ExP NO: 12

Aim: Design ·0-2-4-6 Selt correcting to 0 Counter using D-flip flop.
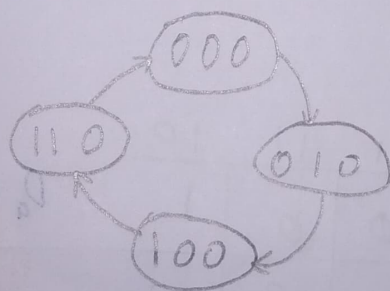
Required:

1 - D·flip flop
2 - Connecting wires
3 · 1C - Trainer Kit

theory:

This kind of counter is used in counting numbers in given sequenc. and once the Sequence is complete it resets to 0.

State diagram:

II Present state and next state table:

excitation

PS q_a q_b q_c			NS Q_A Q_B Q_C			D_1 D_2 D_3		
0	0	0	0	1	0	0	1	0
0	0	1	0	0	0	0	0	0
						1	0	0
0	1	0	1	0	0			
						0	0	0
0	1	1	0	0	0			
						1	1	0
1	0	0	1	1	0			
						0	0	0
1	0	1	0	0	0	0	0	0
1	1	0	0	0	0			
						0	0	0
1	1	1	0	0	0			

excitation table:

K map:

for D_A:

q_c \ $q_a q_b$	00	01	11	10
0	0	0	0	1
1	1	0	0	0

$D_a = q_c \bar{q_a} \bar{q_b} + \bar{q_c} q_a \bar{q_b}$

$\bar{q_b}(\bar{q_a} q_c + q_a \bar{q_c})$

for D_B

q_c \ $q_a q_b$	00	01	11	10
0	1	0	0	1
1	0	0	0	0

$D_b = \bar{q_c} \bar{q_a} \bar{q_b} + \bar{q_c} q_a \bar{q_b}$

$= \bar{q_c} \bar{q_b} (q_a + \bar{q_a})$

$\bar{q_c} \bar{q_b}$

fo D_3 : 0

circuirt for Counter:
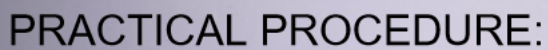
PRACTICAL PROCEDURE:
1. ICs are placed properly on the bread board of the IC trainer kit.
2. Connections are made as per the designed circuit diagram.
3. Power supply to the board is turned ON.
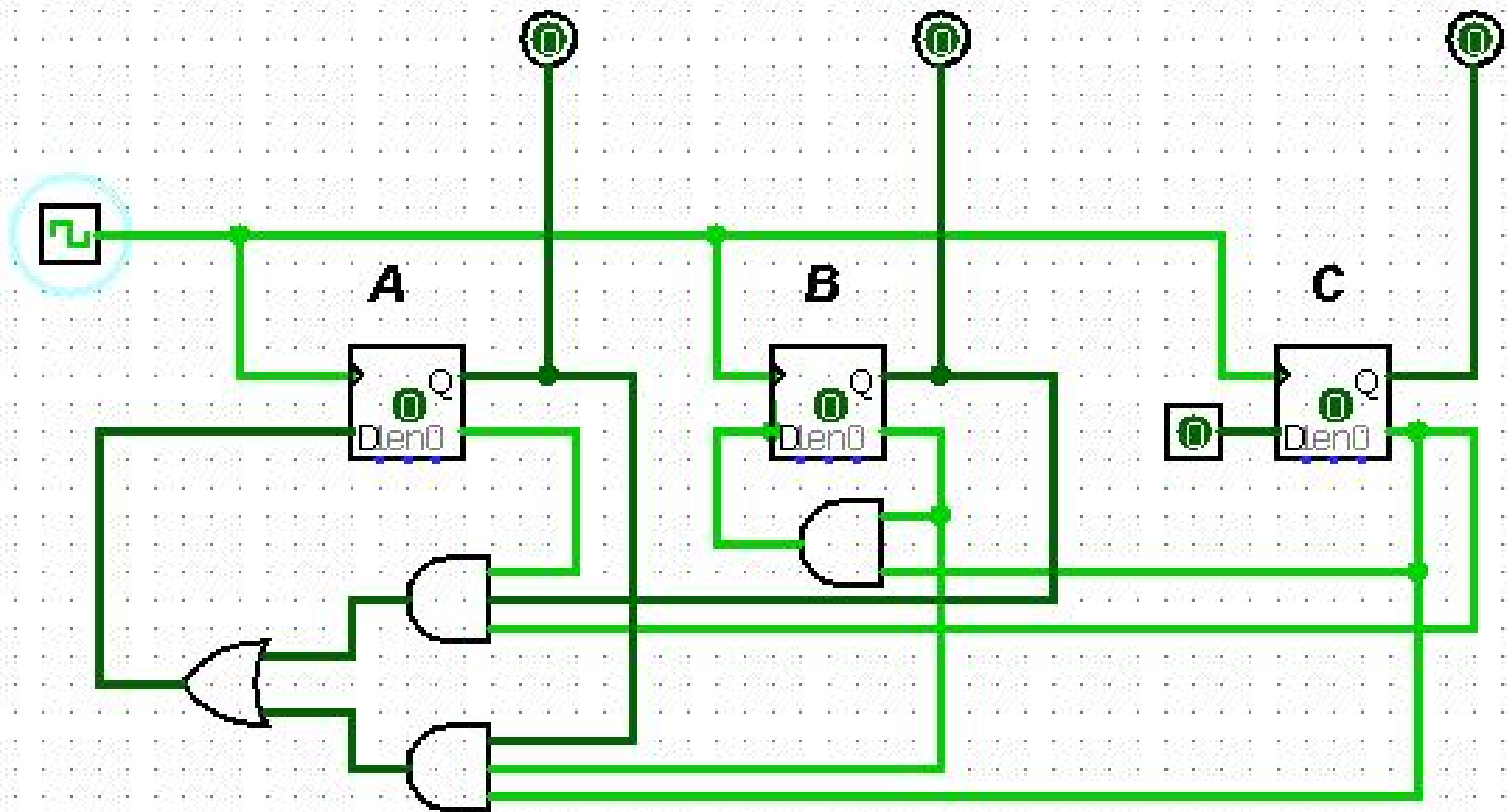4. Circuit is verified as per the truth table of the circuit.

Student's observations:

1. it has 3 d-flip flops for showing pattern 0-2-4-6.
2. its used to count numbers in pattern required but for different pattern we use different circuit
3. all the flip flops has common clock so it is a synchronous counter.
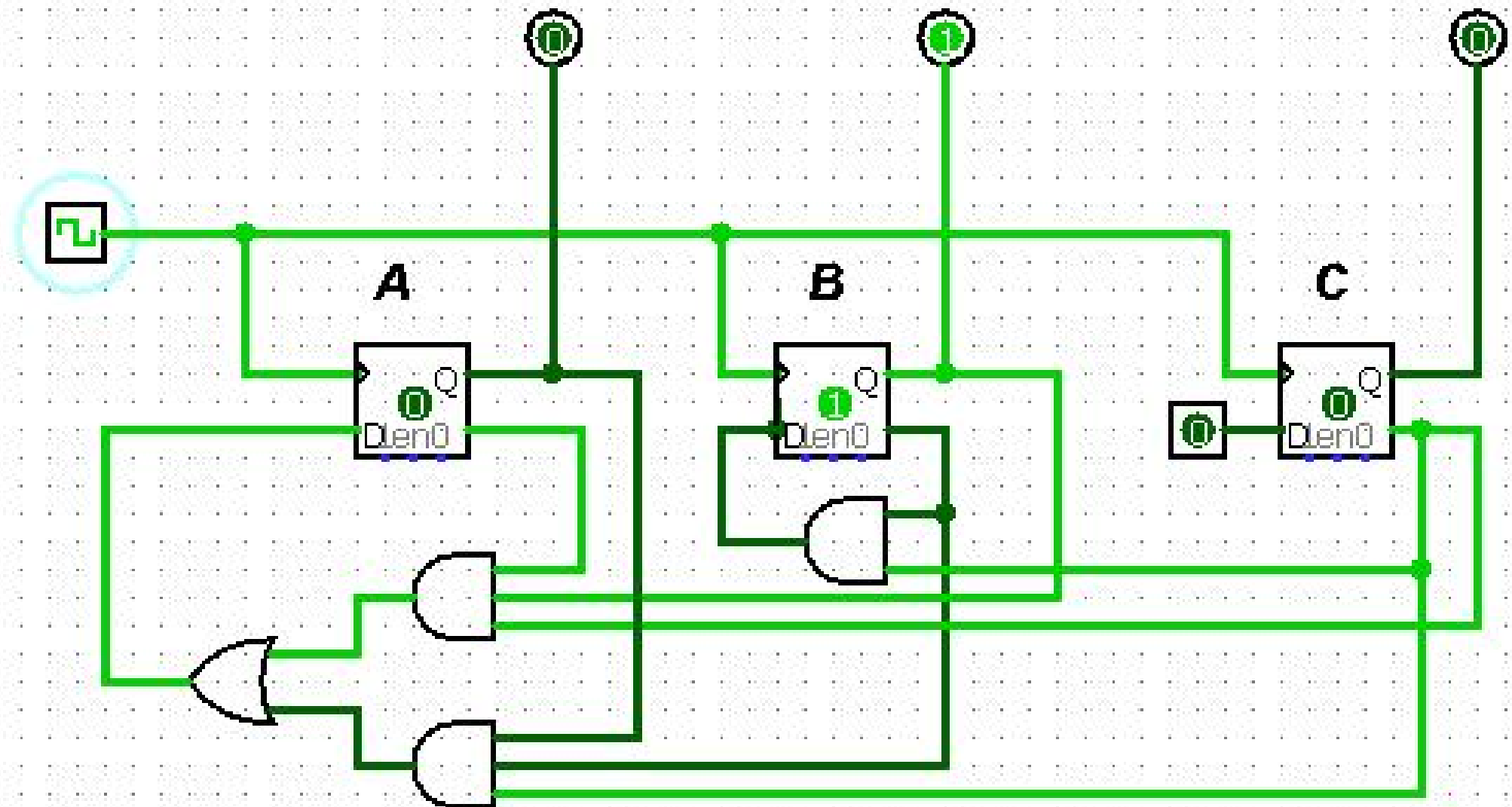
Name:kaushik gupta
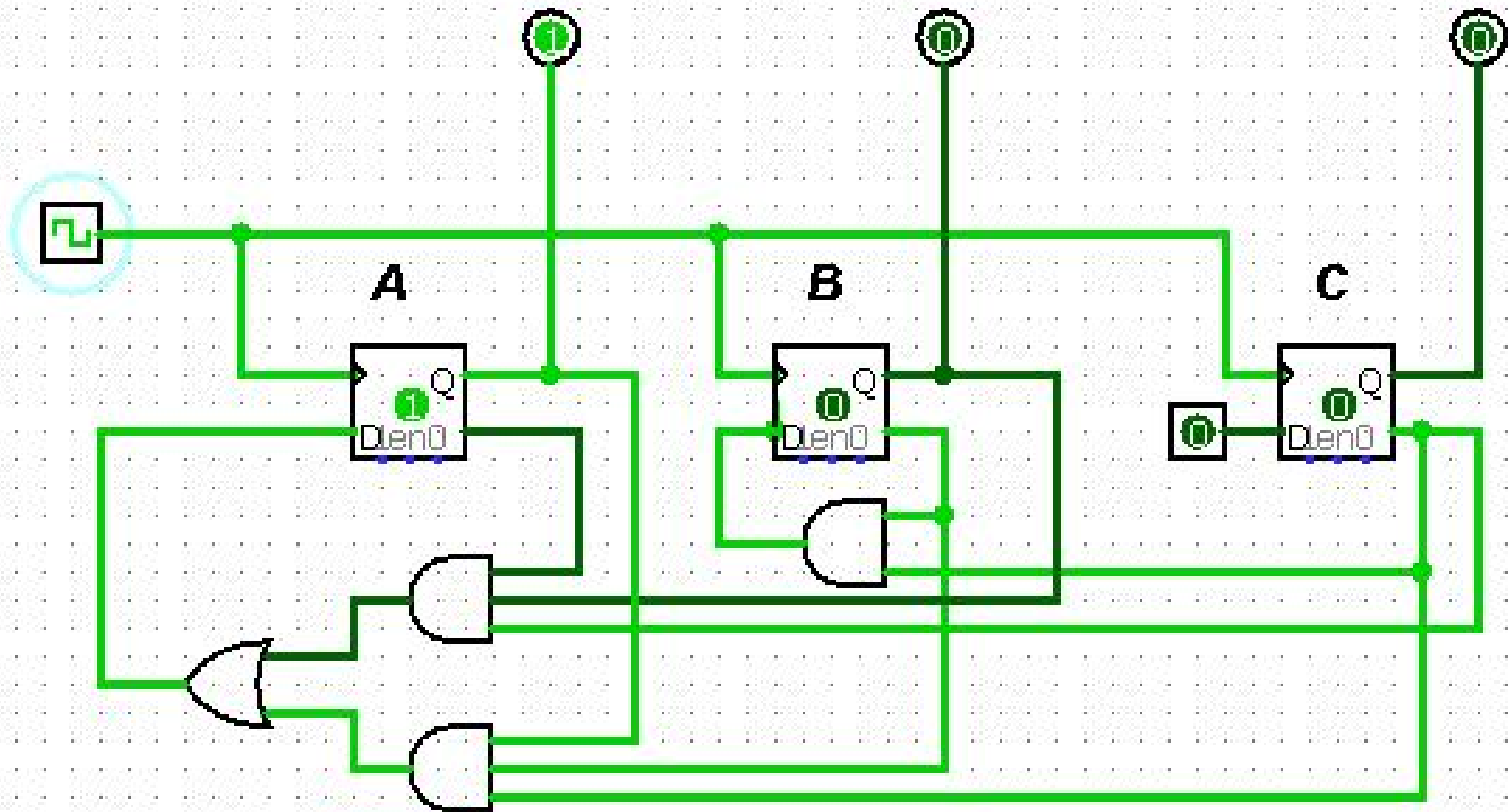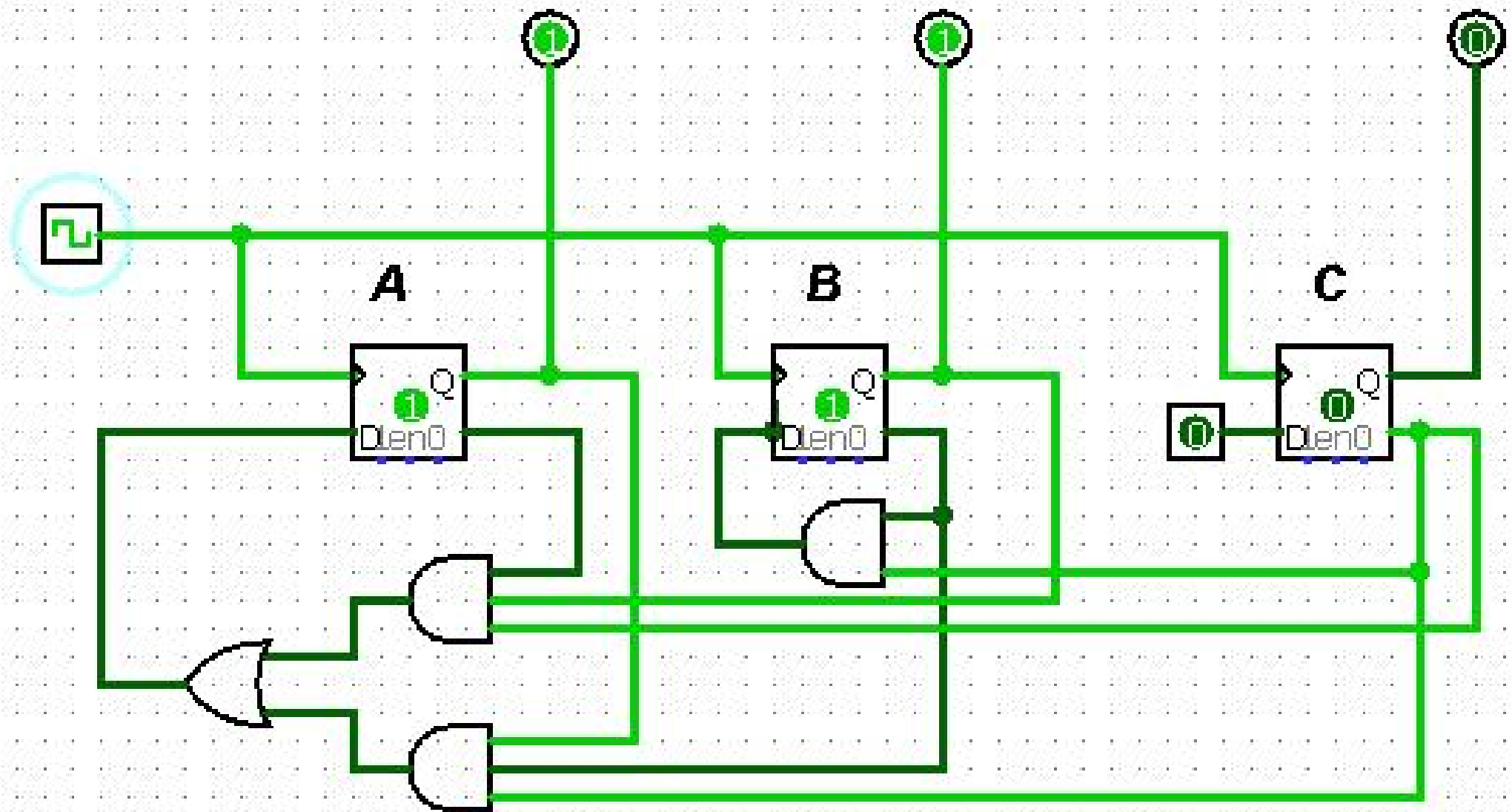Date:13|4|21
regno:201900318
sign:kaushik

kaushik gupta 201900318

kaushik gupta 201900318

kaushik gupta 201900318

kaushik gupta 201900318