1.Verify Basic Flip Flop operation:

Truth Tabe

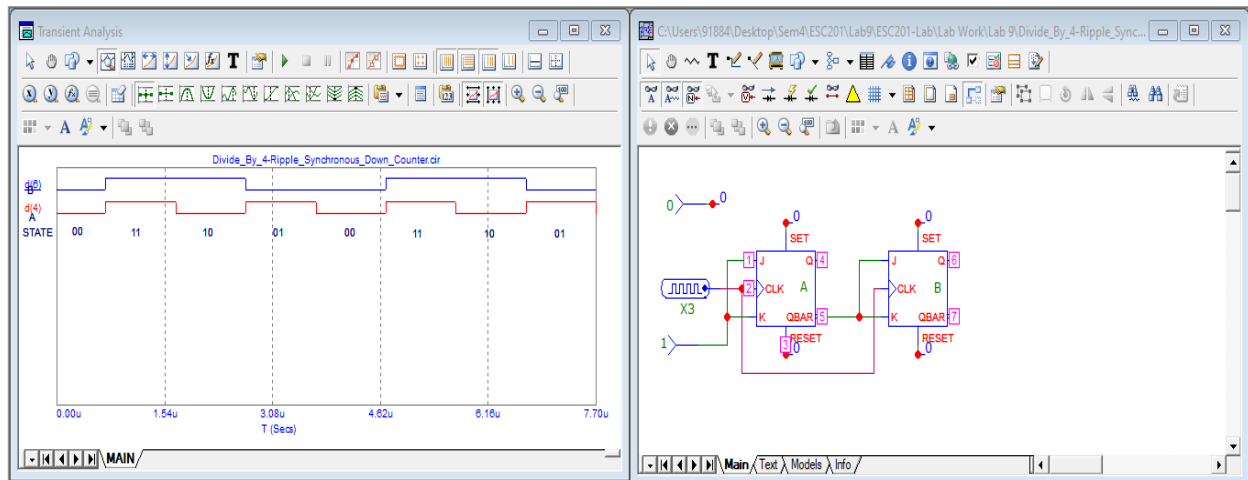| INPUTS					OUTPUTS	
S_d	C_d	CP	J	K	Q_n+1	Qbar_n+1
L	L	↑	L	L	Q_n	Qbar_n
L	L	↑	H	L	H	L
L	L	↑	L	H	L	H
L	L	↑	H	H	Qbar_n	Q_n
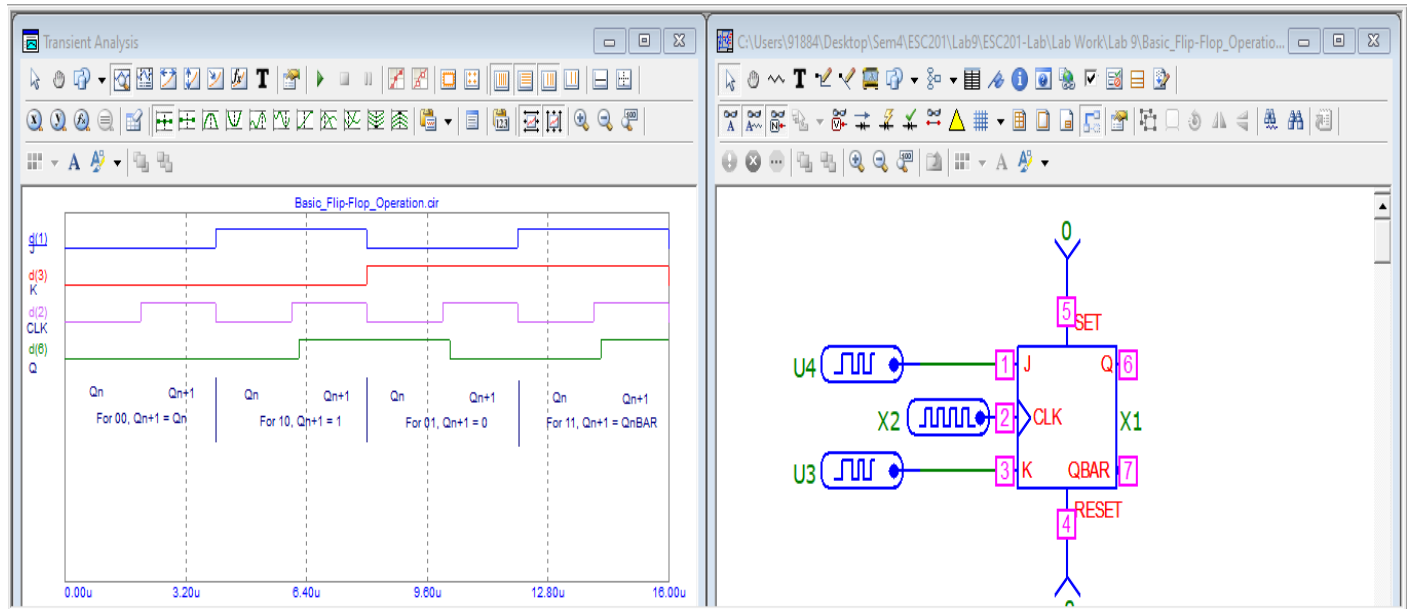
2.Divide-by-8 Ripple Down Counter (3 FFs):
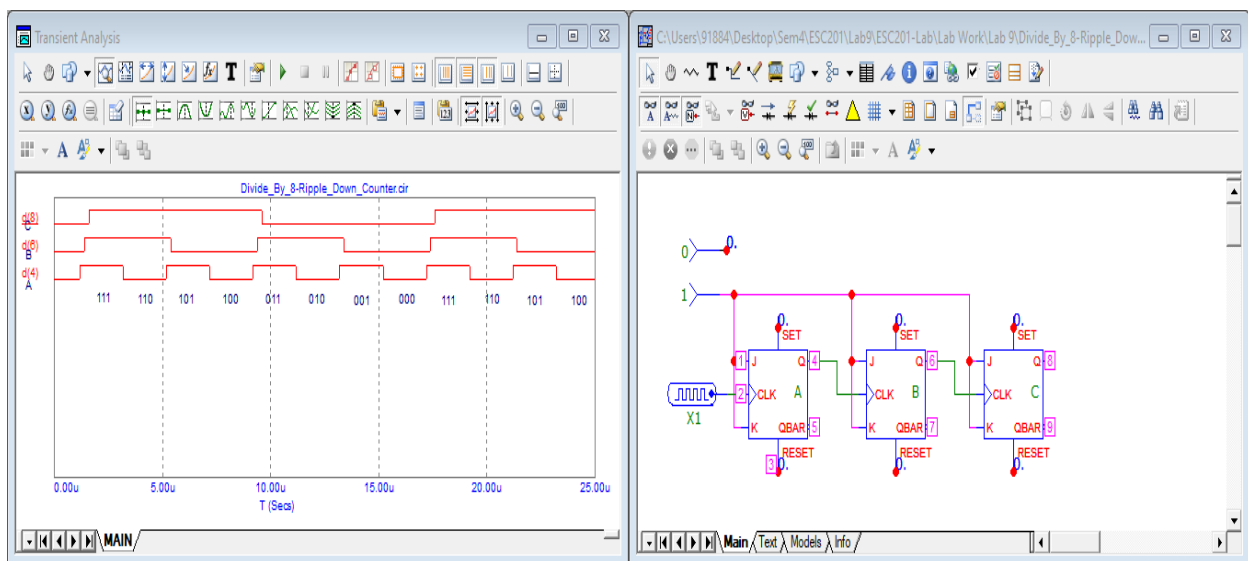
3.Divide-by-8 Ripple UpCounter (3 FFs):
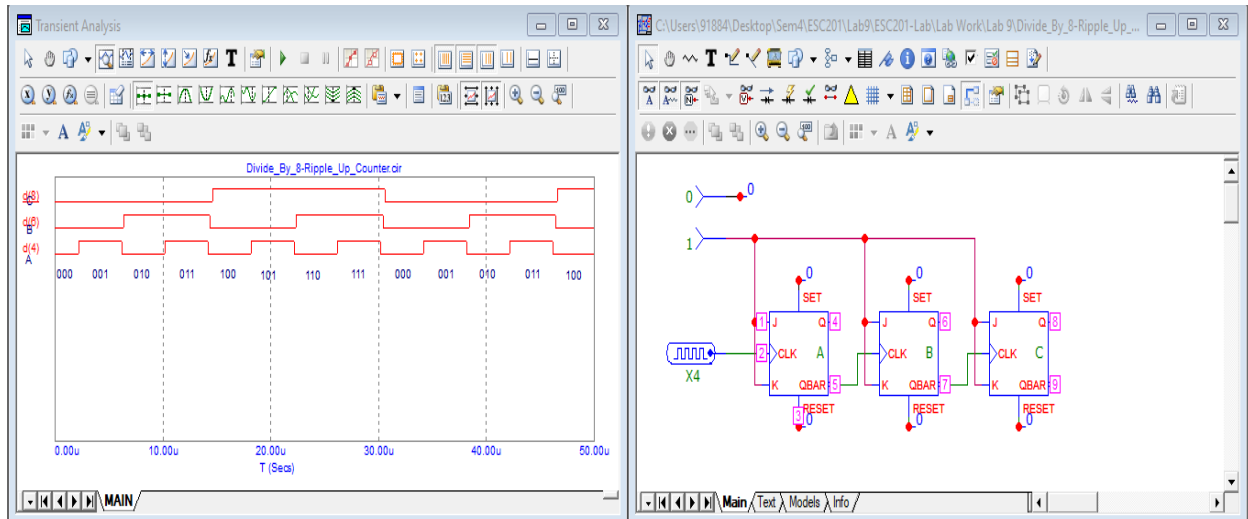
4.Divide-by-4 Synchronous Down Counter (2FFs):

5.Divide-by-3 Synchronous Up Counter (2 FFs):