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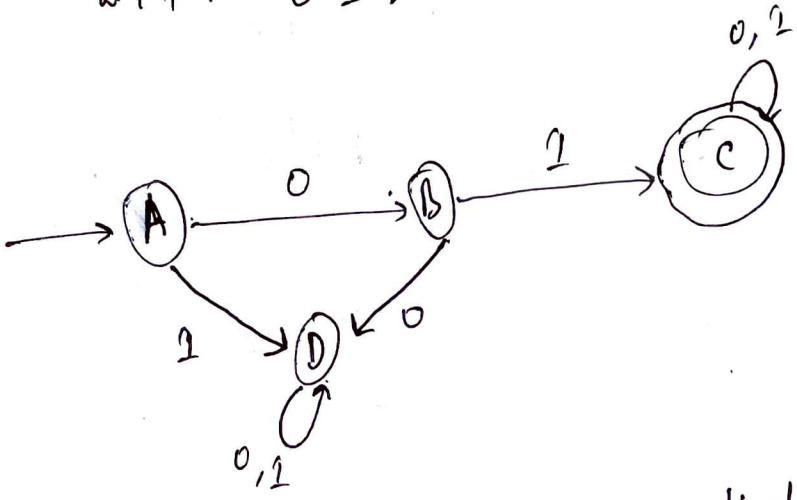
Course: CSE 331

Section: 08

Assignment: 2

Ans to the Q: N: 1

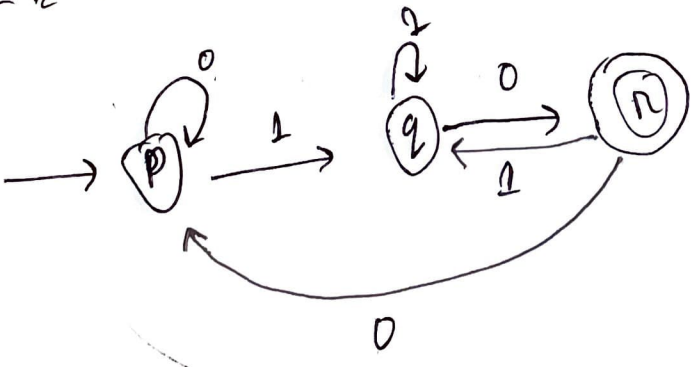
L_1 = Set of binary strings that start with 01.



	0	1
→ A	B	D
B	D	C
C *	C	C
D	D	D

T_1 table

L_2 = Set of binary strings that end with 10.



	0	1
→ p	p	q
q	r	q
r *	p	q

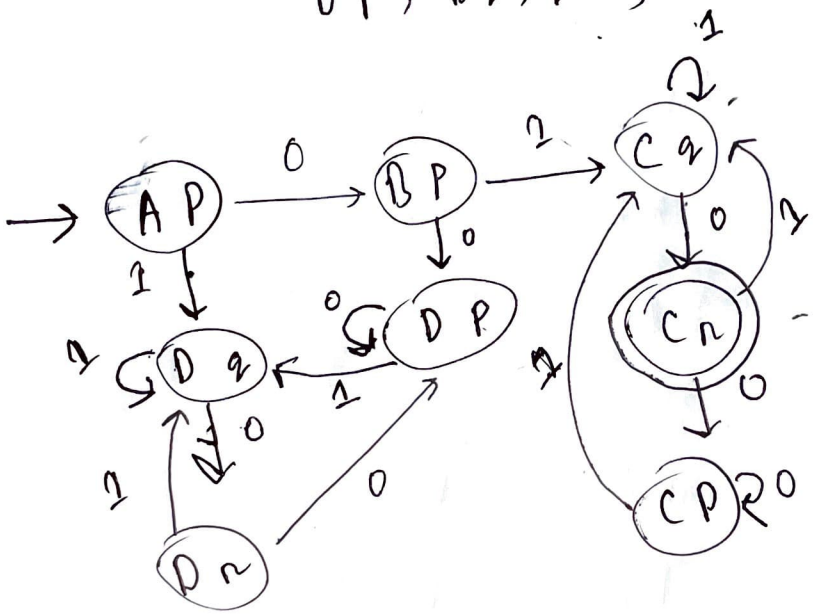
T. table

$L_3 = L_1$ and L_2

$= \{A, B, C, D\} \times \{P, q, r\}$

$= \{AP, Aq, Ar, BP, Bq, Br, CP, Cq, Cr,$

$DP, Dq, Dr\}$



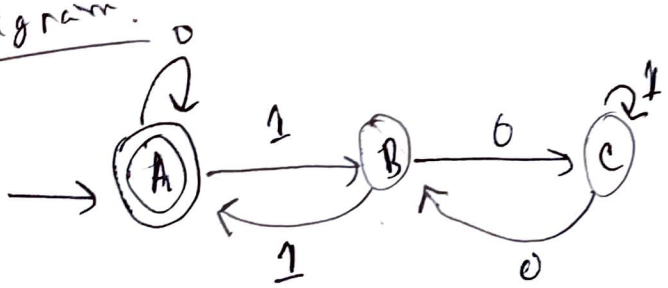
Transition table for L_3:

	0	1
→ A_P	B_P	D_q
B_P	D_P	C_q
C_q	C_r	C_q
C_r *	C_p	C_q
C_p	C_p	C_q
D_q	D_r	D_q
D_p	D_p	D_q
D_r	D_p	D_q

Ans to the Q: No. 2

$L_1 = \{ w \mid w \in (0,1)^* \text{ and } w \text{ is divisible by } 3. \}$

Diagram:

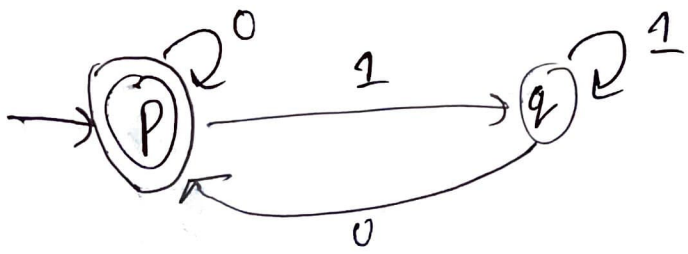


Transition Table:

	0	1
→ A *	A	B
B	C	A
C	B	C

$L_2 = \{w \mid w \in (0,1)^*$, and w is not divisible by $2\}$

Diagram:



Transition table:

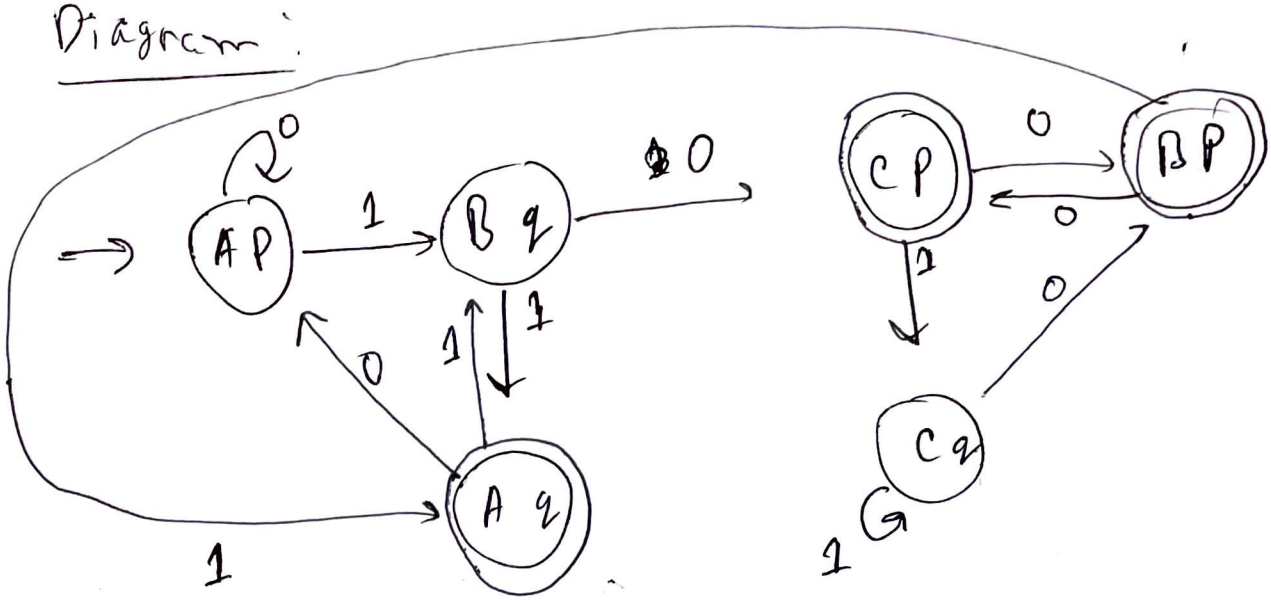
	0	1
$\rightarrow$ * P	P	q
q	P	q

Now, $L_3 = \{L_1\}$ or $\{L_2\}$

$= \{A, B, C\} \times \{P, q\}$

$= \{AP, Aq, BP, Bq, CP, Cq\}$

Diagram:



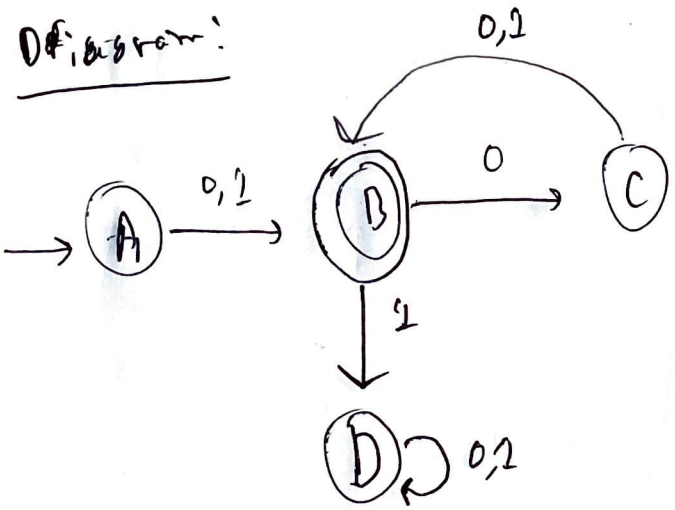
Transition Table:

	0	1
→ A P	A P	B q
B q	C P	A q
C P	B P	C q
* B P	C P	A q
* A q	A P	B q
C q	B p	C q

Ans to the Q: N: 3

L = {set of binary strings whose lengths are odd and have 0s in all even positions}

Diagram:



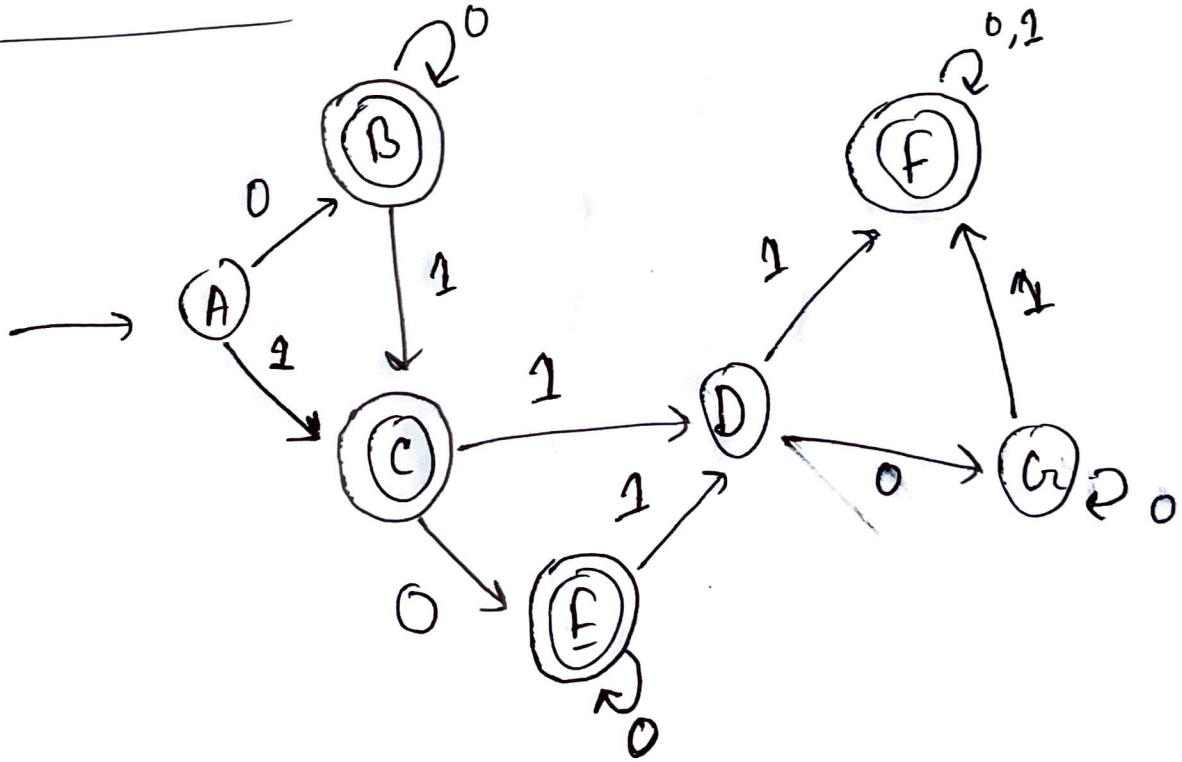
Transition Table for L:

	0	1
→ A	B	B
* B	C	D
C	B	B
D	D	D

Ans to the Q: N: 4

$L = \{w \mid w \in (0,2)^*$ and then $r_0(w)$ do not contain exactly two 1s$\}$

Diagram:



~~Table~~

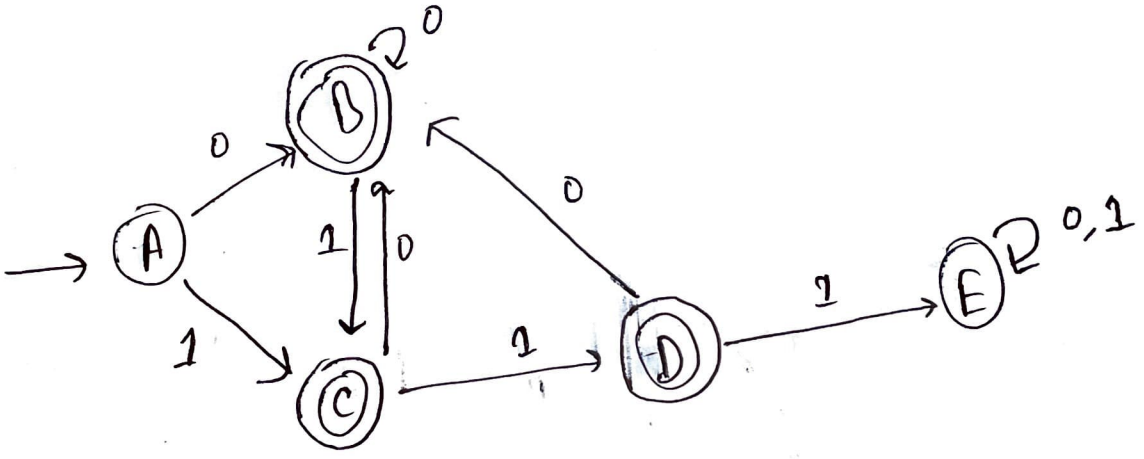
Transition table:

	0	1
→ A	B	C
B *	B	C
C *	E	D
D	G	F
E *	E	D
F *	F	F
G	G	F

Ans to the D.F.S

L = { w | w ∈ (0,1)* and ~~do~~ no (w) to not contain 111 as a substring }

Diagram:



	0	1
→ A	B	C
* B	B	C
* C	B	D
* D	B	E
E	E	E

← Transition Table