Lab 13: Digital Lab Revision

Objective:

*   Digital Lab Revision

a)   From the 3-bit state machine state transition diagram shown in Figure 13.1, fill in the state transition table.
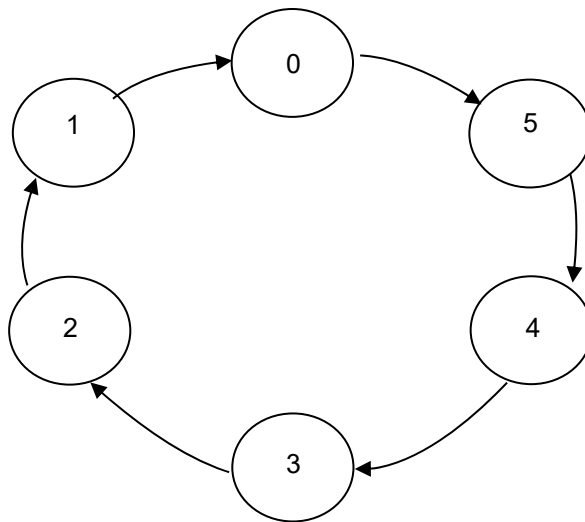

Figure 13.1 State Transition Diagram

Present State			Next State		
Q2	Q1	Q0	Q2*	Q1*	Q0*
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			

Figure 13.2 State Transition table

b)   D flip-flop is chosen to implement the state machine shown in Figure 13.1. Derive the equations for D2, D1 and D0 from Table 13.1.

Q2Q1＼Q0	0	1
00		
01		
11		
10		

Q2* = D2 =

Q2Q1＼Q0	0	1
00		
01		
11		
10		

Q1* = D1 =

Q2Q1＼Q0	0	1
00		
01		
11		
10		

Q0* = D0 =

c)	From the equations derived in b), create the schematic for the state machine shown in Figure 13.1.

(i)	Print the schematic.

(ii)	Write your **Login Account** on the printout.

d)	Perform simulation on this circuit.

(i)	Set up the necessary forces for **CLK**

(ii)	Run the simulation and print the waveform.

(iii)	Write your **Login Account** on the printout