

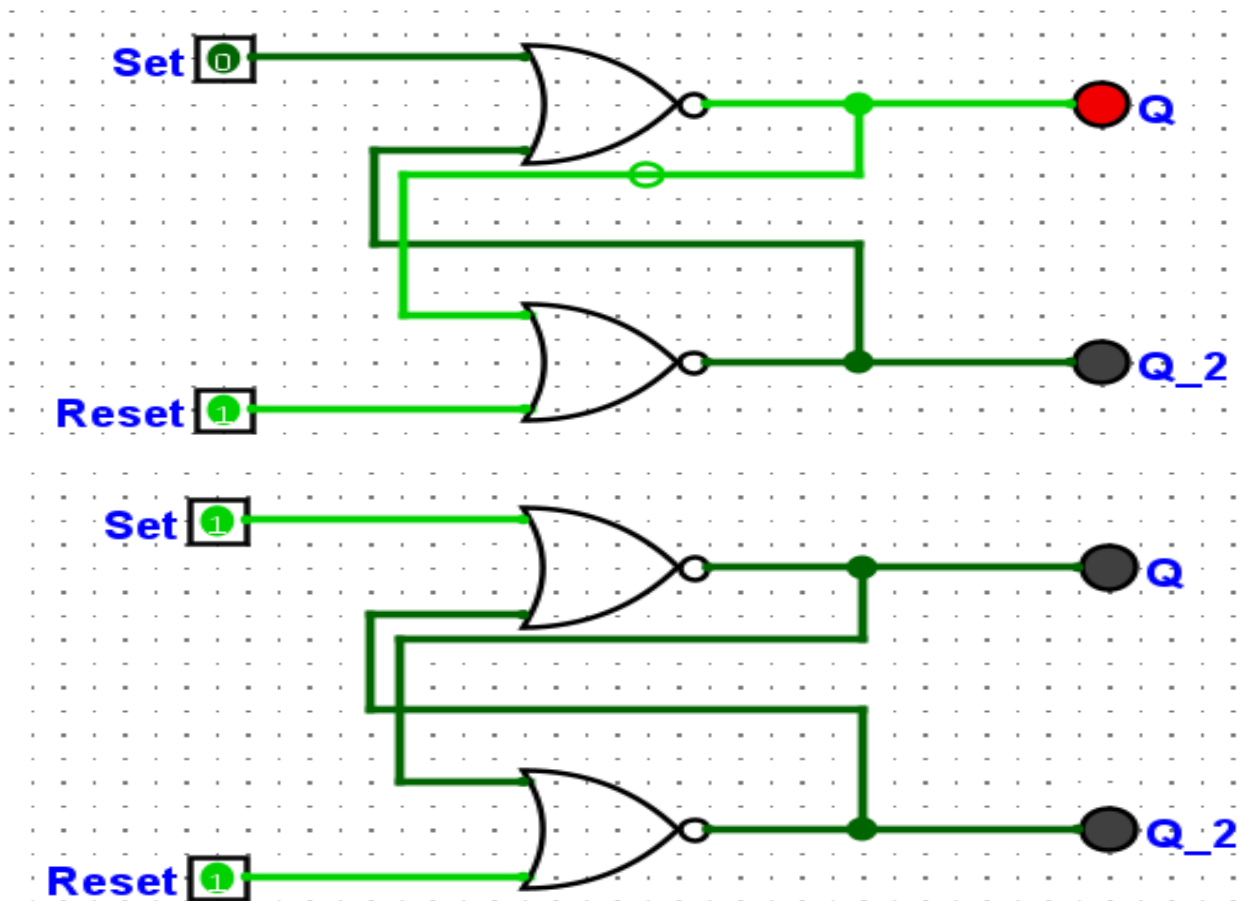
# COS-10004 (Computer Systems)

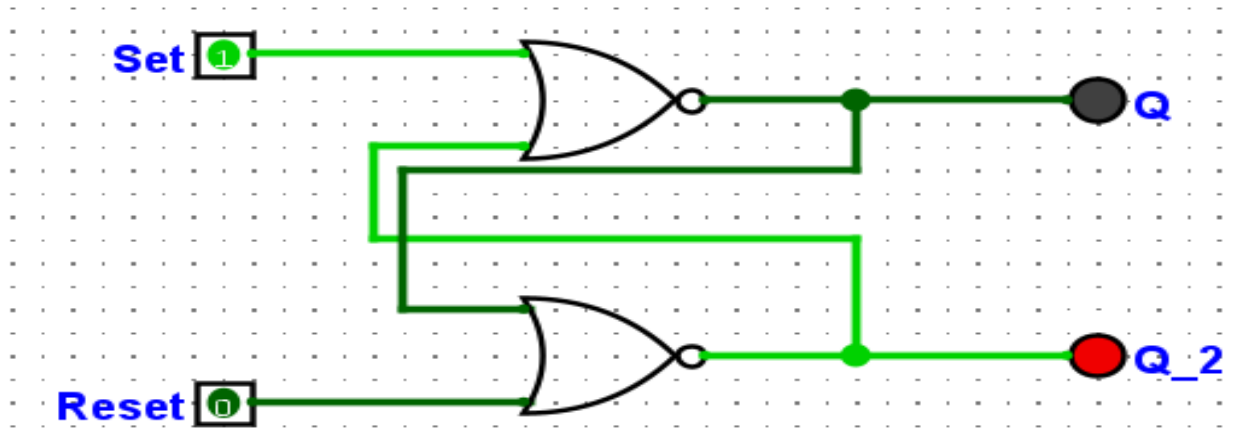
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Q4/5/6:

Set	Reset	Q	Q'
1	0	0	1
1	1	0	0
0	1	1	0
1	1	0	0





Q7:

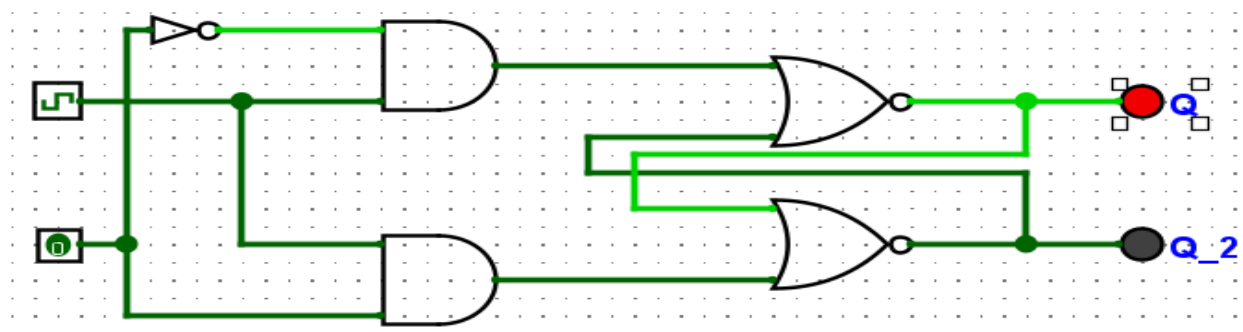
Whenever one of the inputs is 1, the output changes to the numerical value on the opposite input, which in this case is 0, while the additional input's output changes to the value of the prior input, which is 1. This is beneficial to developing digital circuits since it can easily store and transmit bits.

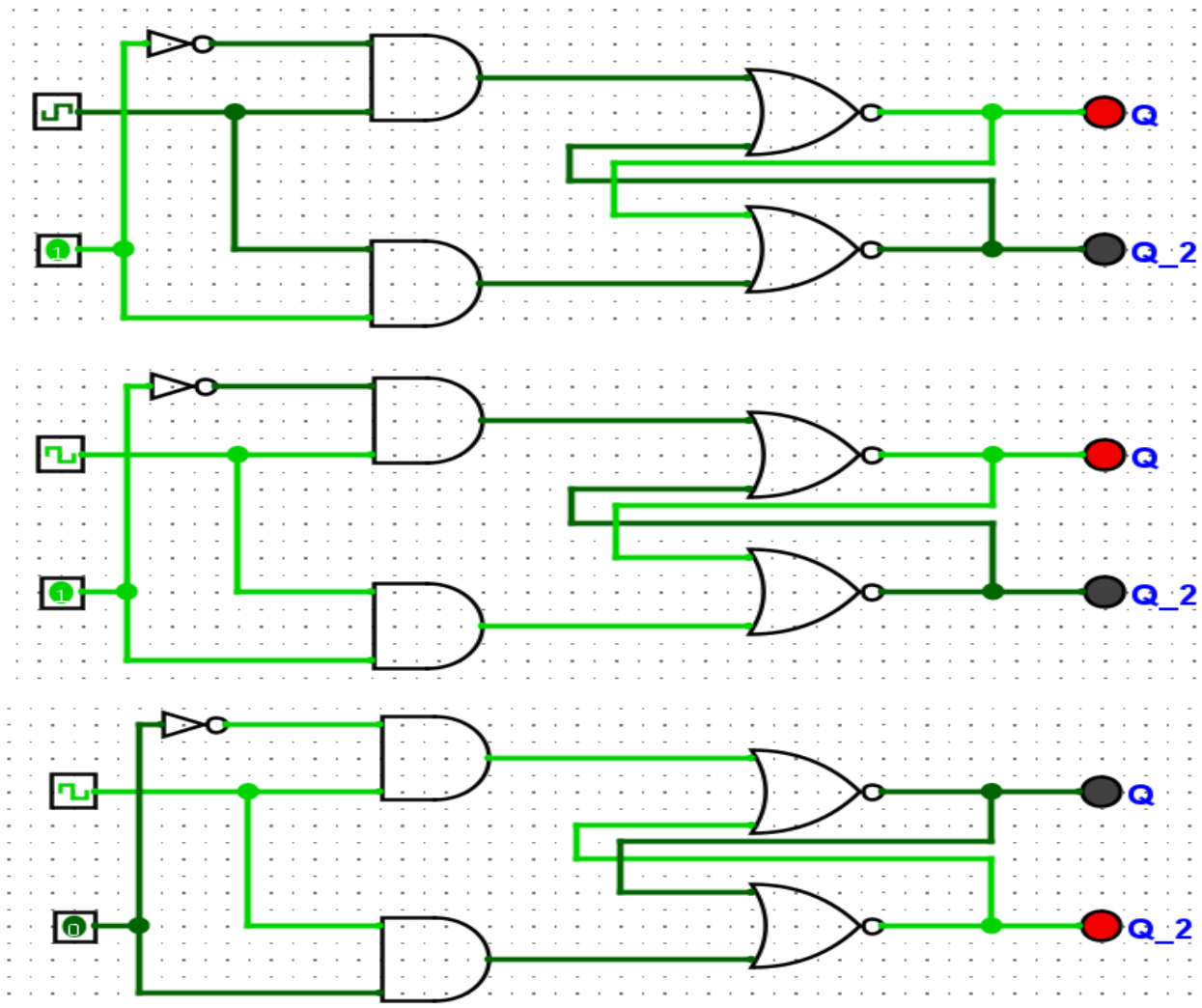
Q8:

When both inputs are set to 1, both outputs are 0. This is a problem for the development of digital circuits since it may result in an error if both outputs have an identical value.

Q9/10:

Clock	Pin	Q	Q'
0	0	0	1
0	1	0	1
1	1	1	0
1	0	1	0





Q11:

When the clock is turned on, the output Q stores the information of the pin and holds it till the clock is turned off and on again. It is useful in the digital era since it can hold only one bit of data.

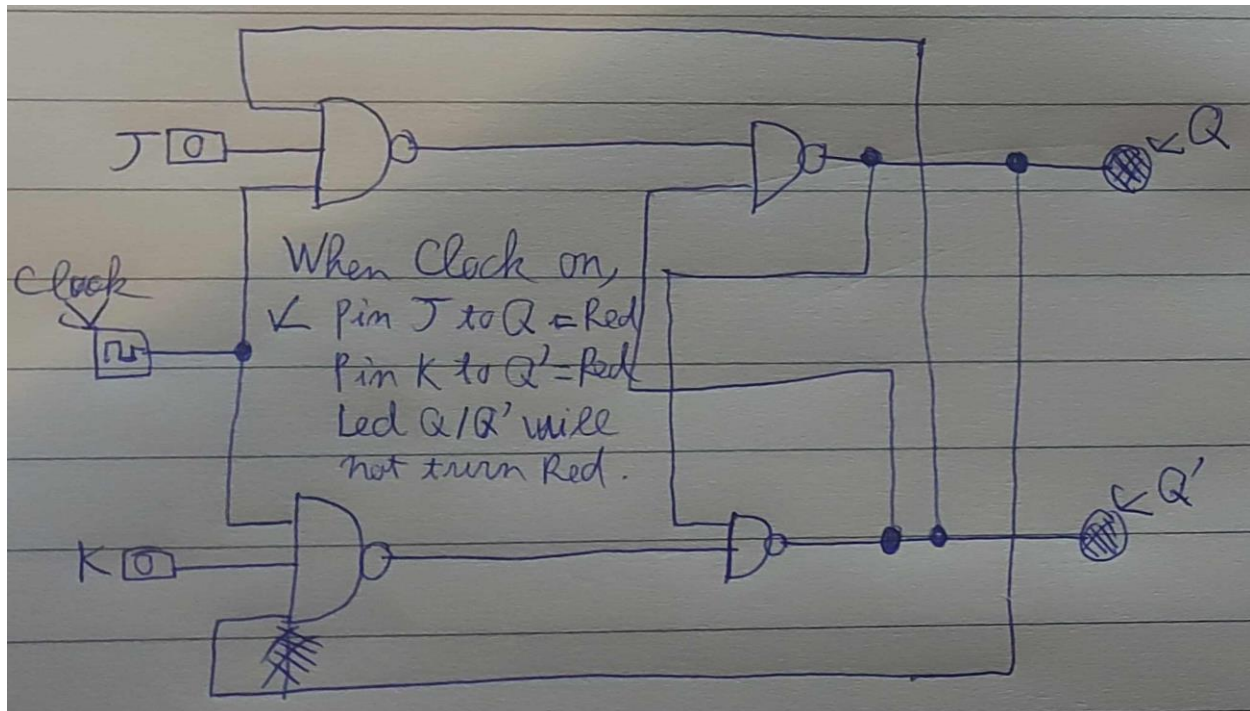
Q12:

The clock's function is to determine when to store data from the input and adjust the numerical value displayed on the output. It affects the changing states of Q and Q' because as the clock ticks, it stores the pin's value as Q and the opposite value as Q' and holds that value until the input changes.

Q13:

There are two reasons for this: Because D flip-flops have just one data input, they are easier to utilize than Rs flip-flops, which have two inputs. Since the D flip-flop's output only changes state while the clock is ticking, it has a lower possibility of mistake than the RS flip-flop.

Q14:



Q15:

J	K	Q (When clocked)	Q' (When clocked)
0	0	0	1
1	0	1	0
0	1	0	1
1	1	1	0

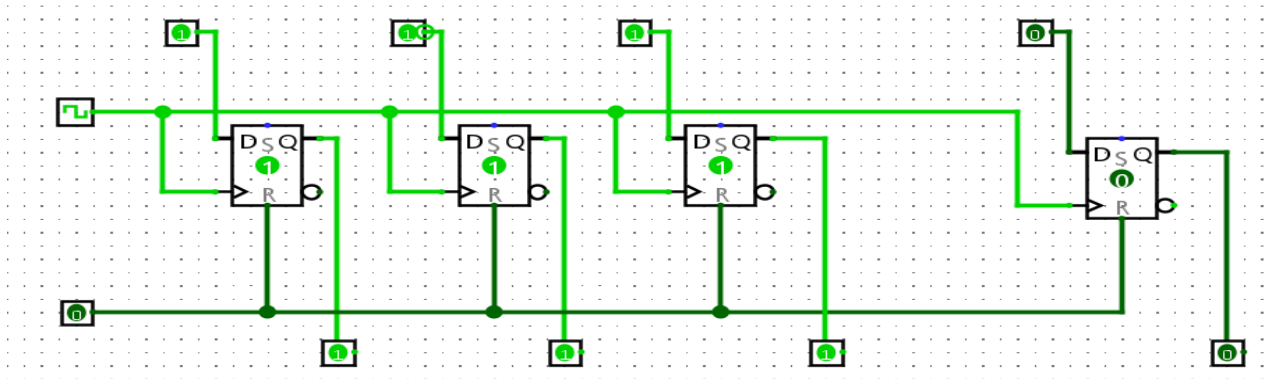
Q16:

By connecting the two inputs J and K and using D flip flop, JK flip flop may be configured operate like D flip flop.

Q17:

JK flip flops may be configured to behave similarly to T flip flops by connecting the two inputs J and K and ensuring that they are using the identical input value.

Q20:



Q22:

Ox	Input Binary	Output Binary
0	0000	0000
1	0001	0001
2	0010	0010
3	0011	0010
5	0101	0101
A	1010	1010
B	1011	1011
C	1100	1100
D	1101	1101
E	1110	1110
F	1111	1111