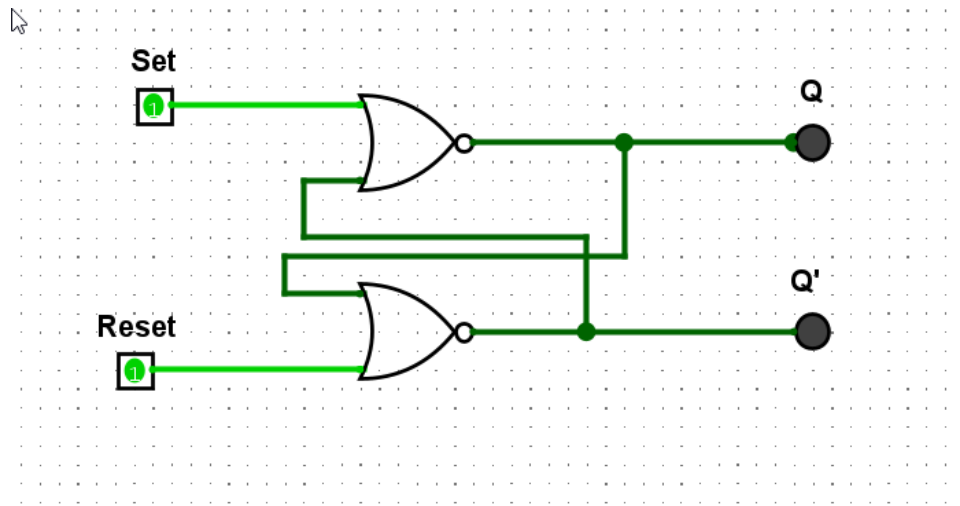


Q1 Storing bits with Flip Flops

RS Flip flop

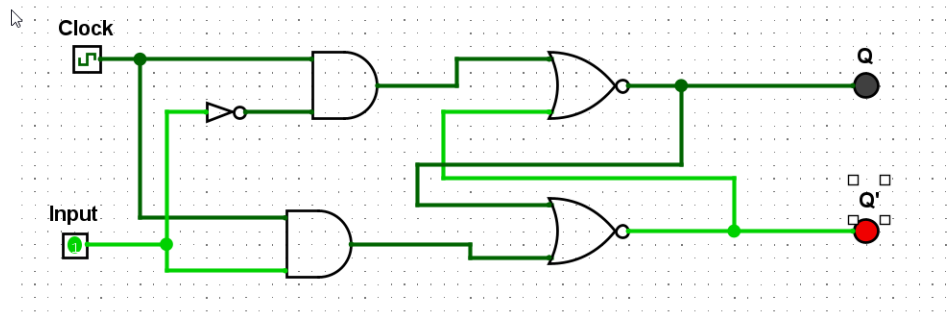


SET	RESET	Q	Q'
1	0	0	1
1	1	0	0
0	1	1	0
1	1	0	0

Q7 when any one of the two inputs of the circuit is 1 then any one of the output will be 1 this is useful for digital circuit design as it assures any one of the out put will be 1

Q8 When we set both inputs to 1, we can observe that both outputs will be 0 (. The output of each NOR gates is used as the input of other NOR gate, so we cannot predict which gate will produce the outcome first. This will be an issue while designing a digital circuit and this flip flop is often referred as an unstable flip-flop

Q2 D Flip-Flop



CLOCK	PIN	Q	Q'
0	0	0	1
1	1	0	1
1	1	1	0
1	0	0	1

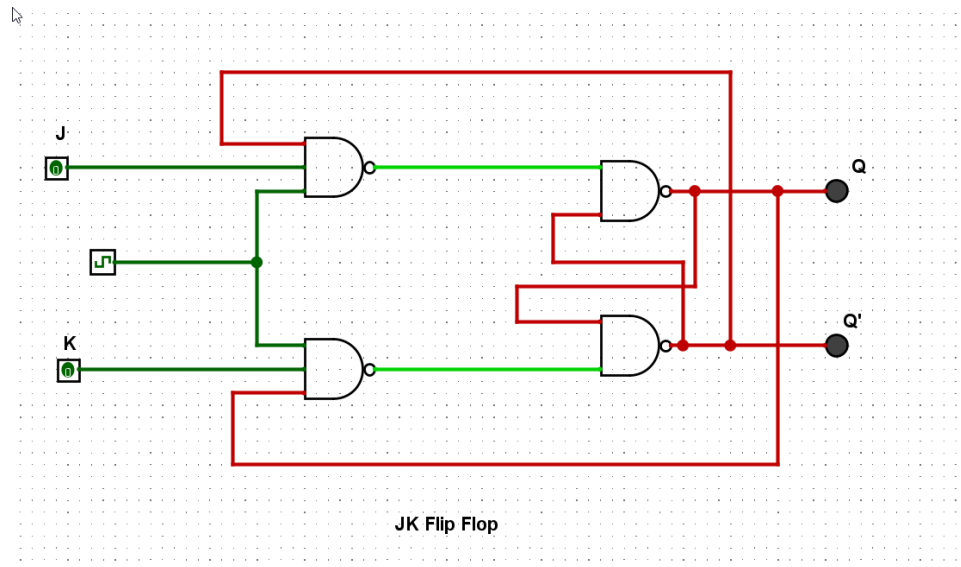
Q11

The D Flip-Flop gives the exact same D input as Q output, which means the Q output will be 1 if the D input is 1 and vice versa the interesting thing is that the change in D input only affects the output when the clock is pulsed (at least one pulse is enough for the change in output). D Flip-Flop is used in computer registers and memories and in counters and shift registers, therefore D Flip-Flops are very useful in digital circuit design.

Q12

The change in input is only reflected at the outputs when the clock is pulsed, which means the change in outputs Q and Q' is caused by the pulse in clock. Thus, clock plays an important role in D Flip-flops. The role of the clock is like a button which should be pressed to get a result.

Q3 JK Flip Flops

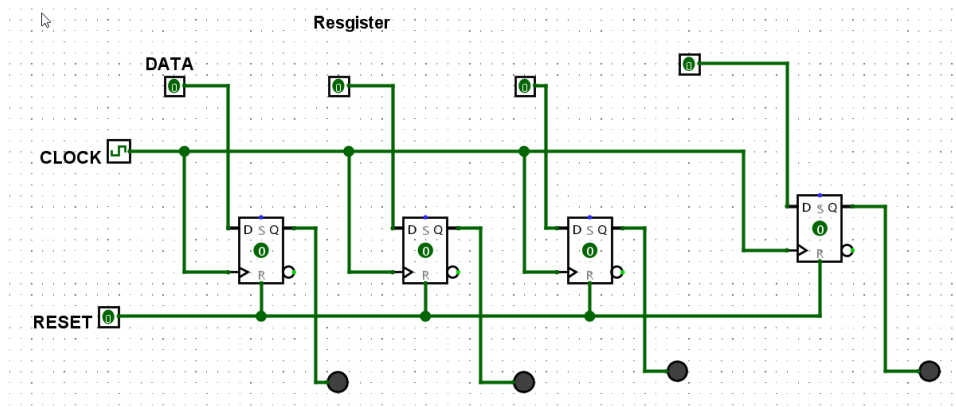


J	K	Q (when clocked)	Q'(when clocked)
0	0	1	0
1	0	1	0
0	1	0	1
1	1	1	0

Q16 We can make a J-K Flip-Flop behave like a D Flip-Flop by using J for turning it on and K for turning it off, which means if either one of J or K input is on J-K Flip-Flop behaves like a D Flip-Flop.

Q17 We can make a J-K Flip-Flop behave like a T Flip-Flop by turning on both J and K inputs. Which means if both inputs 1 and k are on J-K Flip-Flop behaves like a T Flip-Flop.

Q18



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