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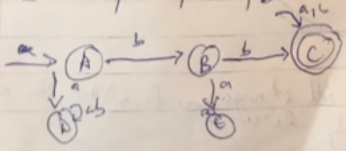
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CSC 304

Solution

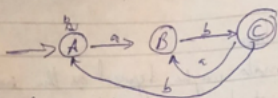
1. A finite automata maybe defined as the simplest form of computation, it has very limited memory. It is an abstract machine that can be in exactly one of a finite number of states at a time.

b) A deterministic finite automata (DFA) is represented formally by a 5-tuple i.e. $\langle S, Q, \Sigma, q_0, F \rangle$ where
 Q = set of all states
 Σ = inputs
 q_0 = Initial state
 F = set of final states
 δ = transition functions.

2. L = set of all strings with bb
 $L = \{bb, bbab, bbb, bbba, \dots\}$



3. $L =$ set of all strings ending with ab i.e. $\{ab, aab, bab, baab, \dots\}$



$$Q = \{A, B, C\}$$

$$\Sigma = \{a, b\}$$

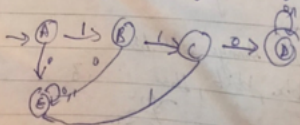
$$q_0 = A$$

$$f = C$$

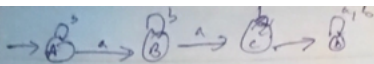
$$\delta =$$

	a	b
A	B	A
B	B	C
C	B	A

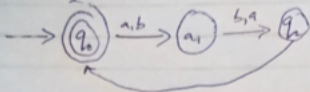
4. $L =$ set of all strings that begin with 110



5. $L =$ set of all strings over $\{a, b\}$ that contain odd number of 'a's

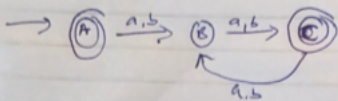


ii. $L =$ set of all strings over $\{a, b\}$ that $w \in L, |w| \equiv 0 \pmod{2}$



5.iii. $w \in \{a, b\}^*$ $|w| \equiv 0 \pmod{2}$

$L = \{\epsilon, aa, ab, ba, bb, aaaa, \dots, bbbb\}$



ii) $L =$ set of all strings over $\{a, b\}$ the length of strings is not 3

