ADE LAB SIMULATION

Asynchronous Up Counter Simulation

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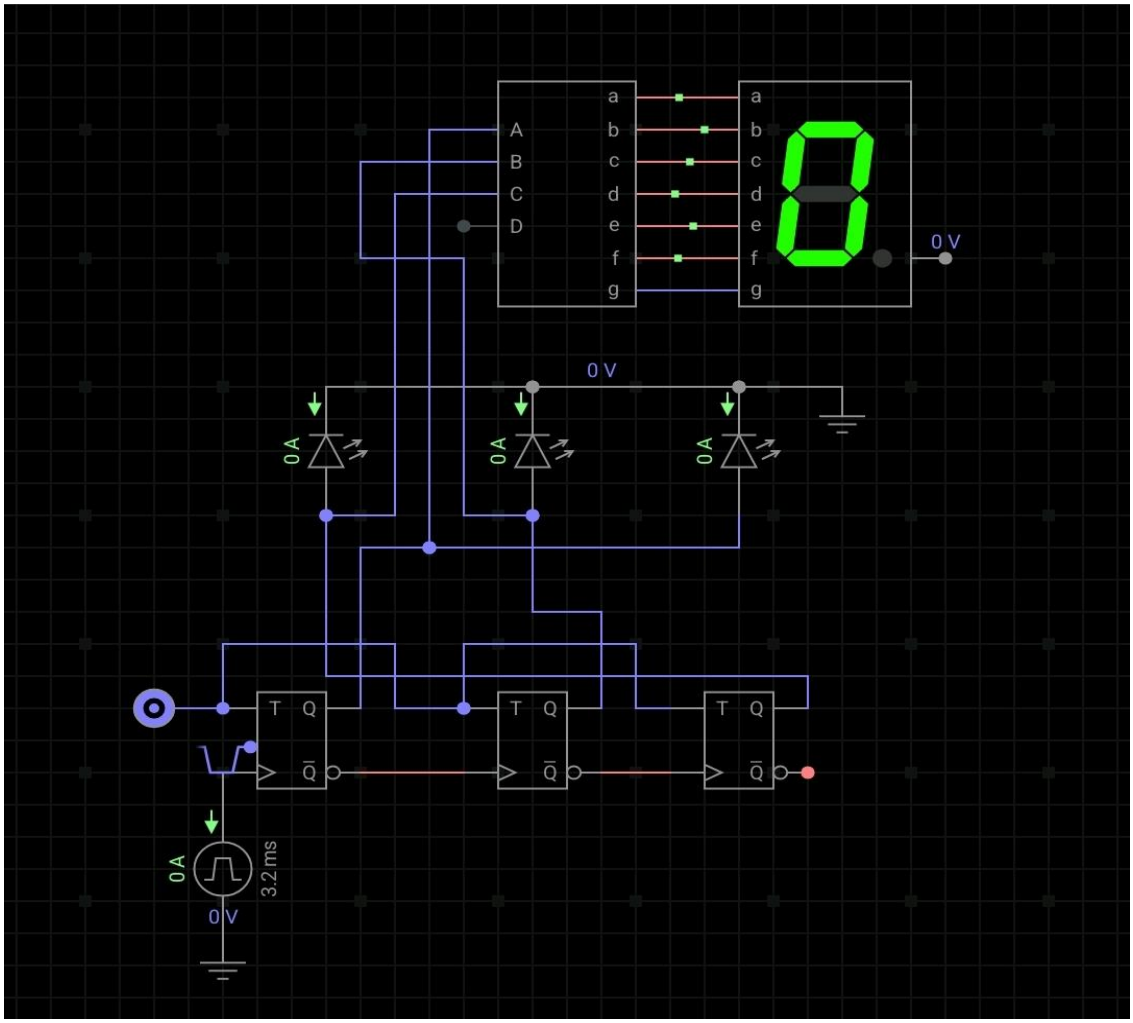
Asynchronous Up Counter

Aim: To display 3 bit binary digits from 0 to 7 using asynchronous up counter.

Theory: 3 bit asynchronous counter can be made by using sequential circuit of 3 T flip-flop. Then 3-bit binary number can be displayed by 7-segment display using BCD decoder.

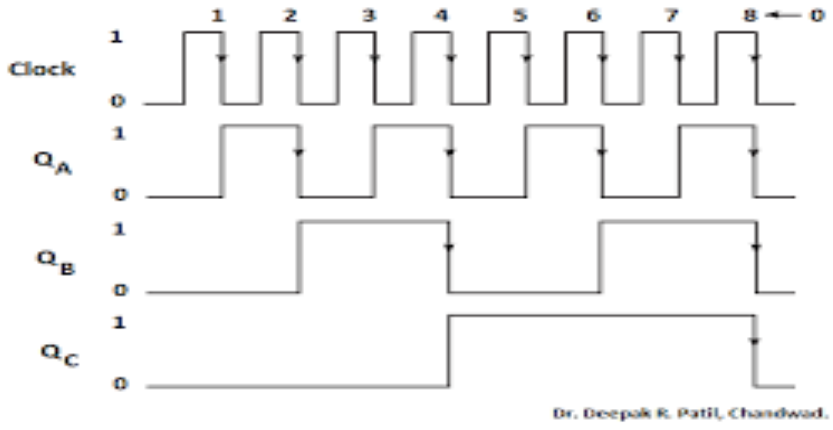
Circuit Diagram:



Truth Table:

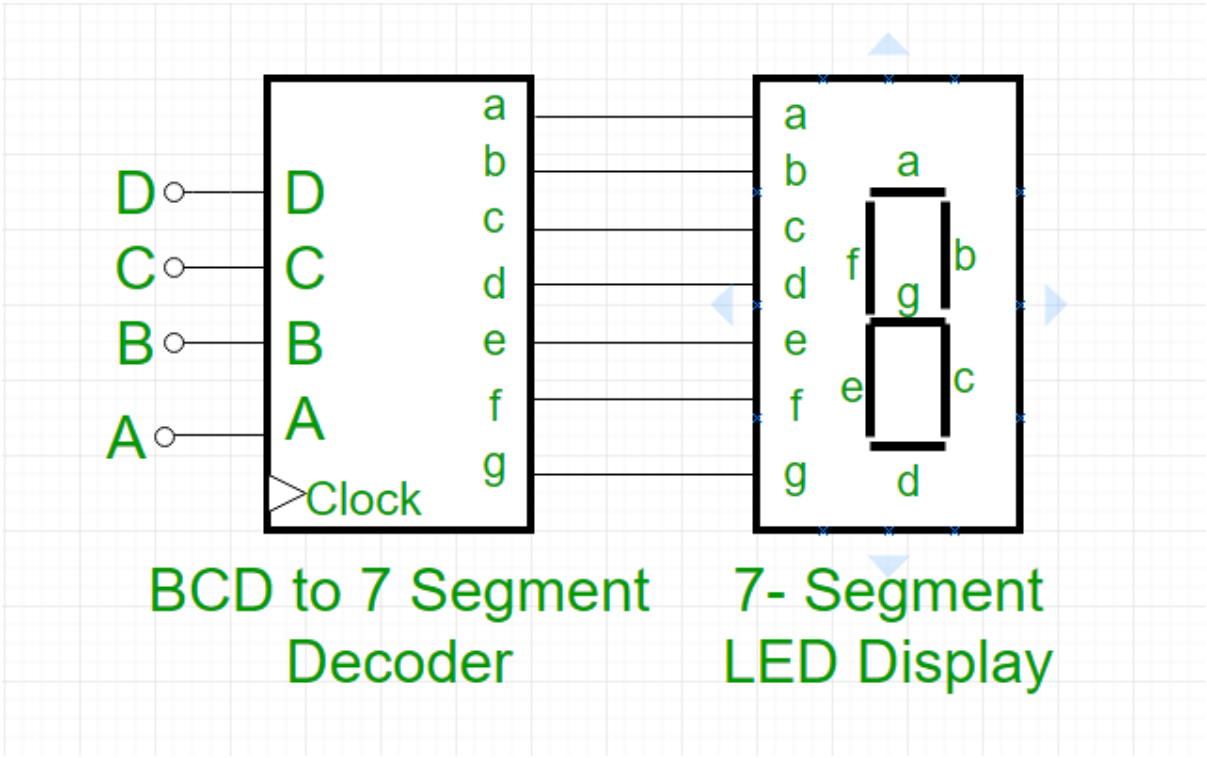
Asynchronous counter:

Clock Cycles	$OutputBits$		
	QC	QB	QA
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1



The binary output from the 3 bit asynchronous counter is given as input to BCD converter and it is displayed by 7 segment display as shown

BCD to 7 segment decoder:



Final output:

Number	Code	LED status							
		A	B	C	D	D	E	G	DP
0	03	0	0	0	0	0	0	1	1
1	9F	1	0	0	1	1	1	1	1
2	25	0	0	1	0	0	1	0	1
3	0D	0	0	0	0	1	1	0	1
4	D9	1	1	0	1	1	0	0	1
5	49	0	1	0	0	1	0	0	1
6	41	0	1	0	0	0	0	0	1
7	1F	0	0	0	1	1	1	1	1
8	01	0	0	0	0	0	0	0	1
9	19	0	0	0	1	1	0	0	1

Thank You for your understanding.