Practical-7

Verify the operation of counter.

Aim :To determine the operation of counter circuit and verify truth table.

Theory :

Counter is a sequential circuit A digital circuit which is used for a counting pulses is known as counter. Counters are of two types.

- Asynchronous or ripple counters.
- Synchronous counters.

Asynchronous or ripple counters.

The logic diagram of a 2-bit ripple up counter is shown in figure. The toggle (T) flip flop are being used. But we can use the JK flip-flop also with J and K connected permanently to logic

1. External Clock is applied to the clock input of flip flop A and QA output is applied to the clock input of the next flip flop.

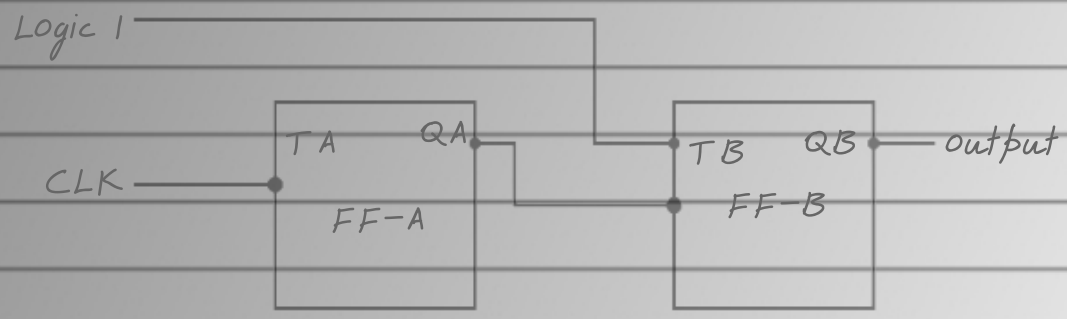
Synchronous counters

Synchronous counters

If the "clock" pulses are applied to all the flip-flops in a counter simultaneously, then such a counter is called as synchronous counter.

Logic Diagram :

Asynchronous or Ripple Counters



Truth Table

Clock	Counter output		State number	Decimal counter output
	QB	QA		
Initially	0	0	-	0
1st	0	1	1	1
2nd	1	0	2	2
3rd	1	1	3	3
4th	0	0	4	0

Synchronous Counters: