

→ AIM : Designing of Shift Register Serial In Serial-out (SISO) using CMOS Technology in Cadence virtuoso.

→ Introduction :

Flip Flops can be used to store a single bit of binary data (1 or 0). However, in order to store multiple bits of data, we need multiple flipflops. N flipflops are to be connected in an order to store n -bits of data.

A Register is a device which is used to store such information. It is a group of flipflops connected in series used to store multiple data bits.

The Registers which will shift the bits to left are called "Shift Left Registers".

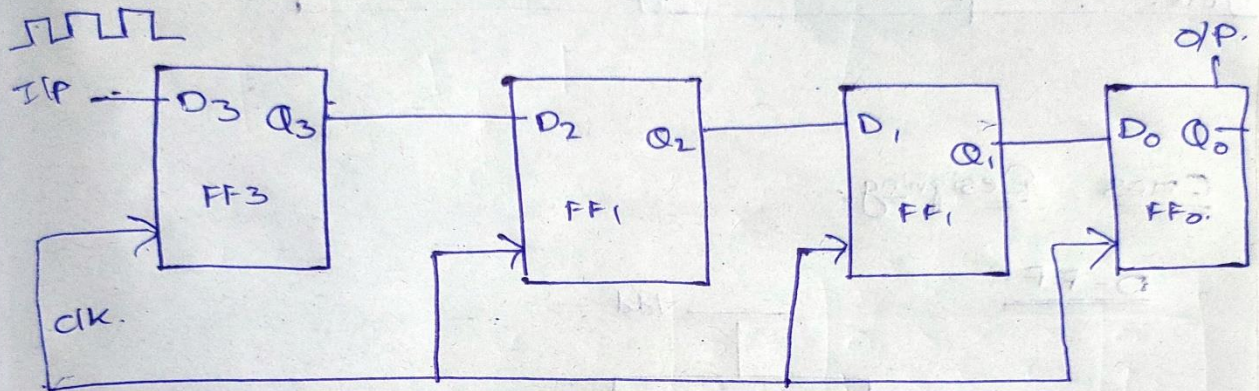
The Registers which will shift the bits to right are called "Shift Right Registers".

Shift registers are of 4 types:

- 1) Serial-IN Serial-OUT Shift Register (SISO).
- 2) Serial-IN parallel-OUT Shift Register (SIPO).
- 3) Parallel-IN Parallel-OUT Shift Register (PIPO).
- 4) parallel-IN Serial-OUT Shift Register (PISO).

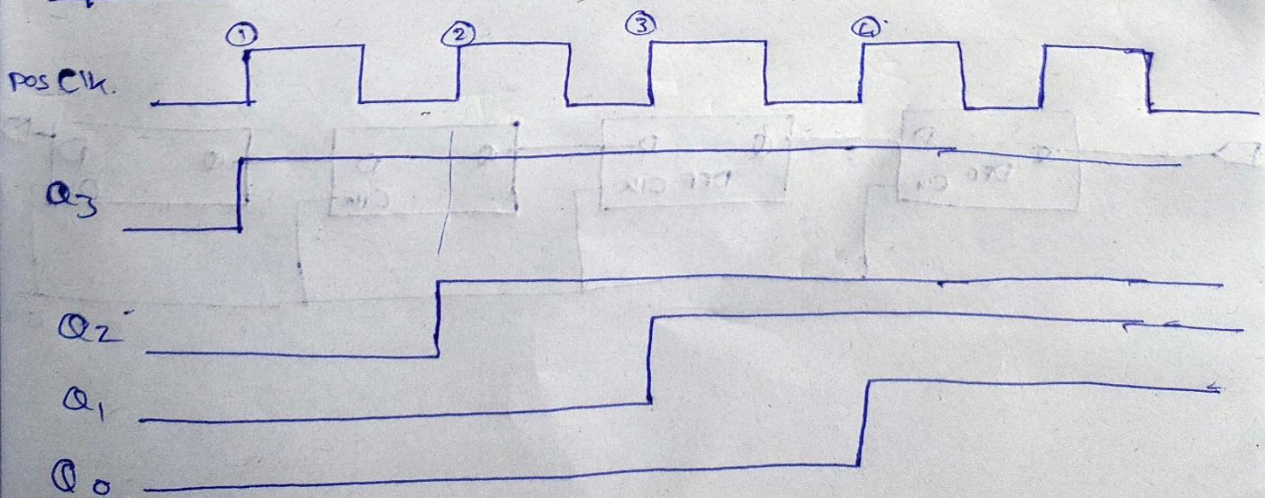
→ Serial - IN Serial - OUT Shift Register (SISO).

The Shift Register, which allows Serial Input (i.e. one bit after the other through a single data line) and produces Serial Output is known as SISO.

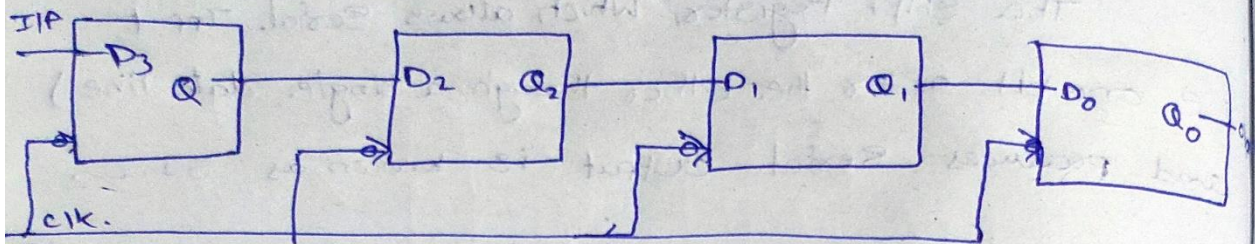


SISO (Posedge clk) -

clk	D ₃	D ₂	D ₁	D ₀	Q ₃	Q ₂	Q ₁	Q ₀
0	0	0	0	0	0	0	0	0
1	1	0	0	0	1	0	0	0
2	1	1	0	0	1	1	0	0
3	1	1	1	0	1	1	1	0
4	1	1	1	1	1	1	1	1

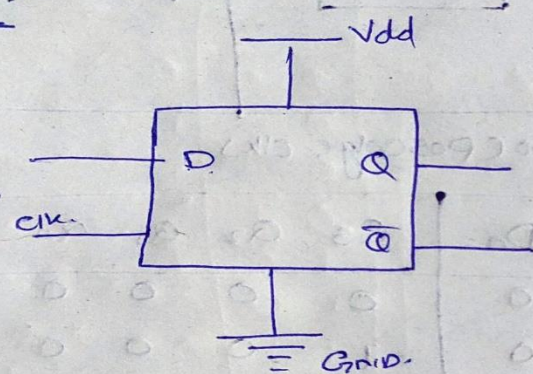


SISO (Neg clk edge).



CMOS Designing.

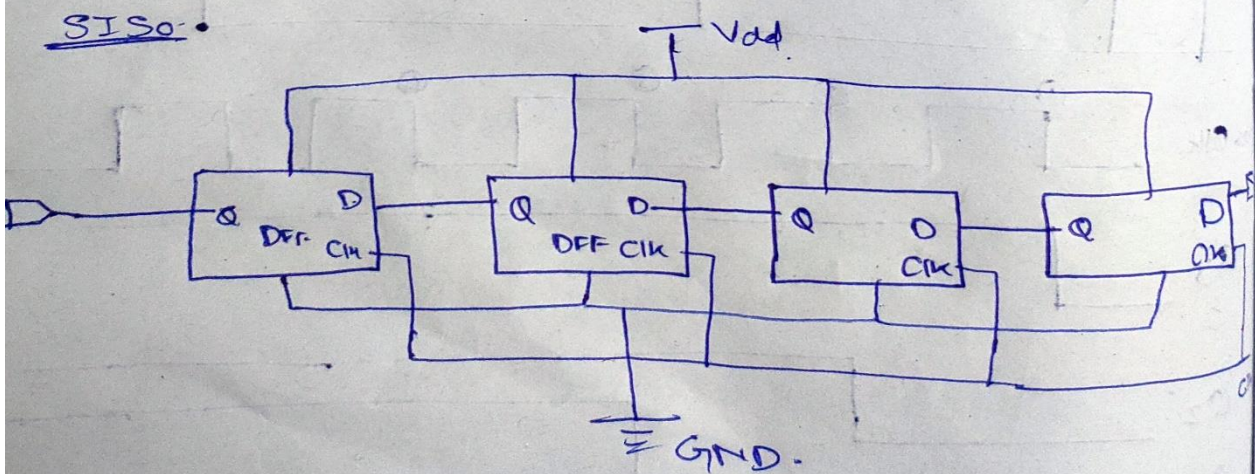
D-FF.



DFFPROP

Instance.

SISO.



→ Learning Outcomes :

- * we have learned about the implementation of SISO in CMOS Technology.
- * working of D-Flipflops and Actual functionalities in flipflops.
- * Usage of PMOS & NMOS as pull up & pull-down networks in CMOS Technology.
- * Implementation of SISO using D-Flipflops. by give pos edge clk & neg edge clk.
- * Left shift SISO & Right shift SISO are also Implemented

Schematics from cadence virtuoso

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