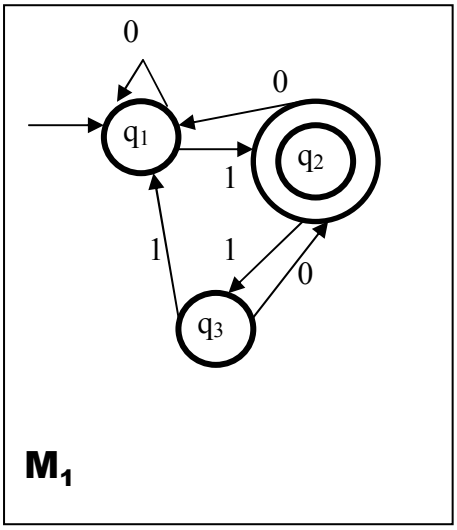
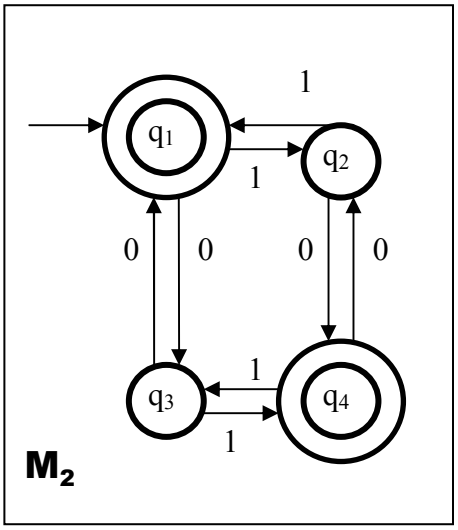
Computer Science 310 Homework #1

Distributed: Friday, September 1, 2006

Due: 1pm, Friday, September 8, 2006
No Late Assignments Accepted

1.





a. What is the start state of M_1?
b. What is the set of accept states of M_1?
c. What is the start state of M_2?
d. What is the set of accept states of M_2?
e. What sequence of states does M_1 go through on input 1001?
f. Does M_1 accept the string 10011?
g. Does M_2 accept the string ε?

2. Give the formal description of the machines M_1 and M_2 pictured above.

3. Exercise 1.3 from Sipser. Page 84.

4. Give state diagrams of DFAs recognizing the following languages. In all cases the alphabet is {0, 1}.

a) {w | w contains at least four 1s}

b) {w | the length of w is at most 5}

c) {w | w contains at least two 0s and at most one 1}

d) {w | w starts with 0 and has odd length, or starts with 1 and has even length}

5. Exercise 1.20, a through h, page 84