

DIGITAL LOGIC AND DESIGN

DIGITAL ASSIGNMENT – 1

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K Maps and Boolean Expressions:

• D₀

A \ BC	00	01	11	10
0	1			
1			1	1

$$D_0 = \Sigma(0, 6, 7)$$

$$\therefore D_0 = A'B'C' + AB$$

• D₁

A \ BC	00	01	11	10
0		1		
1			1	1

$$D_1 = \Sigma(1, 6, 7)$$

$$\therefore D_1 = A'B'C + AB$$

• D₂

A \ BC	00	01	11	10
0				1
1			1	1

$$D_2 = \Sigma(2, 6, 7)$$

$$\therefore D_2 = BC' + AB$$

• D₃

A \ BC	00	01	11	10
0			1	
1			1	1

$$D_3 = \Sigma(3, 6, 7)$$

$$\therefore D_3 = BC + AB$$

• D₄

A \ BC	00	01	11	10
0				
1	1		1	1

$$D_4 = \Sigma(4, 6, 7)$$

$$\therefore D_4 = AC' + AB$$

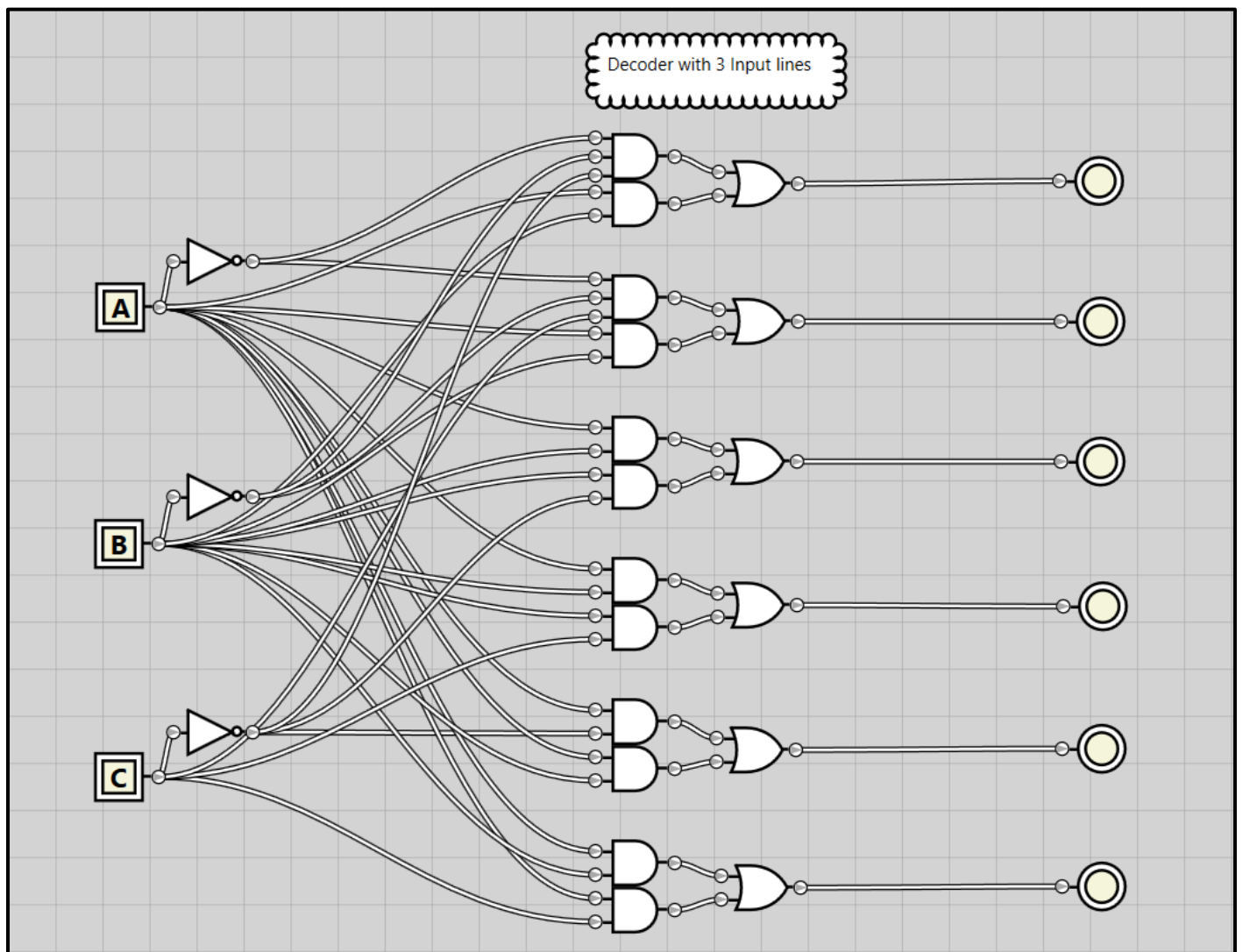
• D₅

A \ BC	00	01	11	10
0				
1		1	1	1

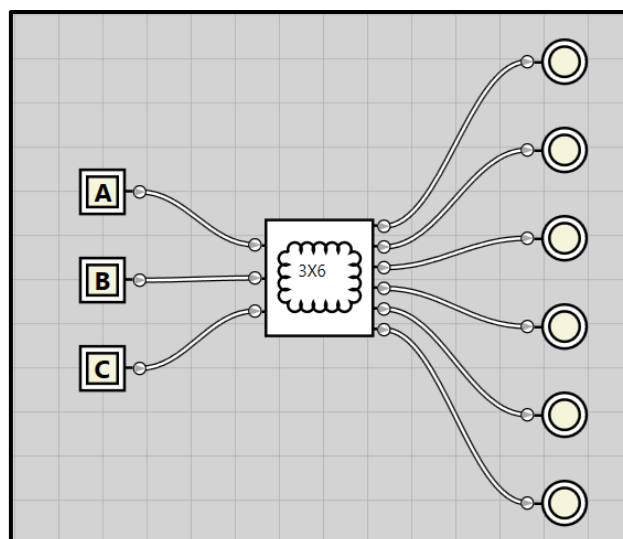
$$D_5 = \Sigma(5, 6, 7)$$

$$\therefore D_5 = AC + AB$$

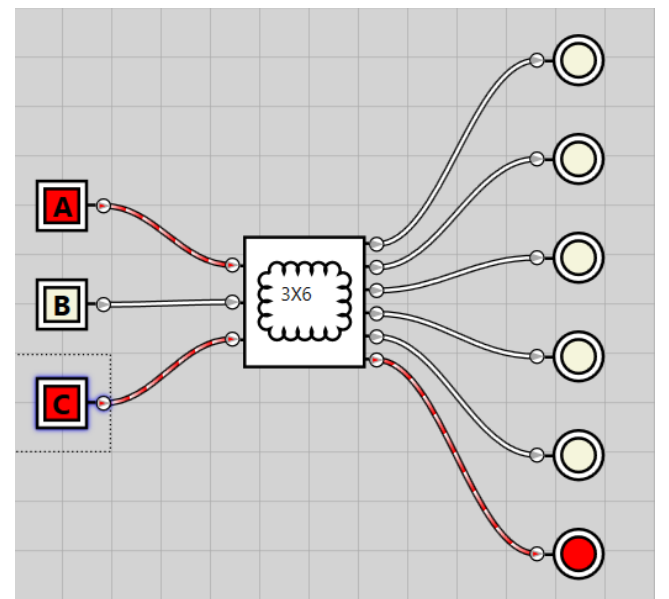
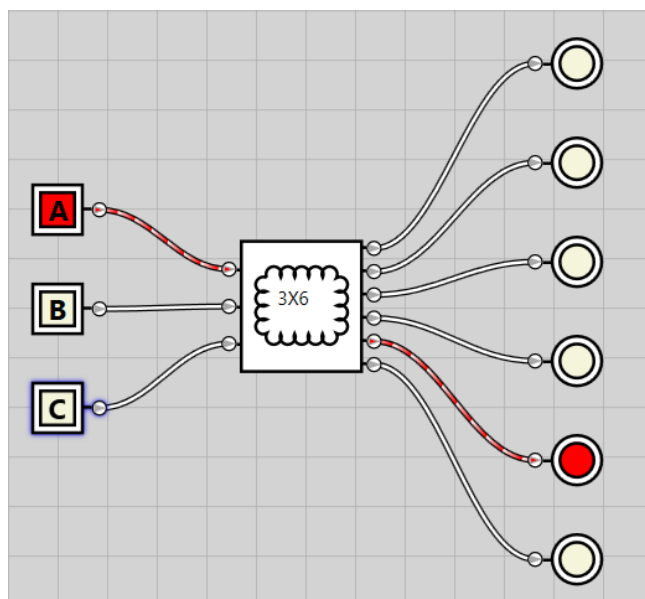
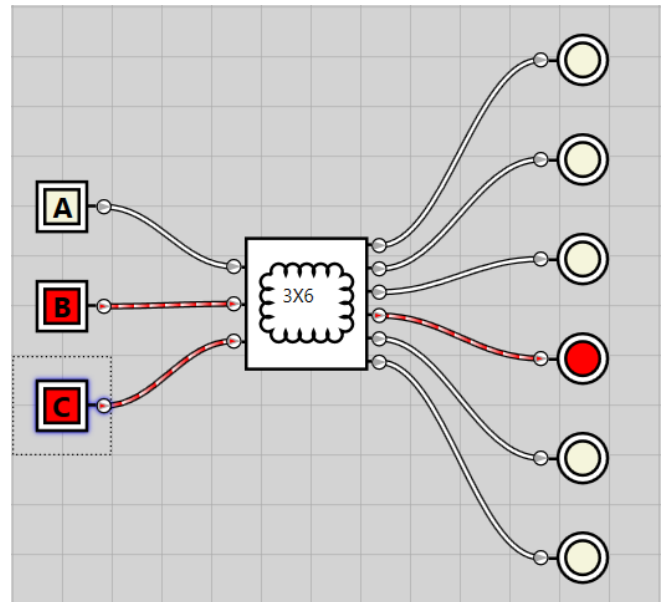
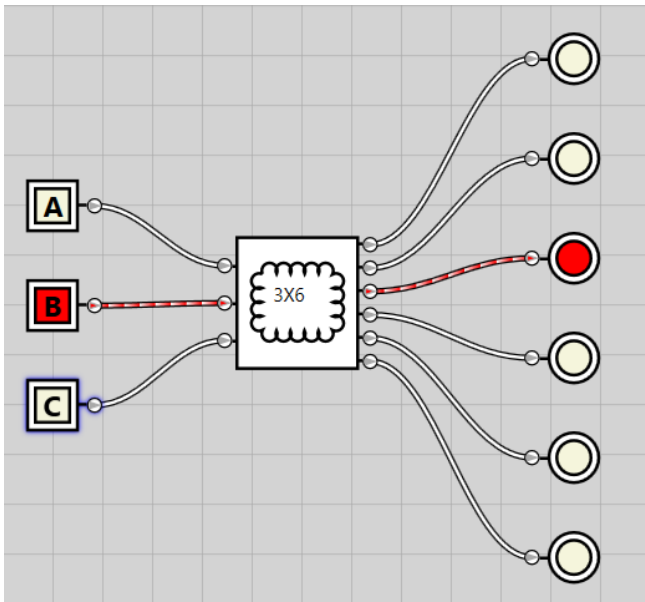
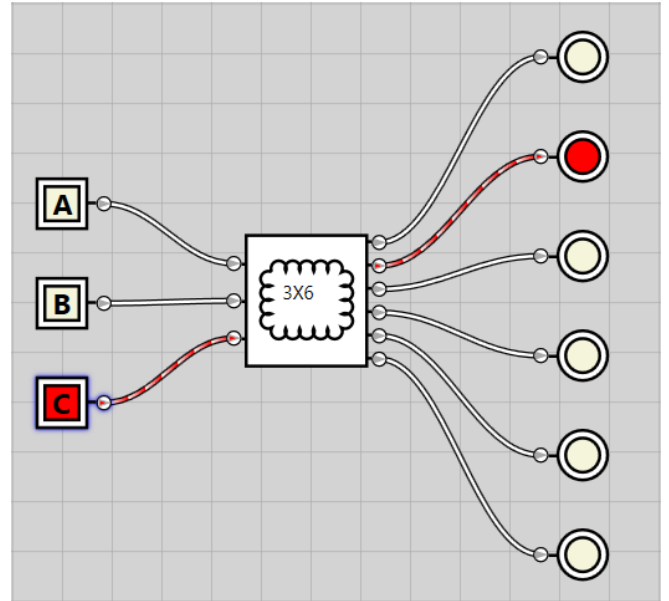
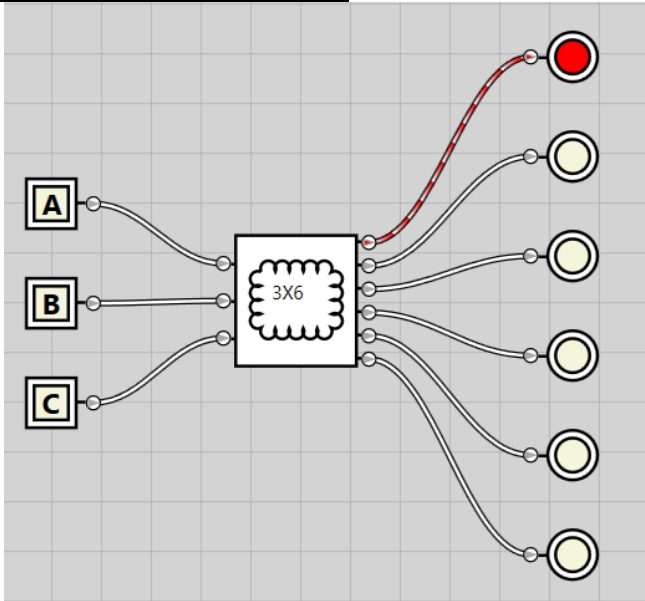
Circuit Diagram Using Logic Gate Simulator:



To simplify the circuit, it is saved as a user Integrated Circuit and imported in a new simulator file, the 3X6 decoder I.C. looks like:



SCREENSHOTS:



Error occurs when input corresponds to 6 or 7:

