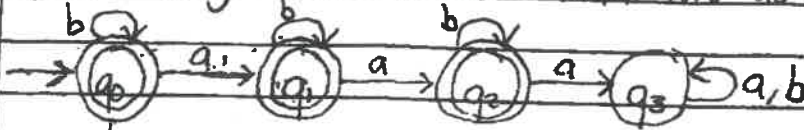


Homework # 2

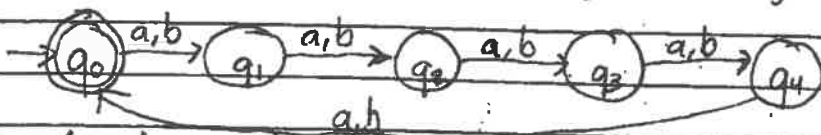
According to words, draw a DFA.

Hints: all strings include all possibilities considered.

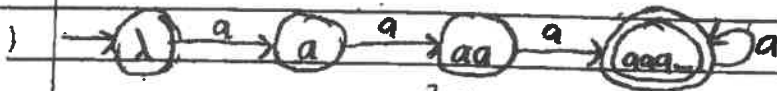
4 c) all strings with no more than two a's $\Sigma = \{a, b\}$



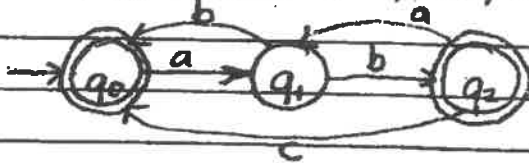
7 b) $L = \{w : |w| \bmod 5 = 0\}$ (Length of string is multiple of 5) $\Sigma = \{a, b\}$



14 $L = \{a^n \mid n \geq 3\} = \{aaa, aaaa, \dots\} = L(M)$



9 $L = \{ab, abc\}^* = \{ab, abc, abab, ababc, abcrab, abcrabc, \dots\}$

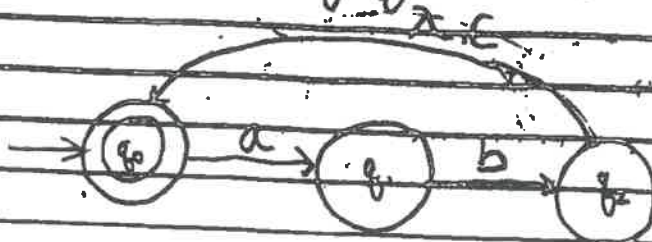


Another solution:

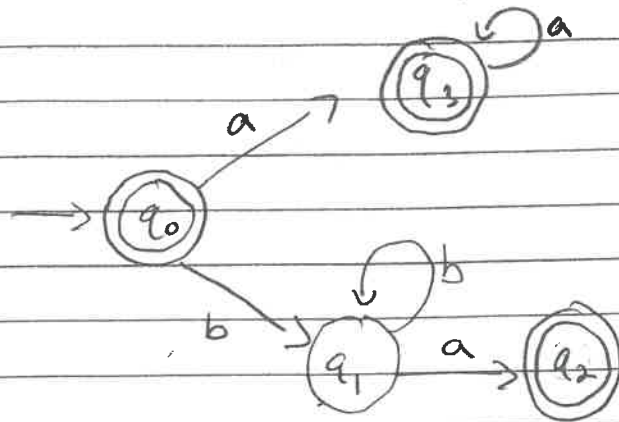
1) NFA has λ , but DFA has no λ .

2) DFA must include all alphabets, but NFA has more than or none alphabets

9 Construct an nfa with three states that accepts the language $\{ab, abc\}^*$



12) Find an NFA w/ 4 states for $L = \{a^n : n \geq 0\} \cup \{b^n a : n \geq 1\}$



DFA

$$\delta^*(q_0, 0) = \{q_1, q_2\}$$

$$\delta^*(q_0, 1) = \{q_1, q_2\}$$

$$\delta^*(q_1, 0) = \{q_0, q_2\}$$

$$\delta^*(q_1, 1) = \{q_1, q_2\}$$

$$\delta^*(q_2, 0) = \emptyset$$

$$\delta^*(q_2, 1) = \{q_1, q_2\}$$

NFA \rightarrow DFA

1) Start from the initial state of NFA

2) numbers of alphabets represent the same number of arrows. The example has two alphabets. $\{a, b\}$, so each states have two arrows.

3) If q_3 is a final state in NFA, all states contain q_3 is final states in DFA!!

4) We may have empty set in DFA

