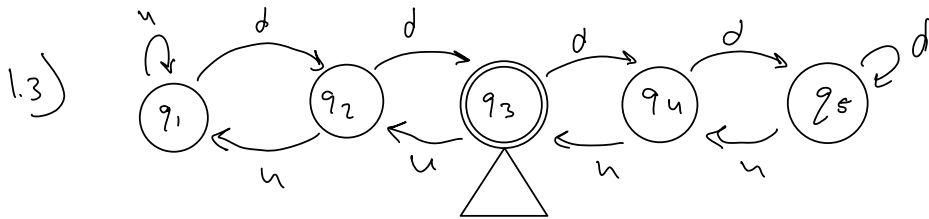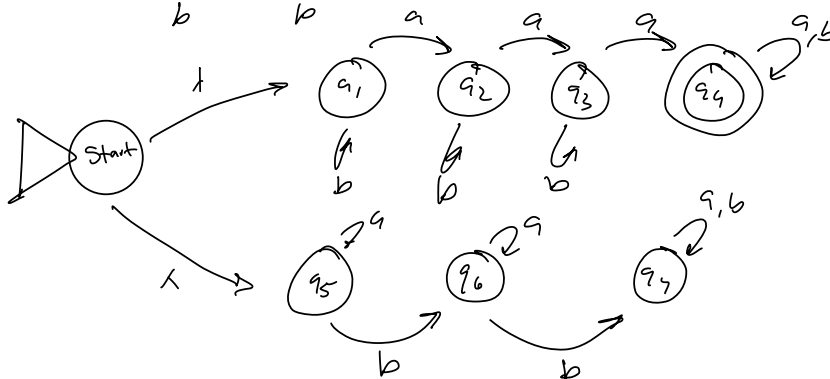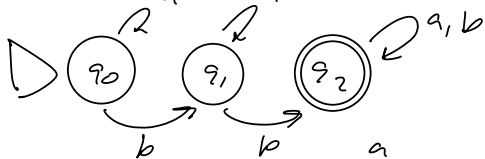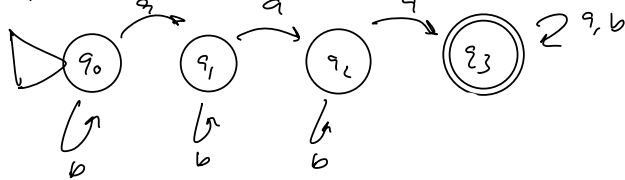Connor Marler   Theory of CompSci   Homework #2

1.3 , 14.a, 1.4f, 1.6a, 1.6b, 1.6e, 1.6f, 1.6n, 1.7d, 1.7g

1.3)

1.4a) {w|w has @ least three a's and least two b's}

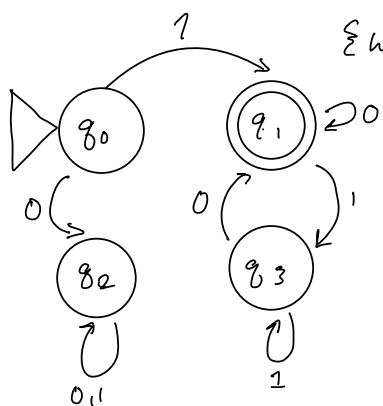1.4f) { w|w has an odd number of a's and ends with a b}

q4   q2   q3   ab   b   b

q0   q.   q   b   a   q2

q   a   q1   q2   q3   q,b   b   b   Start   t

t   b   b   q5   q6   q   a   b   q7   a

1.(6 a)

1
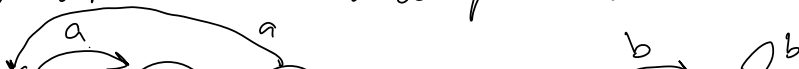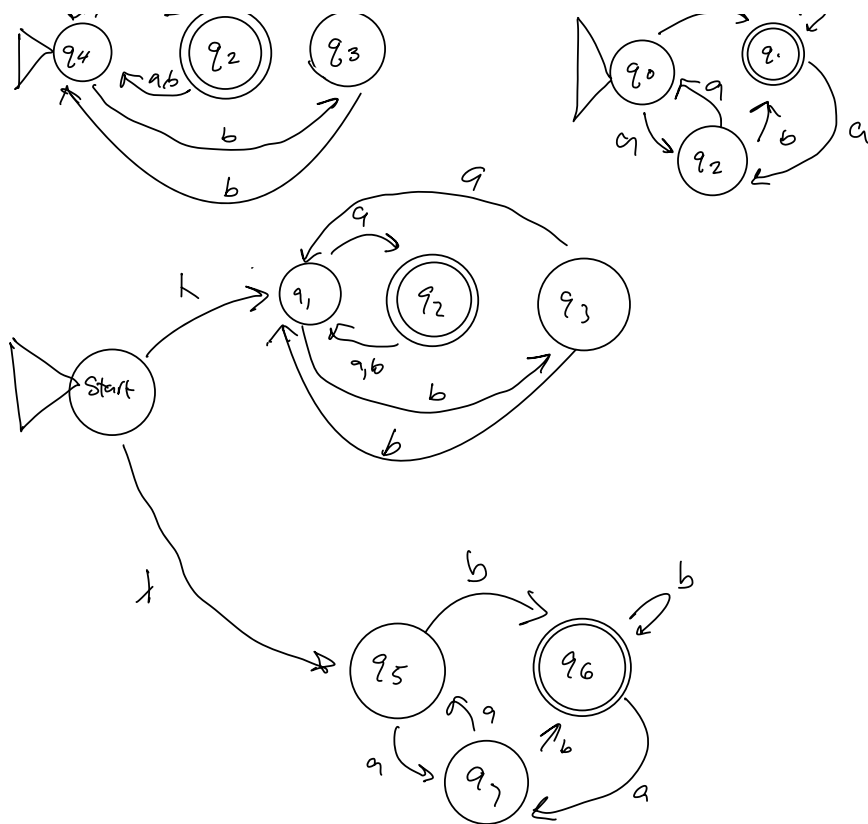
$\{w \mid w$ begins with a 1 & ends with a 0$\}$

q0   q1   0   q2   q3   0   1   0,1   1

1.6 b) $\{w \mid w$ Contains at least three 1s$\}$

1   1   1   1

q0   q1   q2   q3

0   0   0   0
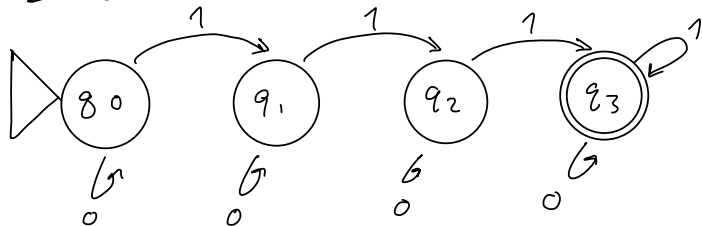
1. (e) {w/w starts with 0 and has odd length, or starts with 1 and has even length}

q_0 → q_1 —0,1→ q_2
q_0 —0→ q_3 —0,1→ q_4 —0,1→ q_2
q_2 —0,1→ (loop)

1. (f) {w/w doesn't contain the string 110}

q_0 —1→ q_1 —1→ q_2 —0→ q_3 ↺ 0,1
q_0 —0→ q_4
q_4 —0→ q_0
q_4 —1→ q_1
q_2 —0→ q_4
q_3 —1→ q_4
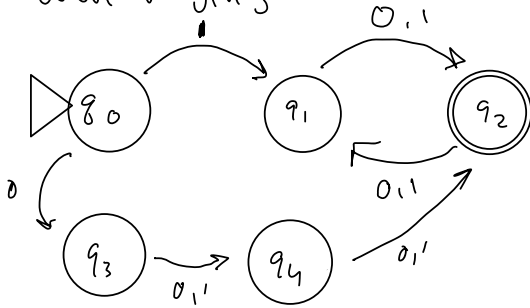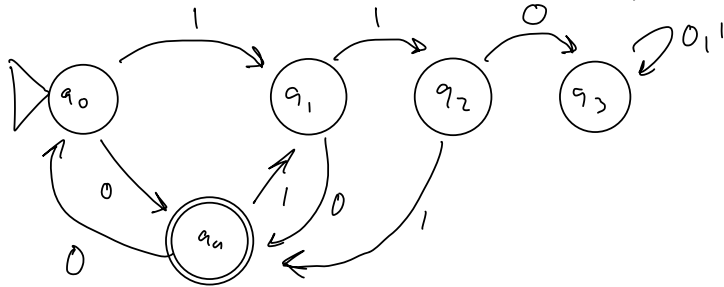
1.6n {w/w all strings except the empty string}

q_0 —0,1→ q_1 ↺ 0,1
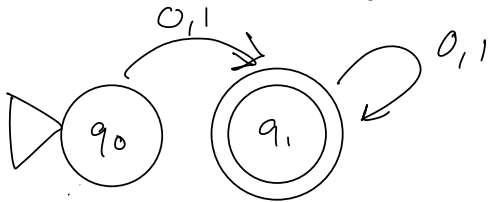
1.7 δ {the language is {0} with 2 states}

q_0 —0→ q_1

1.7g {the language is {ε} with one state

q_0 ↺ ε