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17/SCI01/007
COMPUTER SCIENCE
CSC304

ASSIGNMENT

1. This is a simple idealized machine used to recognize patterns within input taken from some character set (or alphabet).

Finite automata can be represented by input tape and finite control.

Input tape: it is a linear tape having some number of cells. Each input symbol is placed in each cell.

Finite control : it decides the next state on receiving particular input from input tape

2.

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Answer.

2. The regular expression of this language is $bb(a+L)^*$

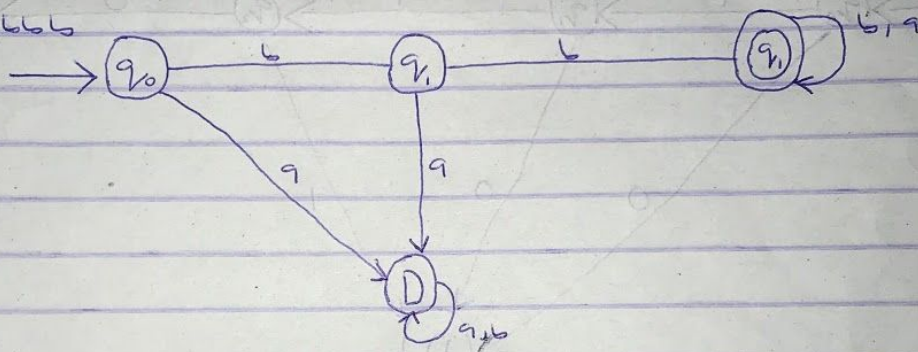
The minimum number of state is =
 $(n+2) = (2+2) = 4$

Strings will check

→ bb

→ bbb

→ bbbbs



3. The regular expression of this language is $(a+L)^*ab$

The minimum number of state is

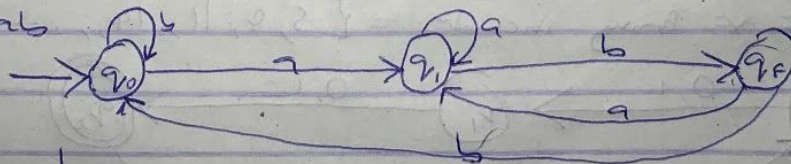
$$(n+1) = (2+1) = 3$$

Strings to check

→ ab

→ aab

→ abab



state	a	b
q0	q1	q0
q1	q1	qf
qf	q1	q0

4. The regular expression of this language is

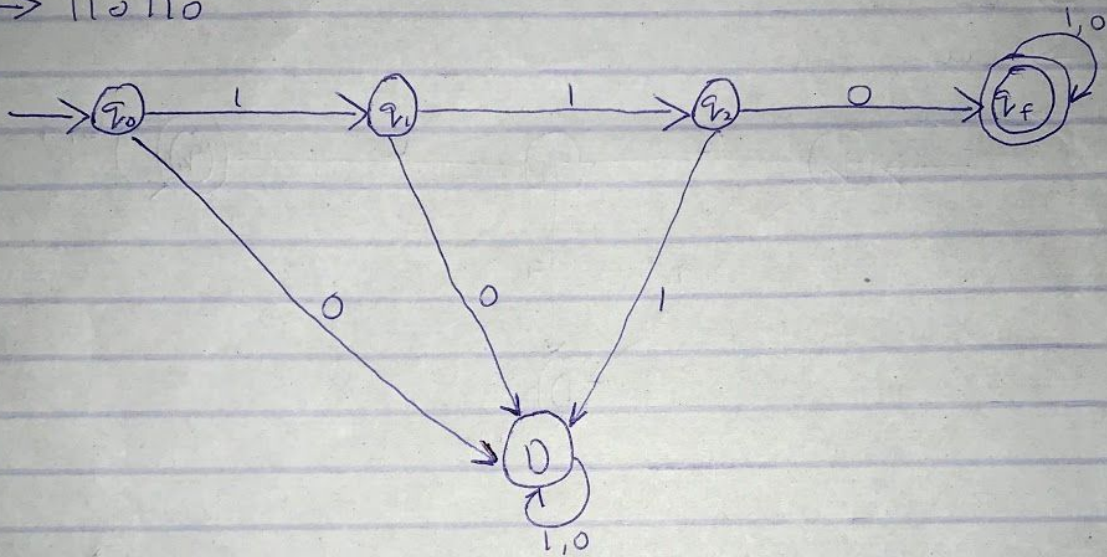
$$110(1+0)^*$$

The minimum number of states is

$$(n+2) = (3+2) = 5$$

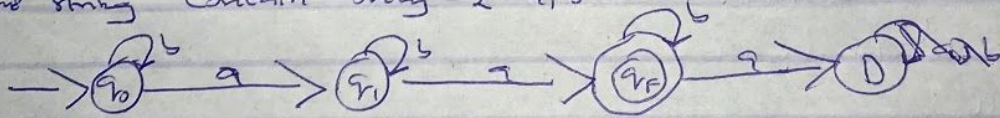
strings to check.

- 110
- 1101
- 11011
- 110110



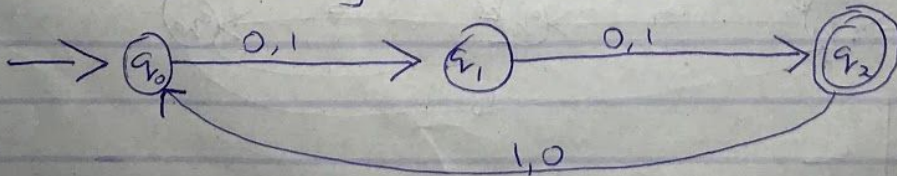
5. Construct a DFA for all strings over $\{a, b\}$ such that

(i) The string contains only 2 a, b.

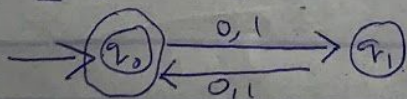


(ii) $|w| \equiv 2 \pmod 3$.

Length of string include = $\{5, 8, 11, 14, \dots\}$



(iii) $|w| \equiv 0 \pmod 2$



(iv) At mod 3 i.e. $\{0, 1, 2, 3\}$



