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Batch M2
Roll No - 27

TOC
Theory Assignment - 1
Batch - 2

1) DFA equivalent to NFA.
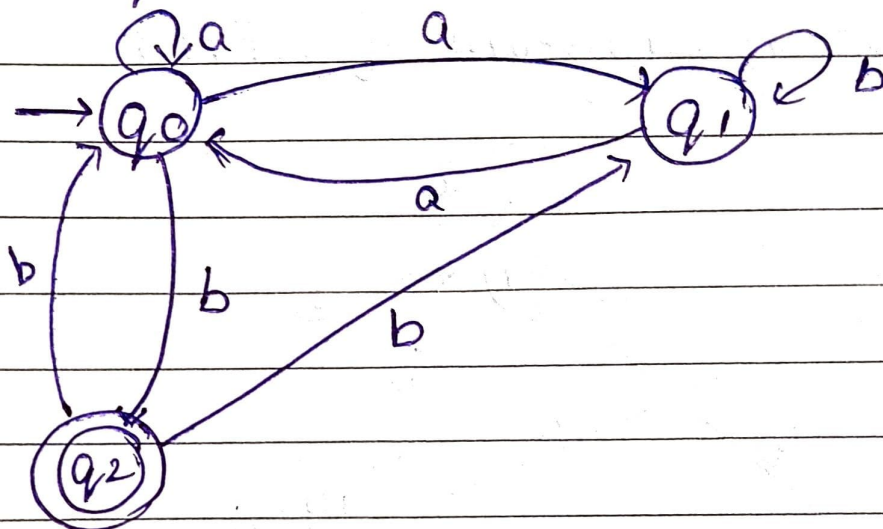
Transition Table of NFA:
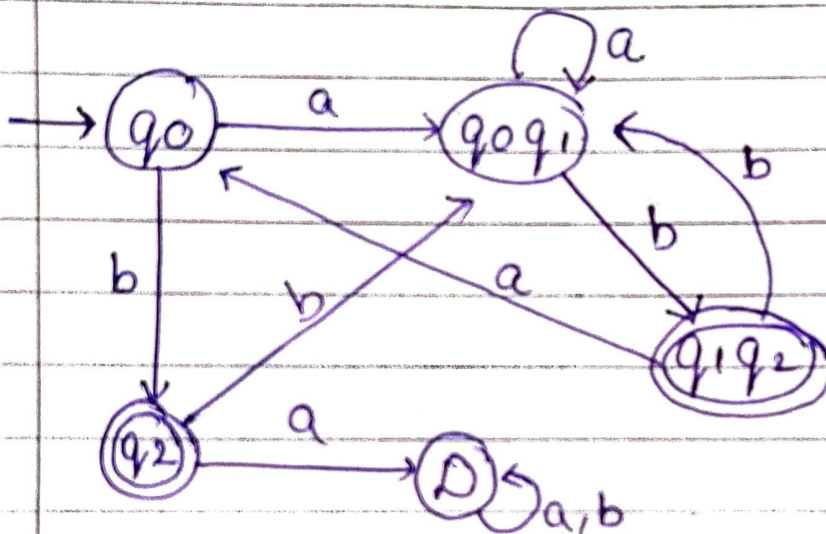
Q \ Σ	a	b
→ q_0	q_0, q_1	q_2
q_1	q_0	q_1
★ q_2	ϕ	q_0, q_1

Transition Table of DFA:

Q \ Σ	a	b
→ q_0	$q_0 q_1$	q_2
$q_0 q_1$	$q_0 q_1$	$q_1 q_2$
★ q_2	ϕ	$q_0 q_1$

Q \ Σ	a	b
★ $q_1 q_2$ D	q_0 D	$q_0 q_1$ D

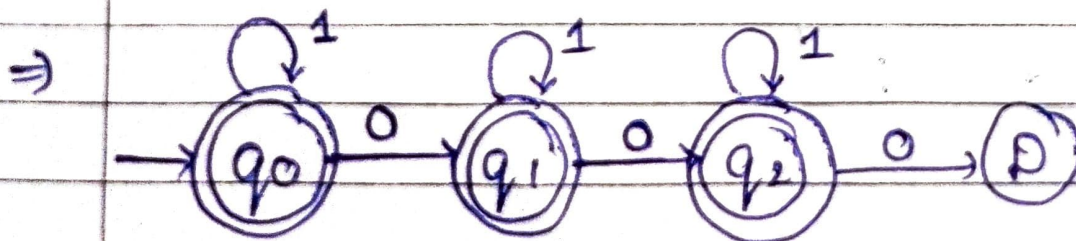## Transition Diagram of DFA:

2) Design a FA for the strings containing at most Two 0's.

⇒ Possible Accepted String:
{0, ɛ, 1, 00, 01, 011, 001, 101 · · · }

⇒

3) Identify a regular expression to denote language over $\Sigma = \{0, 1\}$ for all strings that do not end with 01.

⇒ Possible Accepted Strings.

$\{\epsilon, 0, 1, 00, 10, 11, 000, 100, 110, 010, 011, 111\}$
- - - - - - - etc.

⇒ RE = $\epsilon + 0 + 1 + (0+1)^* (00 + 10 + 11)$

The expression $\epsilon + 0 + 1$ describes the strings with length zero or one, and the expression $(0+1)^* (00+10+11)$ describes the string with length 2 or more.

4) Discover the language accepted by the RE = $(1+10)^*$

Strings ⇒ $\{1, 101, 110, 111, 1, 1010 \ldots\}$

⇒ Strings with input symbol $(0, 1)$ starting with 1 but not having consecutive zero.