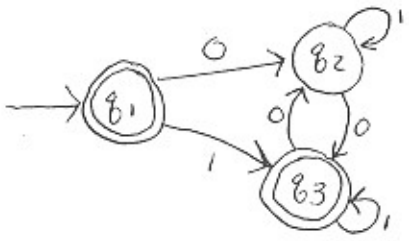
CSI 350 — Theory of Computation, Fall 2005

Quiz #3 - Monday, September 19, 2005

Given the following DFA called M, answer questions 1-4.



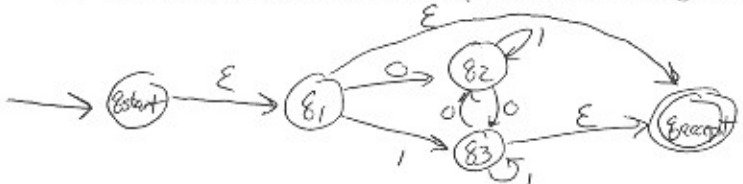
δ	0	1
q_1	q_2	q_3
q_2	q_3	q_2
q_3	q_2	q_3

1. Give the formal definition of M.

$M = (Q, \Sigma, \delta, q_0, F)$

$Q = \{q_1, q_2, q_3\}$ $\Sigma = \{0, 1\}$ $q_0 = q_1$ $F = \{q_1, q_3\}$

2. Convert M into a GNFA. (Use a state diagram to show the GNFA).



Shown without ∅ transitions

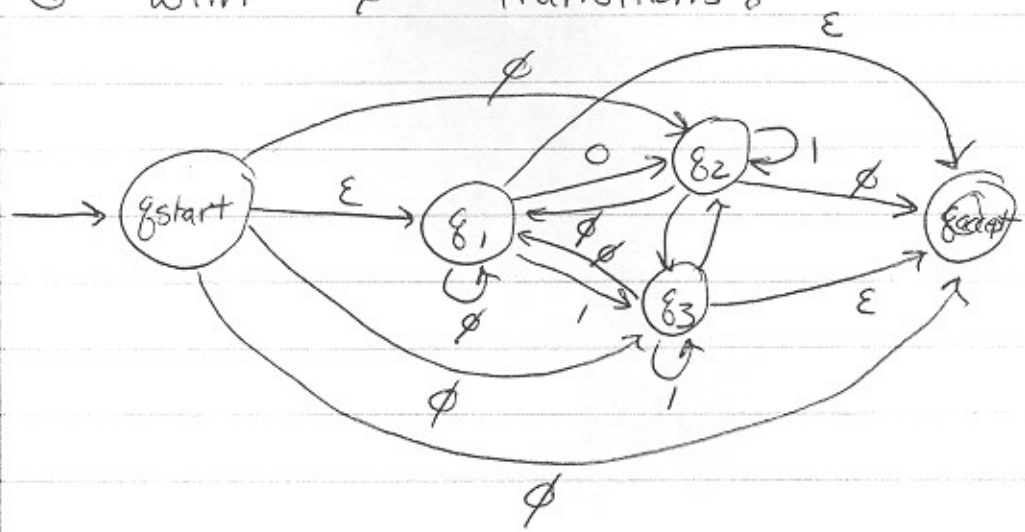
3. Write the regular expression which describes the language of M.

$(1^*01^*01^*)^*$ or perform rips (next page)

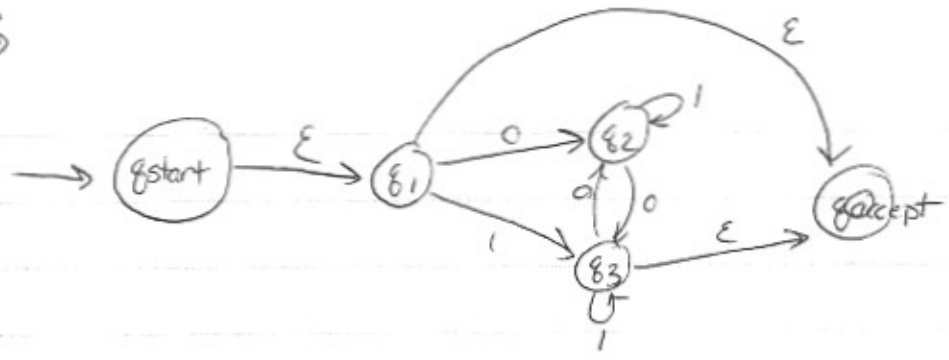
4. What language does the DFA recognize?

$L(M) = \{w \mid w$ is ε or contains an even number of 0s$\}$

G with ∅ transitions:

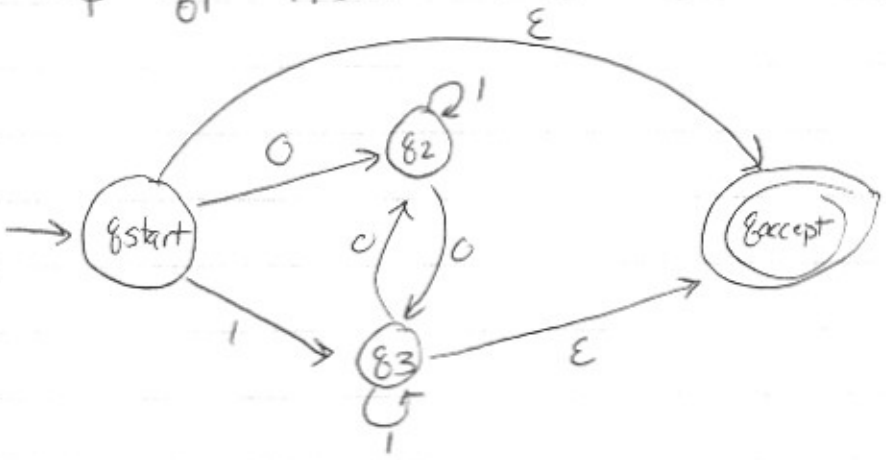


G



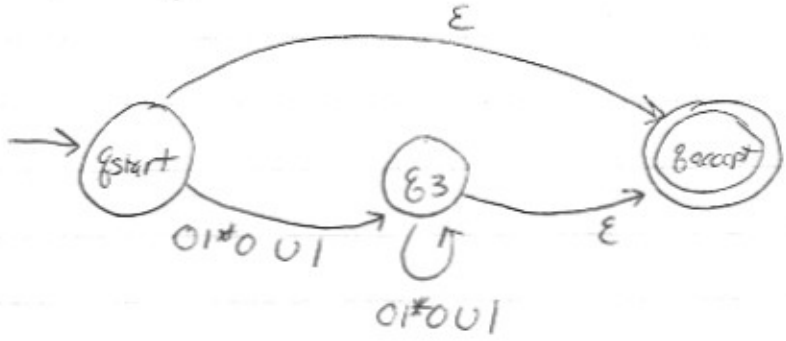
Rip q_1 from the GNFA G

G′



Rip q_2 from G′

G″



Rip q_3 from G″

G‴

$(01^*0U1)(01^*0U1)^* \cup \varepsilon$