Exp: 10

Date:

Aim: Design a 4 Bit ring counter using J K flip flop:

Aparatus used:

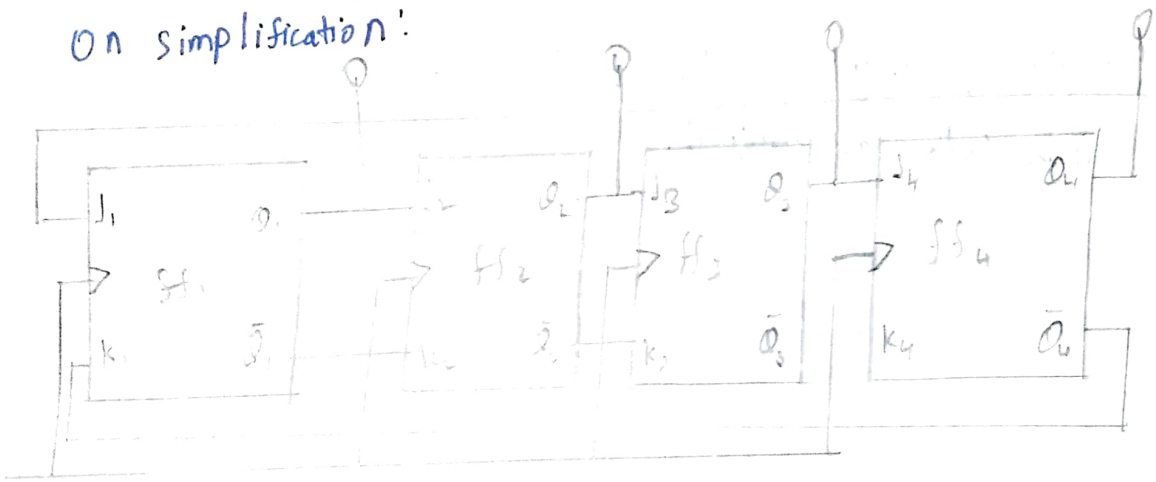
1) J K flip flop
2) Connecting wire
3) Power supply.

Theory: Ring counter is a typical application of Shift register. Ring coonter is almost Same as a shift counter. The only change is that the output of the last flip flop is connected to the input of first flip flop in case of ring counter but in case of Shift register it is taken as output.

Present and next state table:

Present State	Next State	Excitation table
$Q_A Q_B Q_C Q_D$	$Q_{AN} Q_{BN} Q_{CN} Q_{DN}$	$J_A K_A \; J_B K_B \; J_C K_C \; J_D K_D$
1 0 0 0	0 1 0 0	x 1 1 x 0 x 0 x
0 1 0 0	0 0 1 0	0 x x 1 1 x 0 x
0 0 0 0	1 0 0 0	1 x 0 x 0 x x 1
1 0 0 0	0 1 0 0	x 1 1 x 0 x 0 x

On simplification:



Practical Procedure:

1) Proper IC placing
2) Proper Power supply

Student's observation and conclusion:
> Counter is a device which stores (and sometimes displays) the number of times a particular event or process has occurred, often in relationship to a clock signal. Counter are used in digital electronics for counting purpose, they can count specific event happening in the circuit.

> it can be implimented in jk and d flip flop.

>The timing diagram of the Ring counter will explain that the clock signal changes the output of every stage of the counter, so that CLK signal will help the data to circulate from one flip flop to another. As the 4-bit ring counter (4 stages or 4 flip flops) circulates the preset digit within one clock signal, the output frequency of each flip flop is ¼ th of the main clock frequency.

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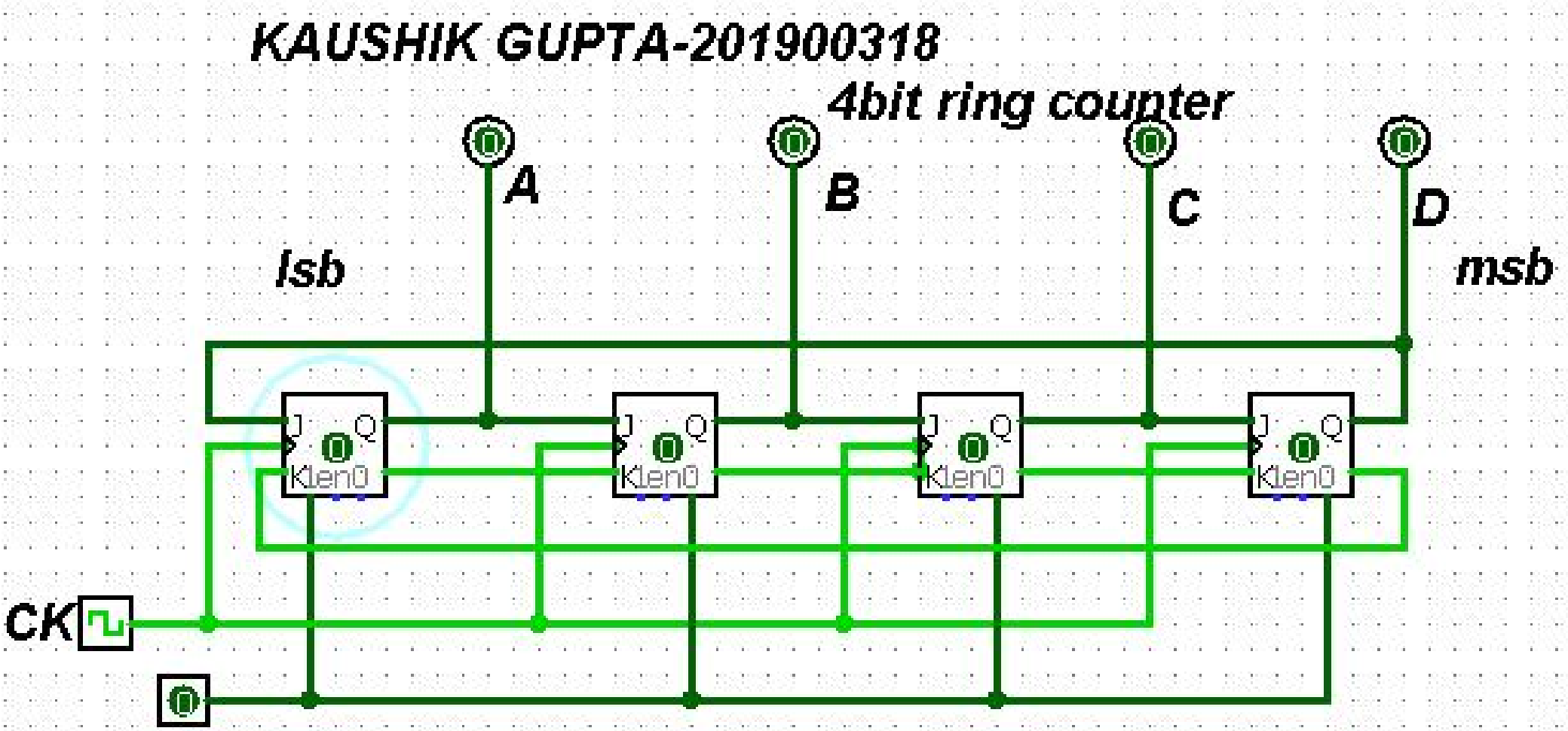
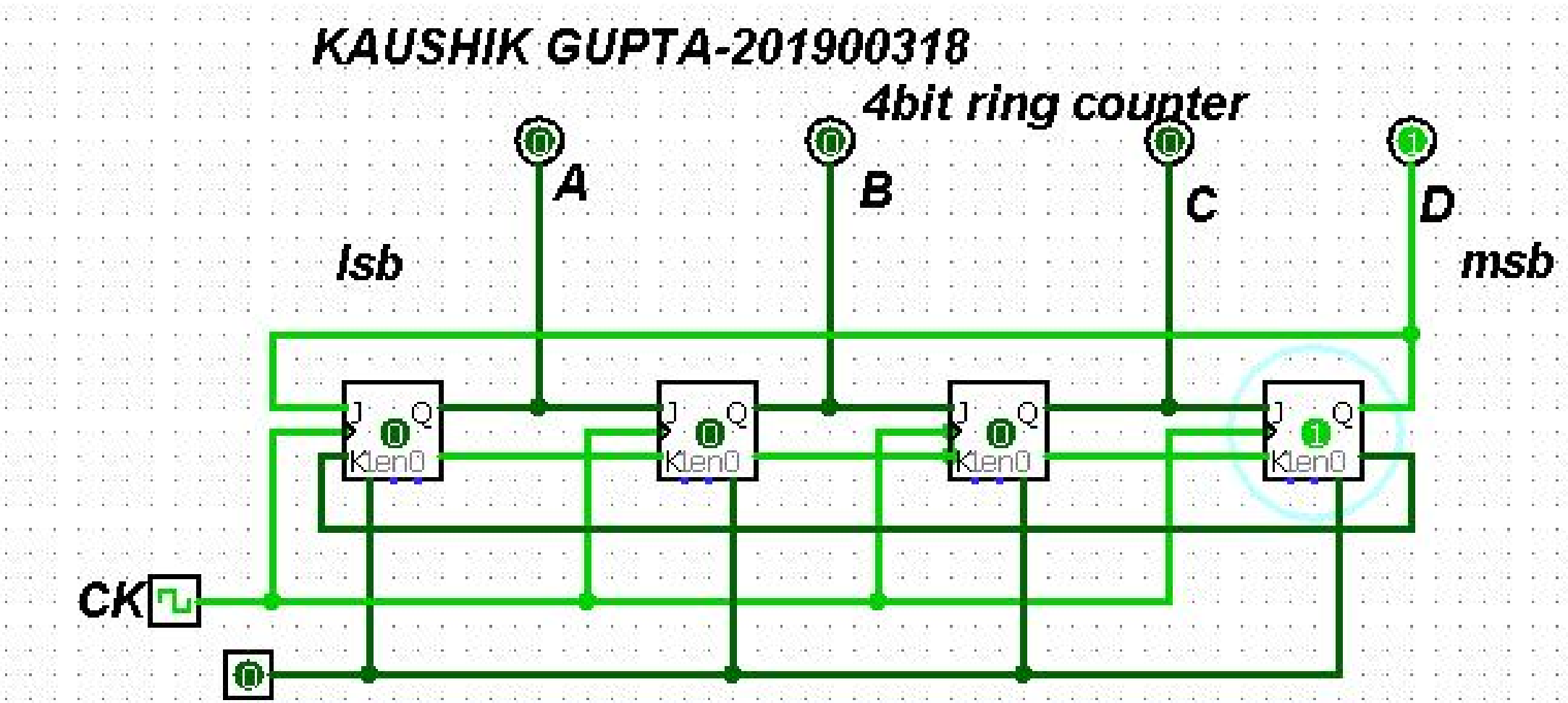

KAUSHIK GUPTA-201900318
4bit ring counter
A
B
C
D
lsb
msb
J
Q
K
en
CK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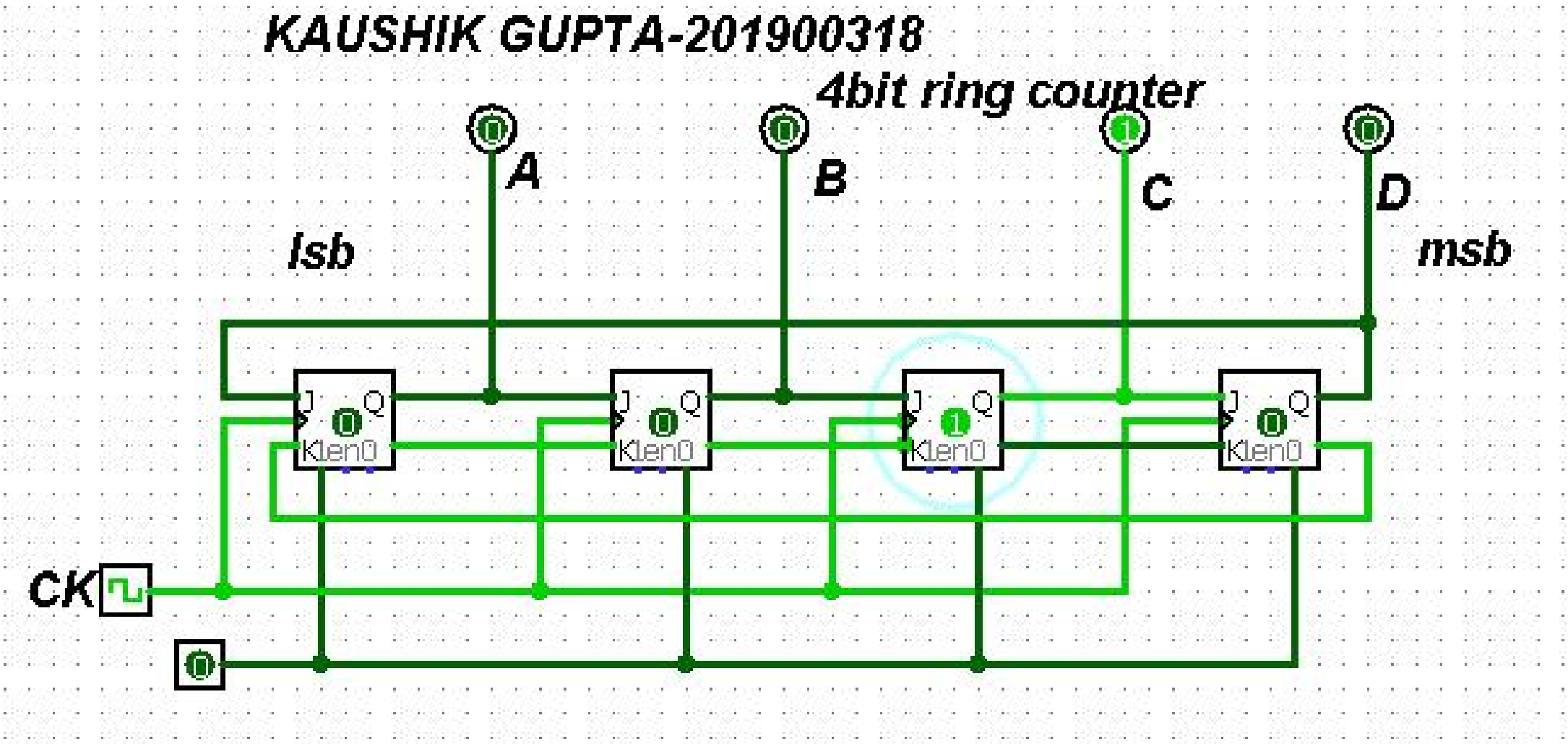
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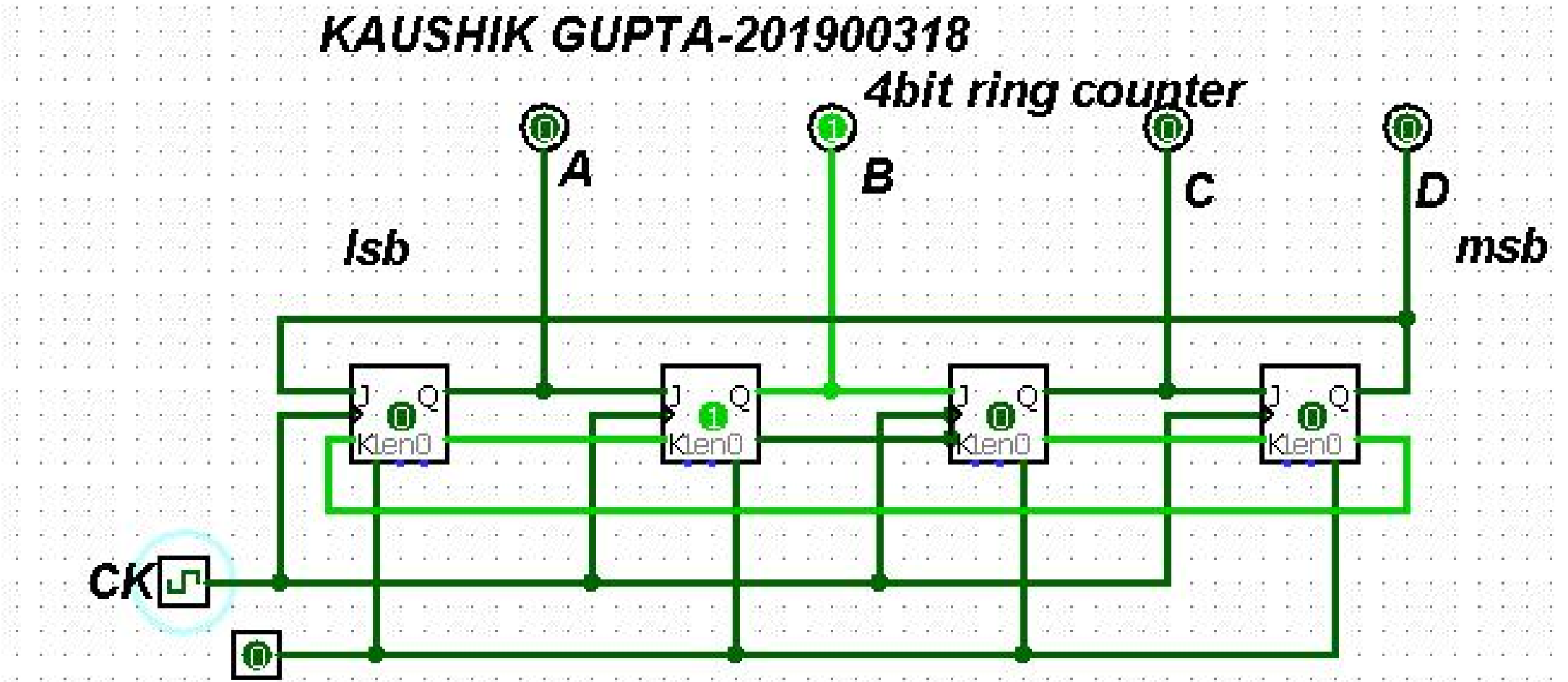
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