

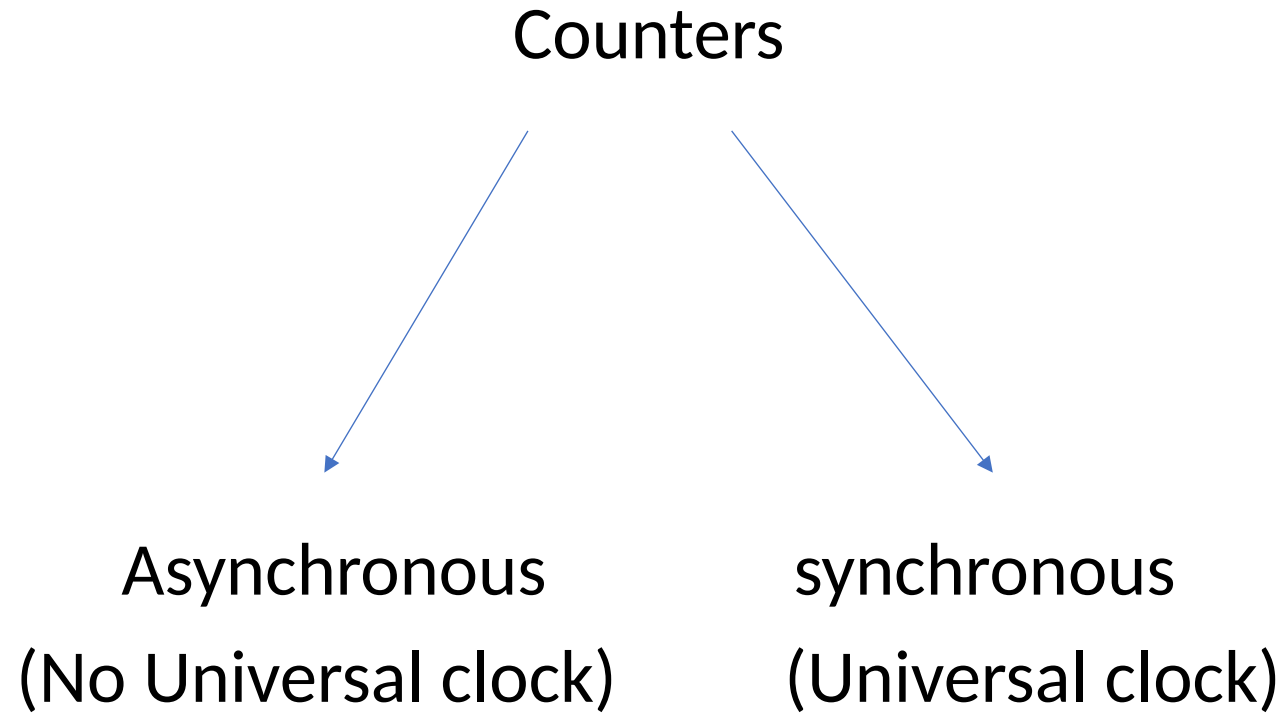
Sequential Circuits

S.M. Shovan

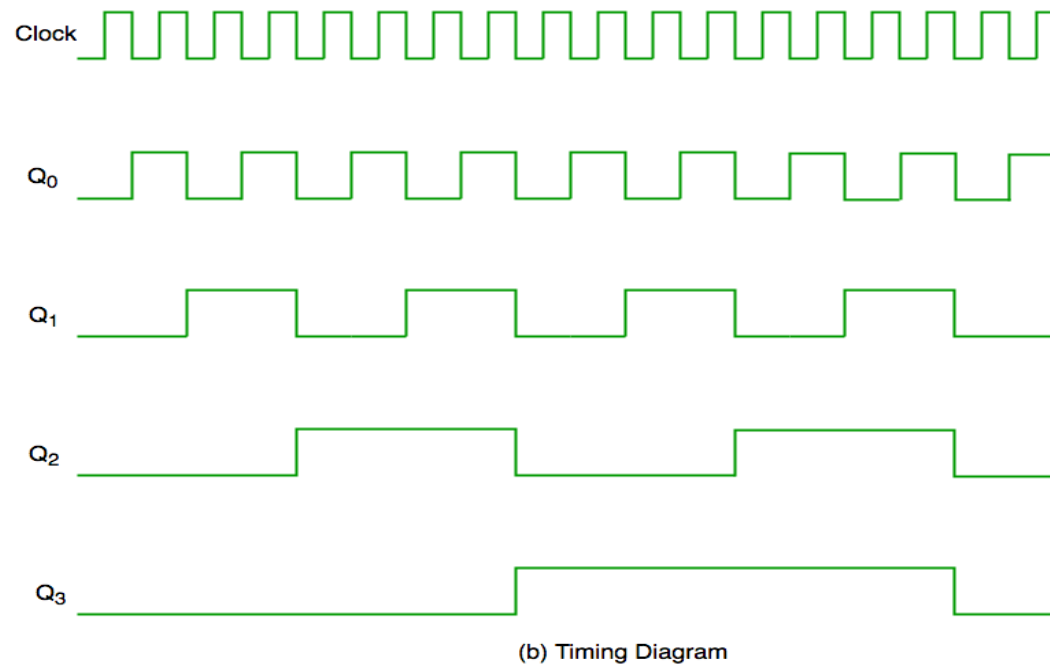
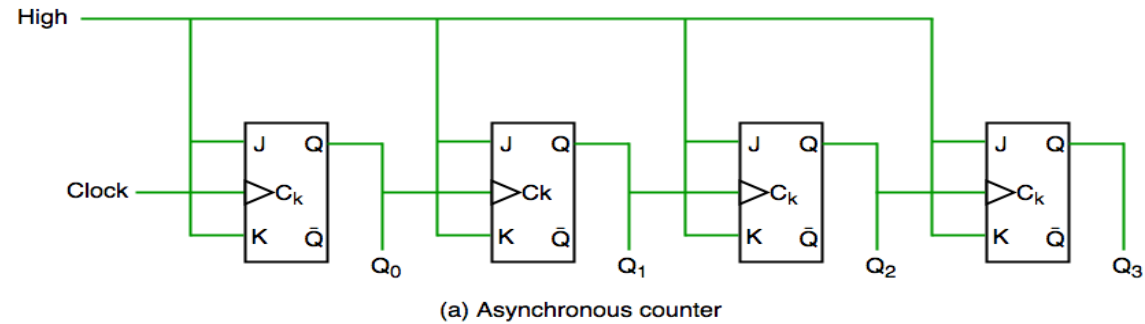
Contents

- Counter
 - Asynchronous Counter/ Ripple Counter
 - Synchronous Counter
- Register
 - Parallel Register
 - Shift Register

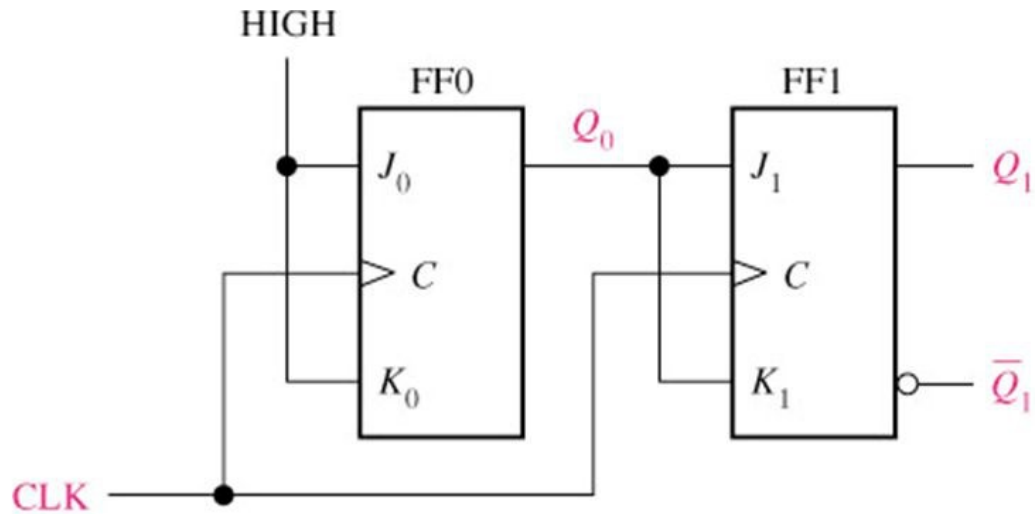
Counters



Asynchronous Counter



Synchronous Counter



# of CLK	Q1	Q0
0	0	0
1	0	1
2	1	0
3	1	1
4	0	0

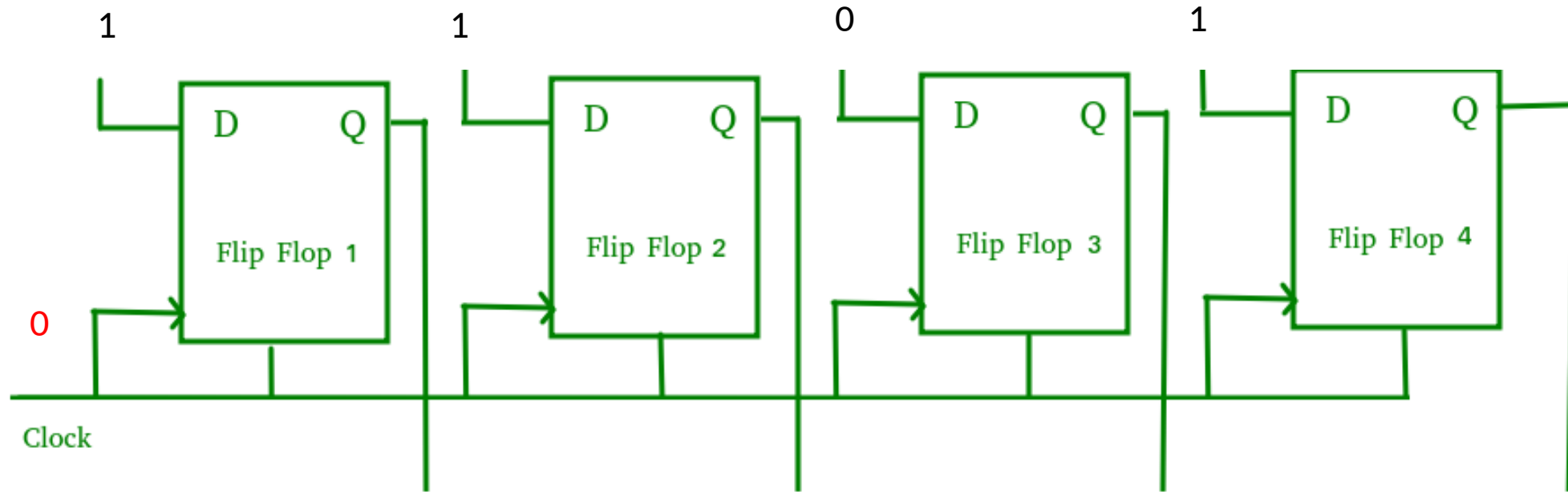
Register

- Shift registers are basically of 4 types.

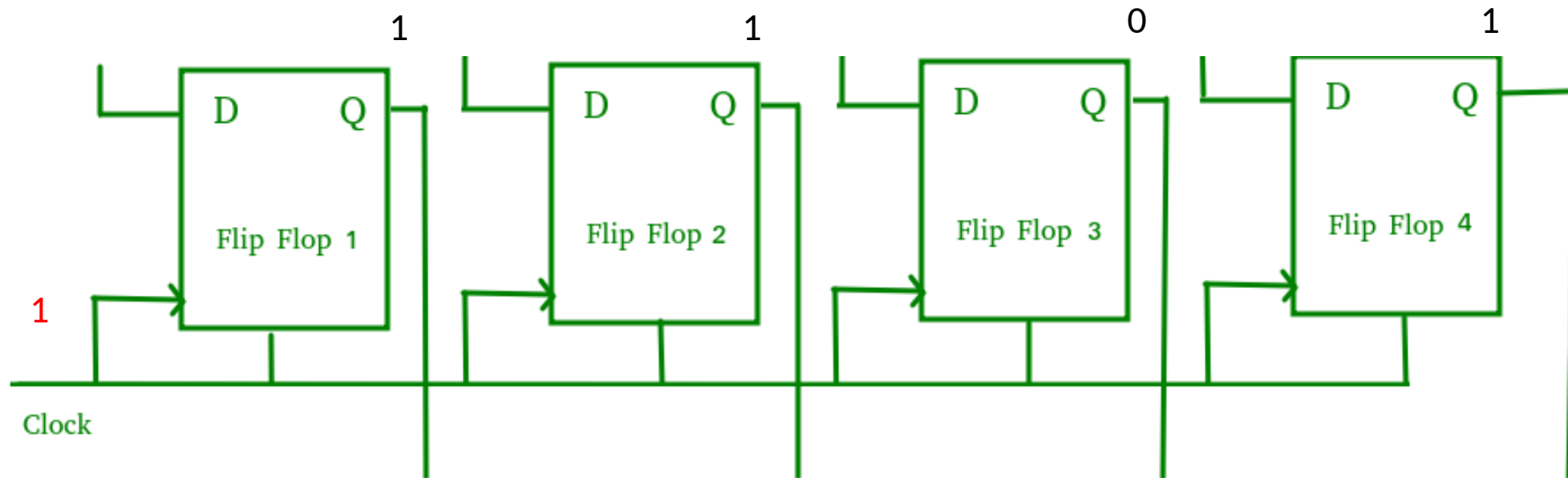
These are:

1. **Serial In Serial Out shift register**
2. Serial In parallel Out shift register
3. Parallel In Serial Out shift register
4. **Parallel In parallel Out shift register**

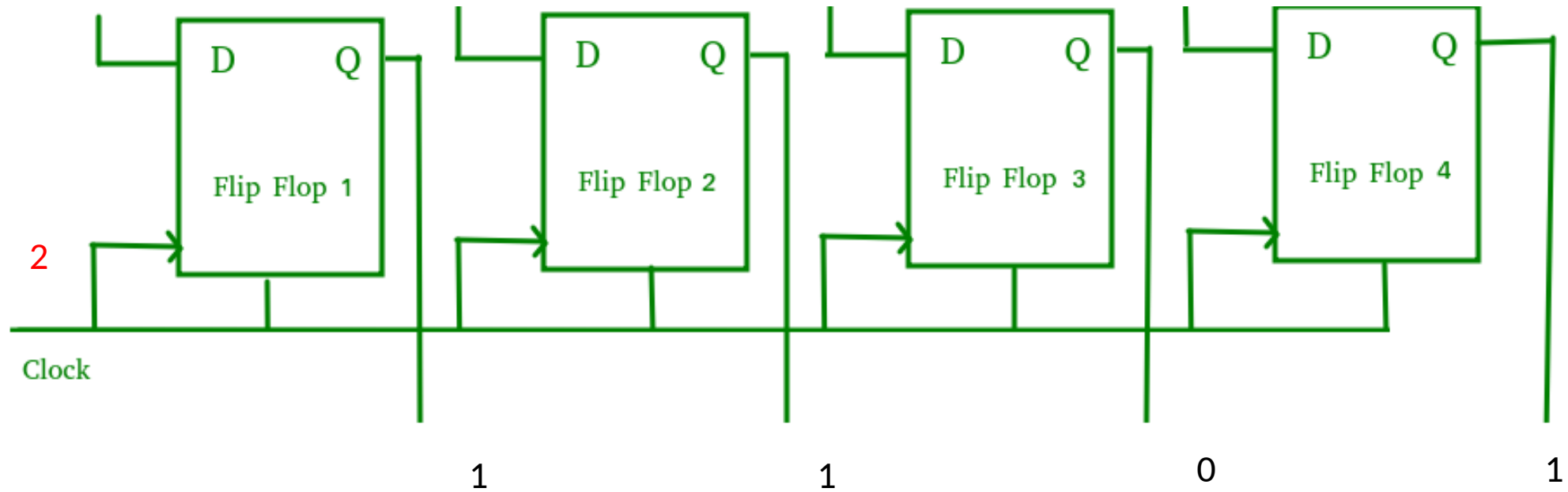
Parallel In parallel Out shift register (4-bit)



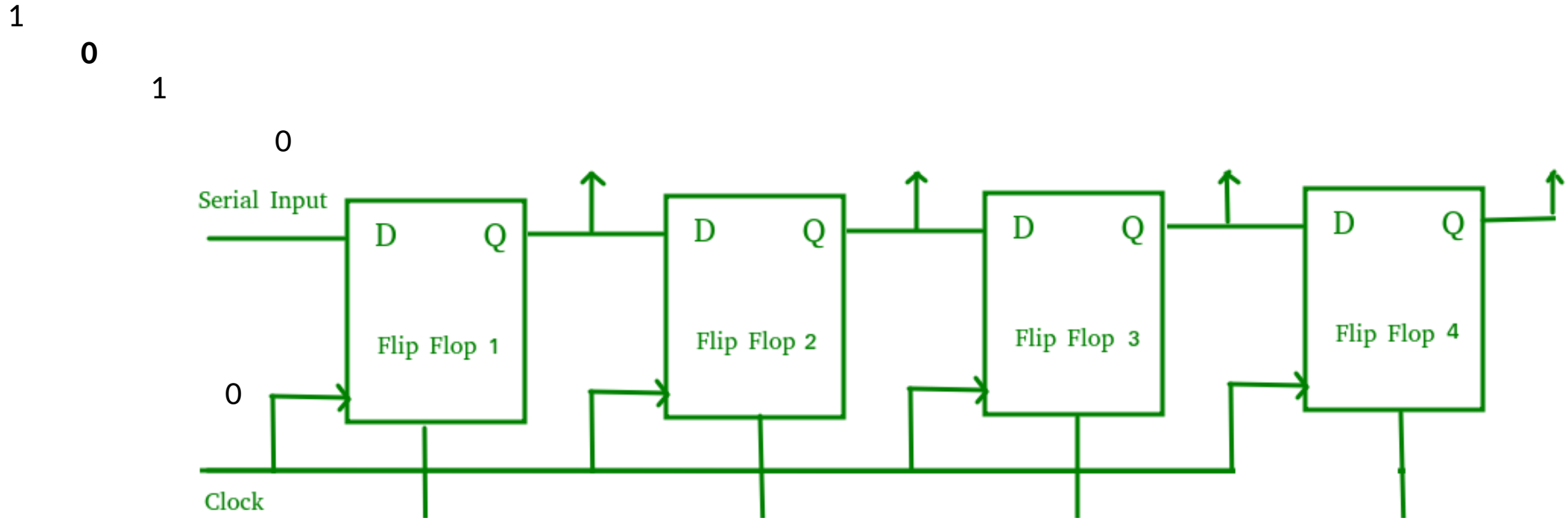
Parallel In parallel Out shift register (4-bit)



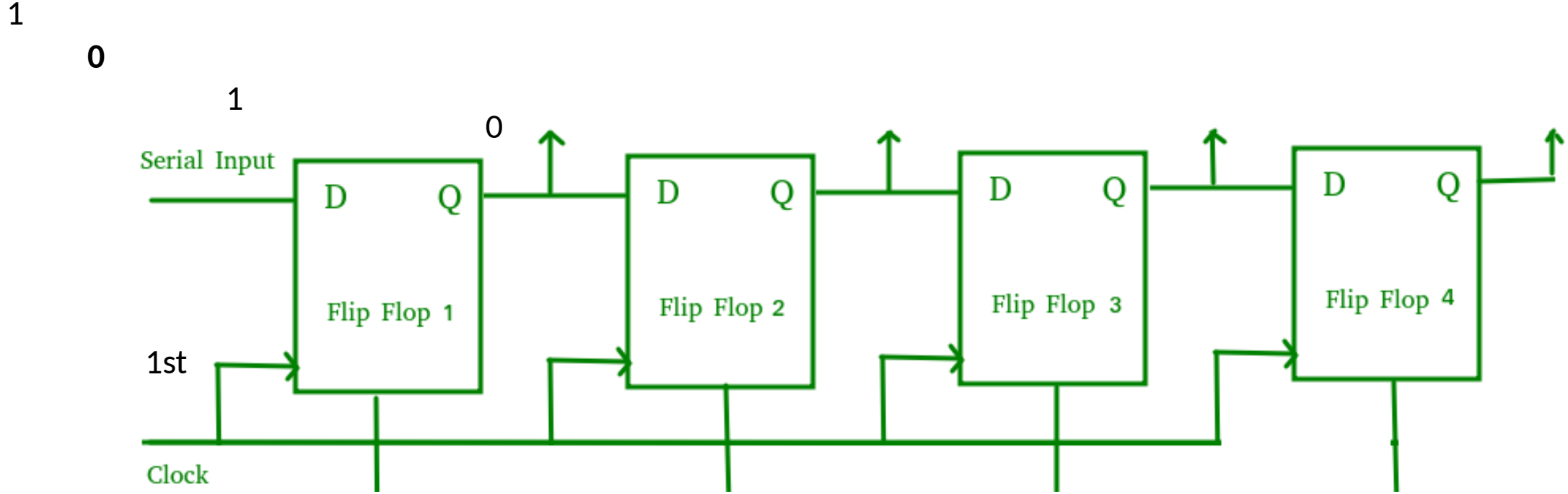
Parallel In parallel Out shift register (4-bit)



Serial In Serial Out shift register (4-bit)

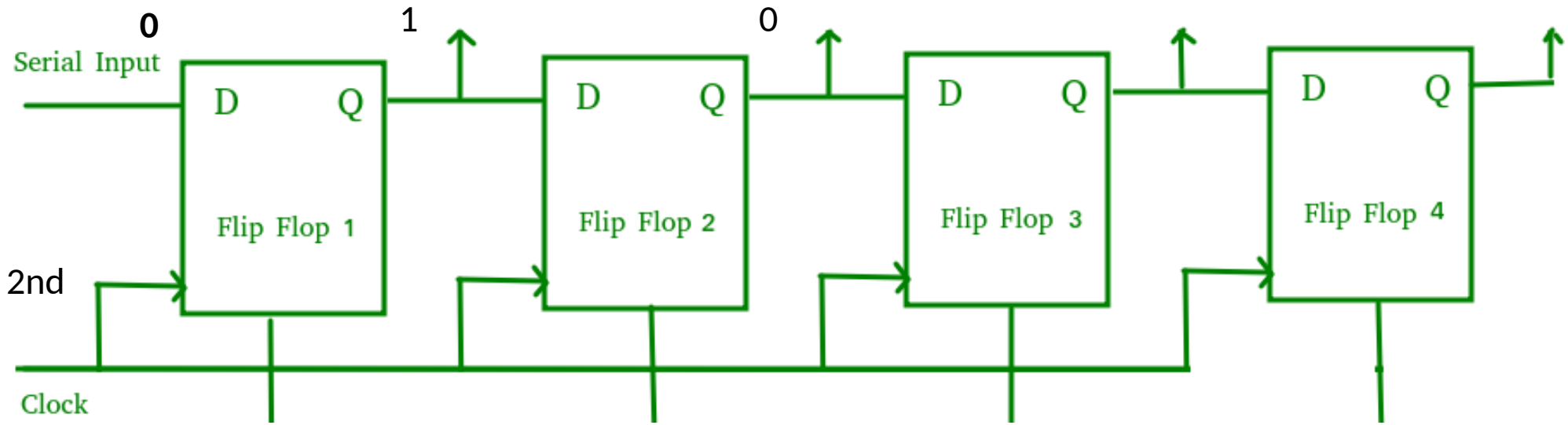


Serial In Serial Out shift register (4-bit)

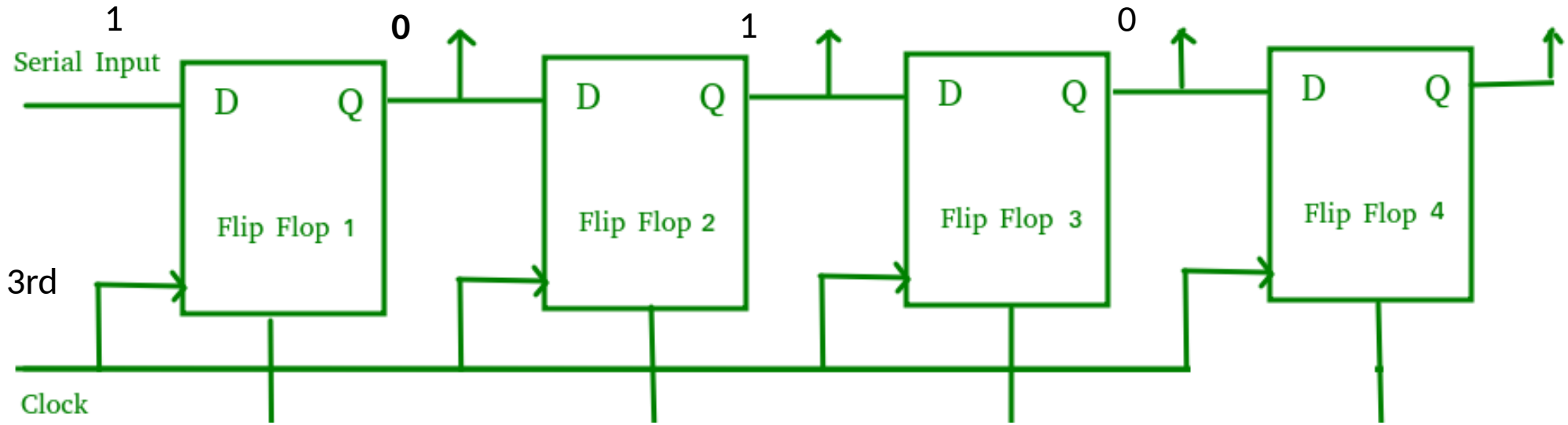


Serial In Serial Out shift register (4-bit)

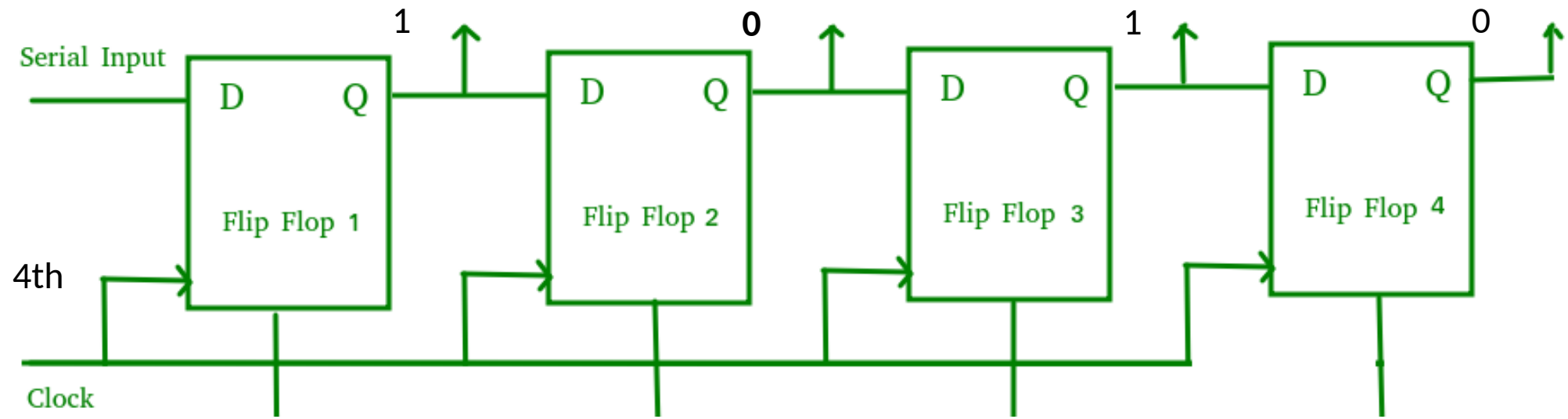
1



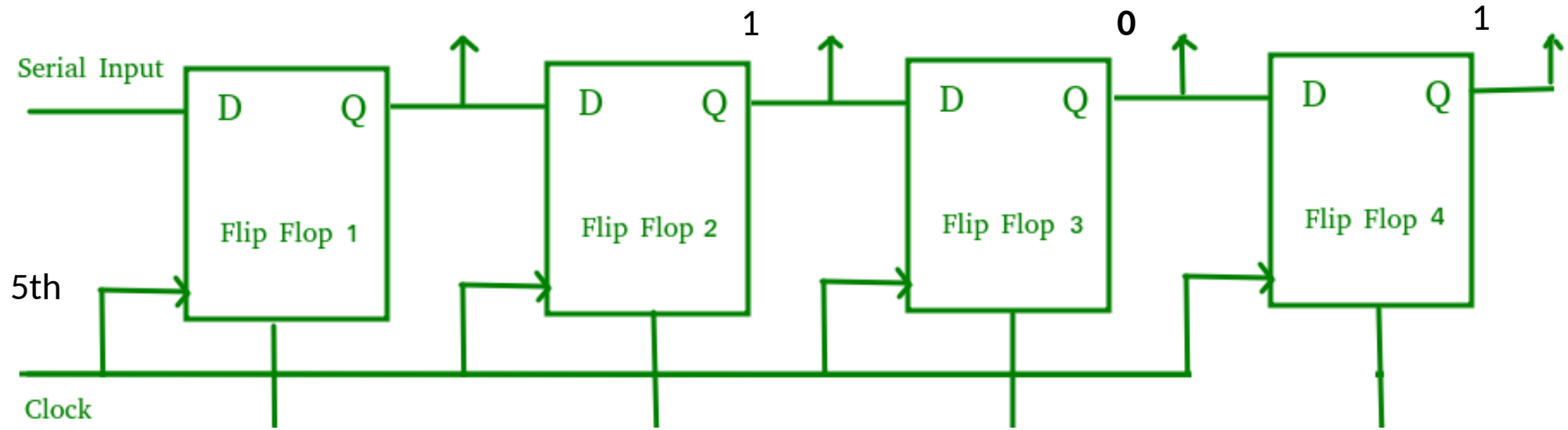
Serial In Serial Out shift register (4-bit)



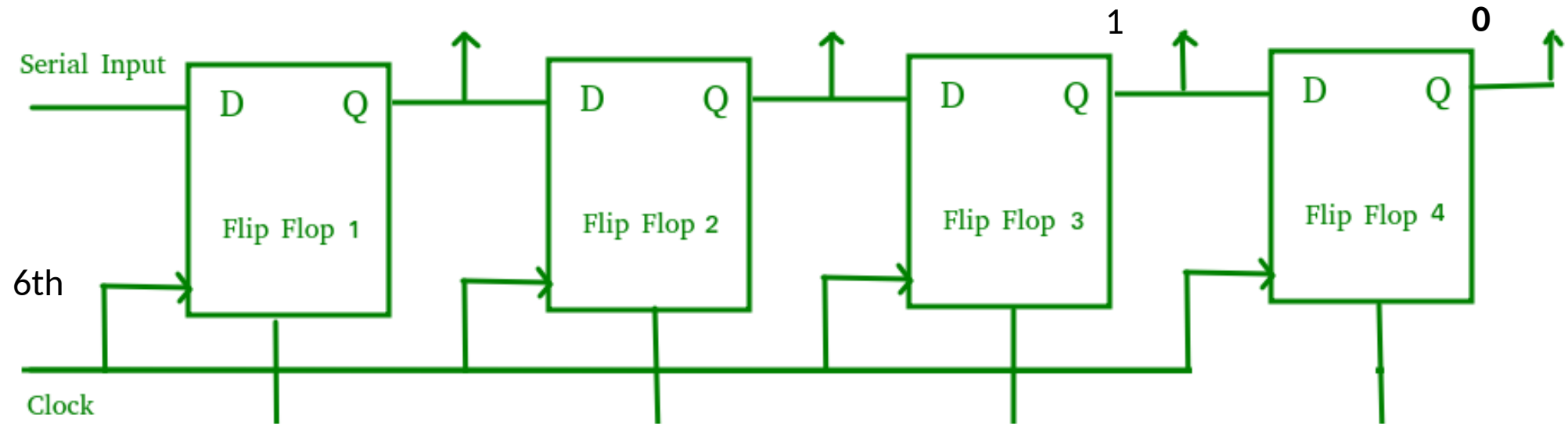
Serial In Serial Out shift register (4-bit)



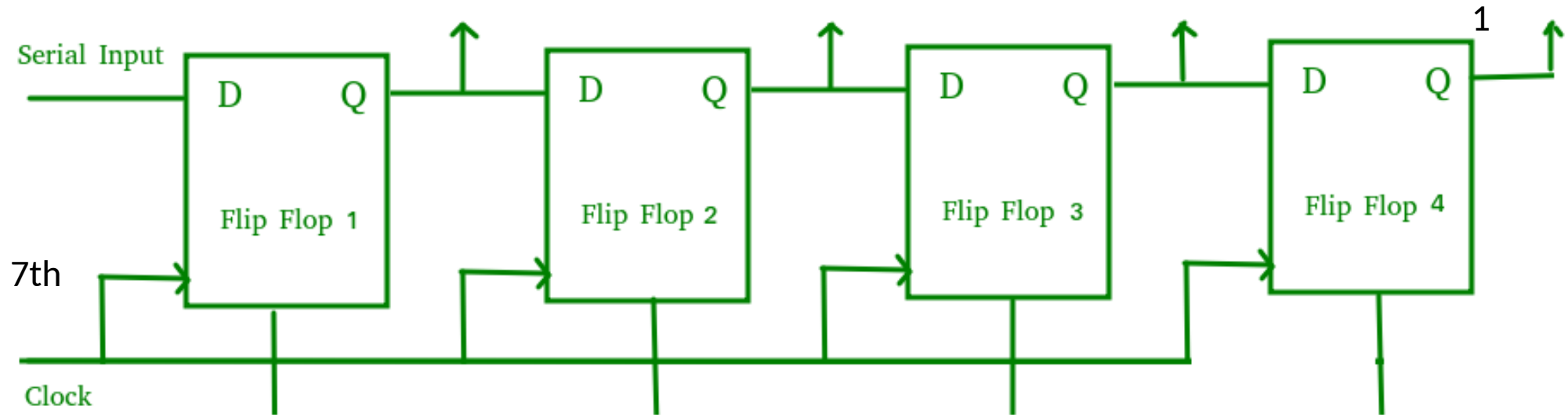
Serial In Serial Out shift register (4-bit)



Serial In Serial Out shift register (4-bit)



Serial In Serial Out shift register (4-bit)



Serial In Serial Out shift register (4-bit)

