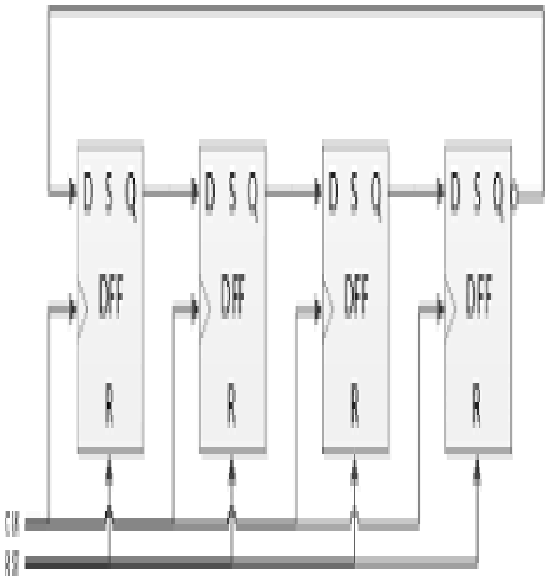
SNS COLLEGE OF ENGINEERING

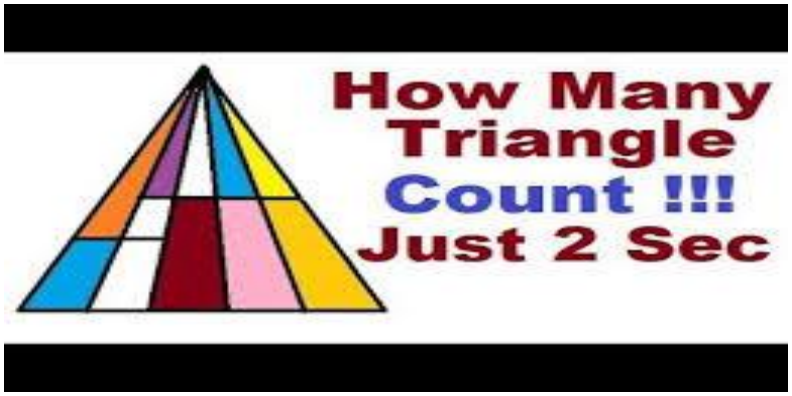
(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

DIGITAL CIRCUITS

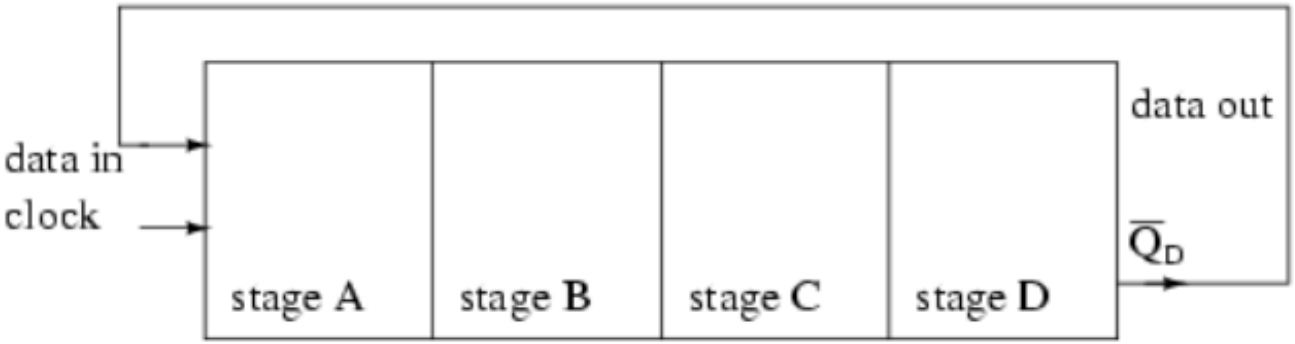
Guess Today's Topic????





Ring Counters

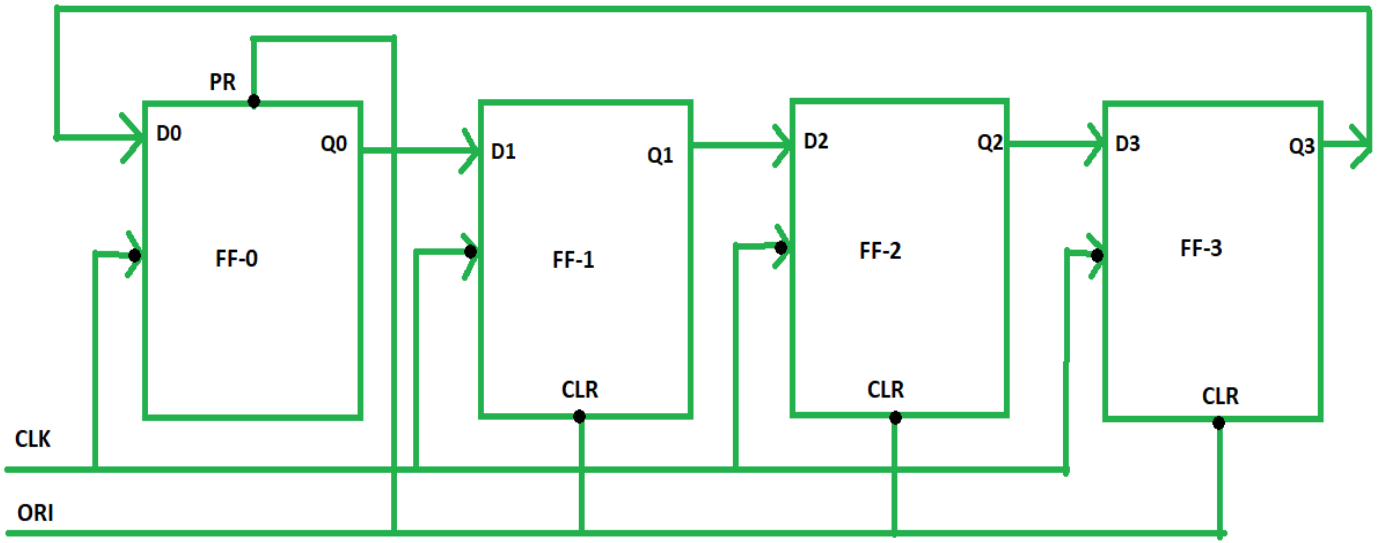
If the output of a shift register is fed back to the input. a ring counter results.



Ring Counter, shift register output fed back to input

Building a Ring Counter

- Ring counter is a typical application of Shift resister
- No. of states in Ring counter = No. of flip-flop used



Ring Counter

Working

PRESETED 1

ORI	CLK	Q0	Q1	Q2	Q3
low	X	1	0	0	0
high	low	0	1	0	0
high	low	0	0	1	0
high	low	0	0	0	1
high	low	1	0	0	0

Working (Contd...)

- These two values are always fixed
  PR = 0, Q = 1
  CLR = 0, Q = 0

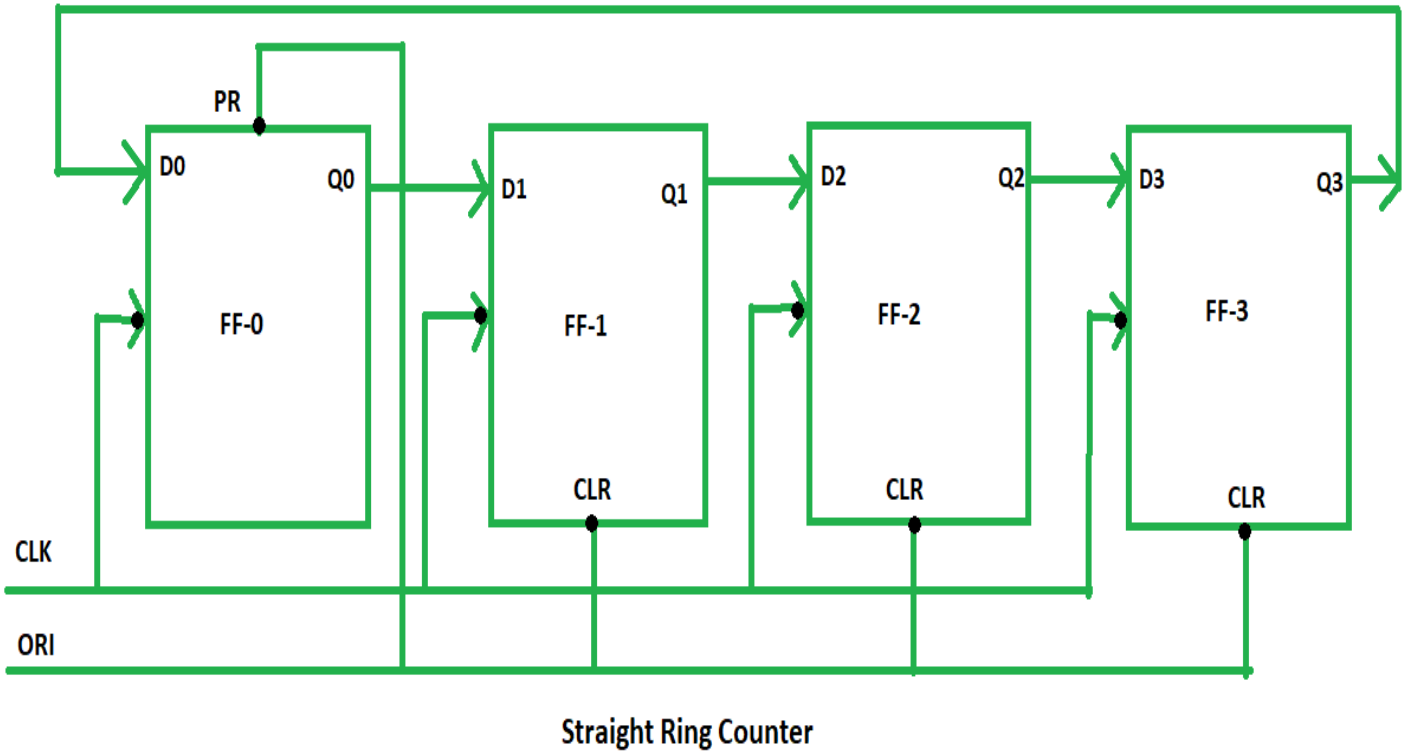
Also, here we use Overriding input (ORI) to each flip-flop. Preset (PR) and Clear (CLR) are used as ORI.

4 states are:

1 0 0 0
0 1 0 0
0 0 1 0
0 0 0 1

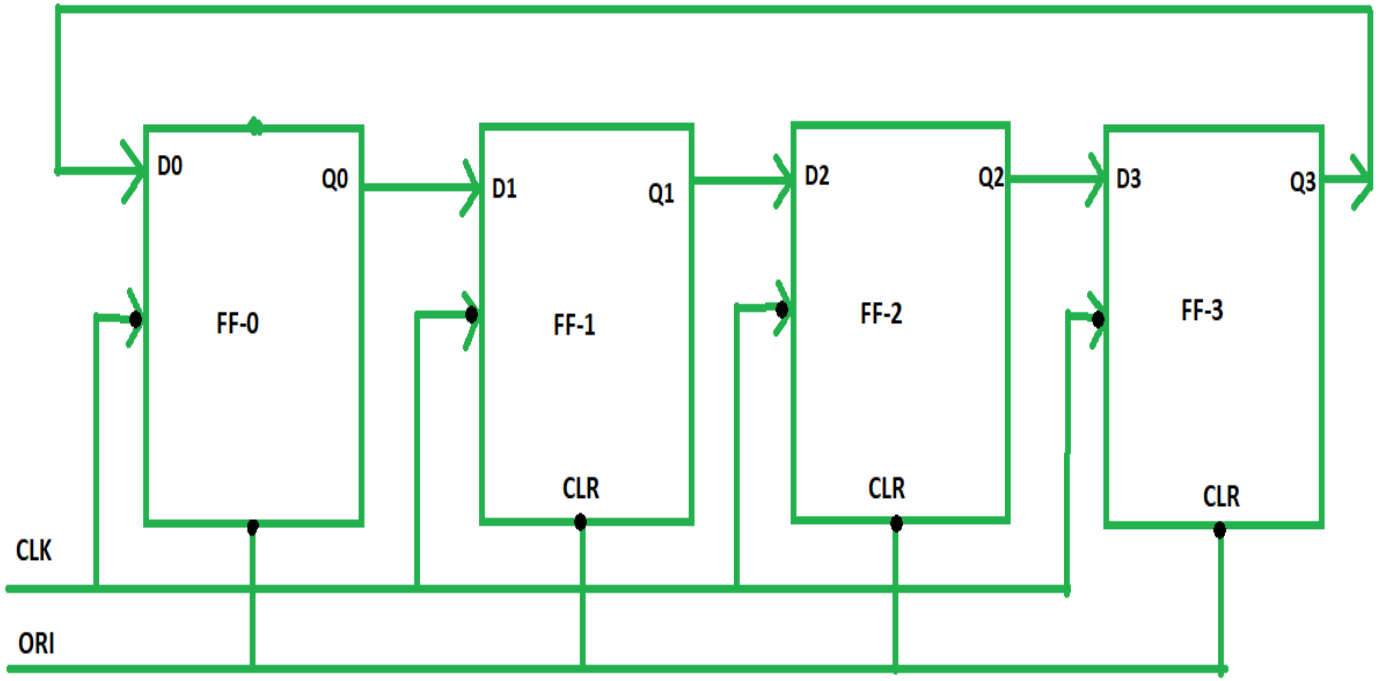
Types of Ring Counter

1. Straight Ring Counter



Straight Ring Counter

2. Twisted Ring Counter



Twisted Ring Counter

Design a 4-bit Ring Counter using four D flip-flops.


Thank
you