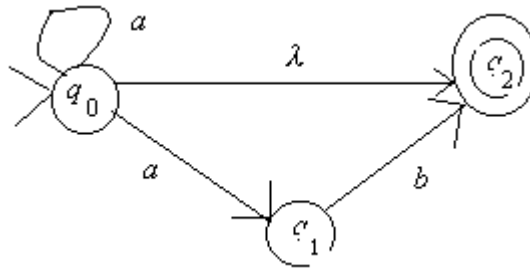
CS3133
HW #4

DUE: Friday, September 22

1. (4 points) Describe the NFA- λ constructed by the algorithm described in class or the text to accept the regular language

$$ba^*(a \cup b)$$

2. (6 points) a) Describe the DFA constructed by the algorithm described in class or the text to accept the same language accepted by the NFA- λ :



Formally, the NFA- λ is $(\{q_0, q_1, q_2\}, \{a, b\}, \delta, \{q_0\}, \{q_2\})$ where

δ	a	b	λ
q_0	$\{q_0, q_1\}$	\emptyset	$\{q_2\}$
q_1	\emptyset	$\{q_2\}$	\emptyset
q_2	\emptyset	\emptyset	\emptyset

b) Give a regular expression for the language accepted by the previous NFA- λ .

3. (4 points) Do **Exercise 3** on page 82 of our text.

4. (4 points) Prove or give a counterexample to the

CONJECTURE: For any regular language L , if context-free grammar G generates L (that is, $L = L(G)$), then G must be regular.