

ID# 13794

COMPILER CONSTRUCTION

SPRING-2020

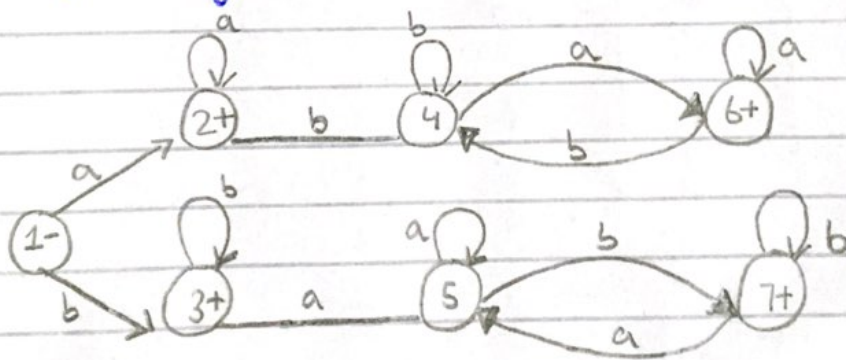
FINAL PAPER

Q1) Build an FA accepting the language L of strings, defined over $\Sigma = \{a, b\}$, beginning with and ending in same letter.

Sol:- The language L may be expressed by the following regular expression.

$$(a+b)^* a (a+b)^* a + b (a+b)^* b$$

This language L may be accepted by the following FA



Q6. Draw a transition table for the diagram given in figure 2. (-) is the starting state & (+) is the ending state

Ans:- Transition Table :

States	a	b
1-	2	6
2	3+	x
3+	x	4
4	x	5+
5+	x	x
6	10	7
7	4	8
8	9+	Y
9+	Y	Y
10	Y	11+
11+	Y	Y
x	x	x
y	y	y

Q4 Distinguish between Moore & Mealy machine and convert the following Mealy machine to Moore in figure 1.

Q5:- Mealy Machine: A mealy machine is defined as a machine in theory of computation whose output values are determined by both its current state and current inputs. In this machine at most one transition is possible.

It has 6 tuples: $(Q, q_0, \Sigma, O, \delta, \lambda)$

Q is finite set of states

q_0 is the initial state

Σ is the input alphabet

O is the output alphabet

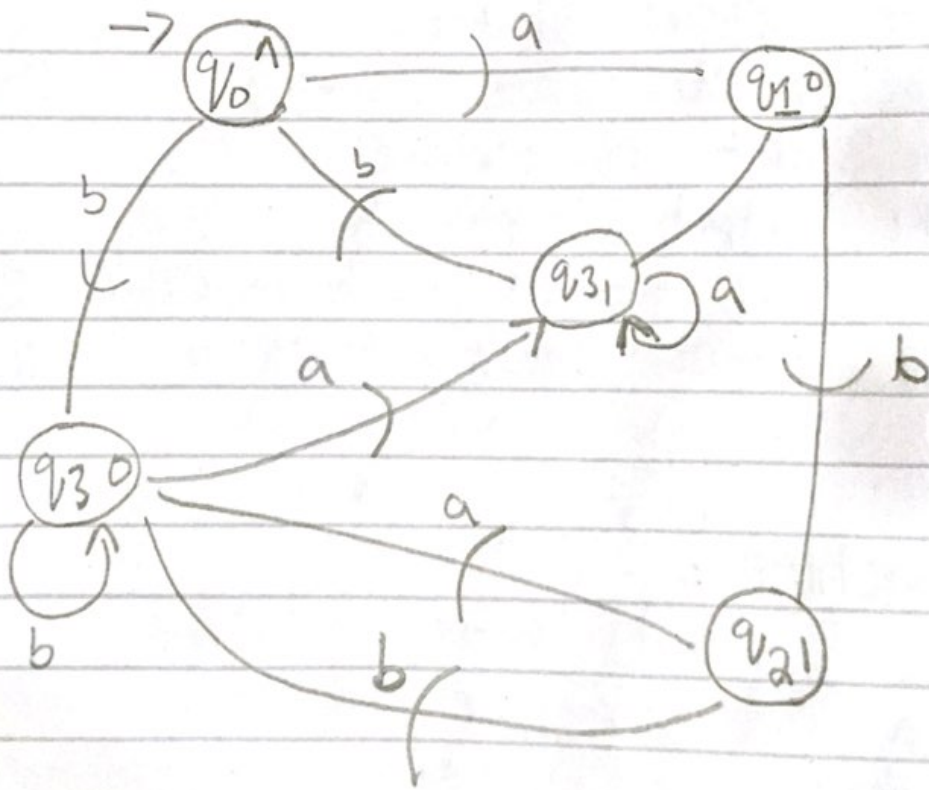
δ is transition function which maps $Q \times \Sigma \rightarrow Q$

λ is the output function which maps $Q \times \Sigma \rightarrow O$

Moore Machine:

A Moore machine is defined as a machine in theory of computation whose output values are determined only by its current state.

- 1) Output depends only upon present state
- 2) If input changes, output does not change
- 3) More number of states are required
- 4) There is less hardware requirement for circuit implementation
- 5) They react faster to inputs
- 6) Synchronous output & state generation
- 7) Output is placed on states
- 8) Easy to design



Q3) Construct regular expression defining each of the following language over the alphabet $\Sigma = \{a, b\}$

i. All words having even length
 $(a+b)(a+b)^*$

ii. All words having at least three a & two b
 $(a+b)^* aaa (a+b)^* bb (a+b)^*$

iii. All words having at least double a or triple b
 $(a+b)^* (aa+bbb) (a+b)^*$

iv. All words starts with double a or quadruple b.
 $aa + bbbb (a+b)^*$

Q2) Build an FA accepting ----- or triple b's.

sn: An FA which has quadruple a's or triple b's

