Practical-8

Verify the operation of a 4 bit shift register.

Aim : To determine the operation of 4 bit shift register circuit and verify truth table.

Theory :

4 Bit Shift Register

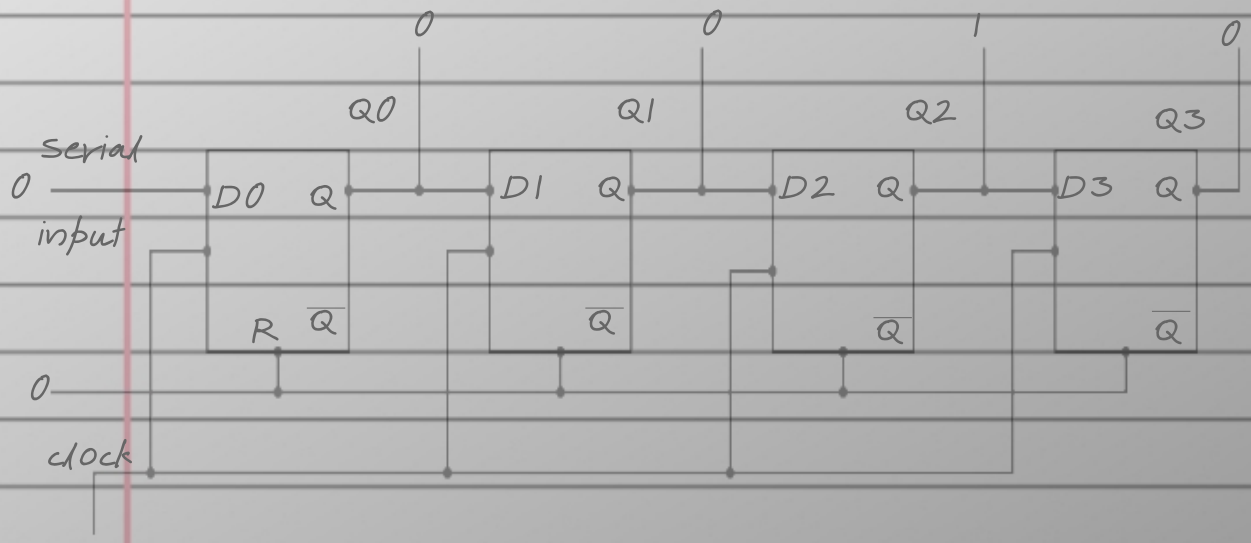
A shift register consists of a group of flip-flops arranged such that the output of one feeds the Input of the next so that the binary numbers stored shift from one flip-flop to the next controlled by a clock pulse. This implementation is 4-bit shift register utilising d-type flip-flops. In this type of circuit, the clock input of all the flip-flops connect to a common line. So they receive clock Inputs simultaneously.

This type of shift register is also known as serial in parallel out register because we load it through its serial Input, however, we read it from its parallel output. This type of register is also the basis of a serial to parallel converter and is therefore sometimes utilised in serial communication systems.

In these type of circuits we reset the flip-flops simultaneously and therefore their central pins connects to a common line.

Logic Diagram :

4-Bit Shift Register Animation



Truth Table :

Outputs	Q0	Q1	Q2	Q3
Reset	0	0	0	0
CLK Pulse 1	1	0	0	0
CLK Pulse 2	0	1	0	0
CLK Pulse 3	0	0	1	0
CLK Pulse 4	0	0	0	1