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Question

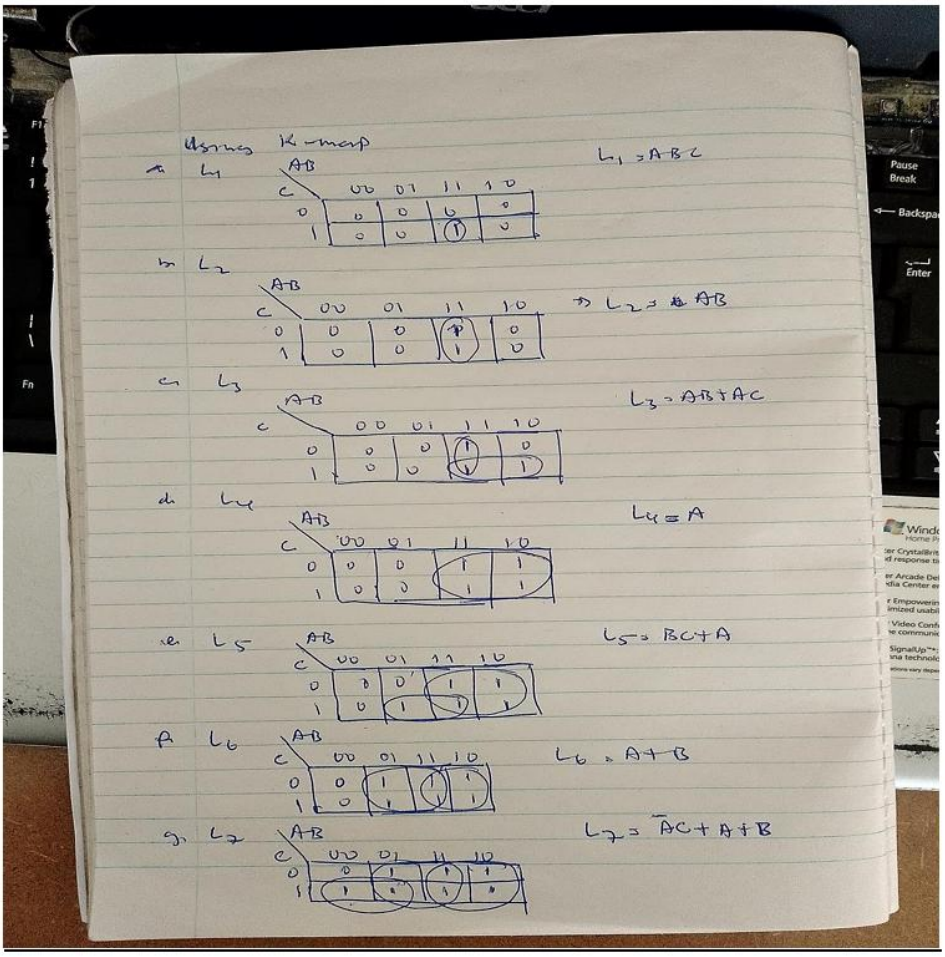
Design a digital circuit which decodes the input binary number given by the three inputs and give lights up the same number of LEDs as the input binary number. Design the circuit using AND and OR gates, three digital switches and LEDs.

My Approach and Solution:

Step One: Truth Table and K-Maps Deductions

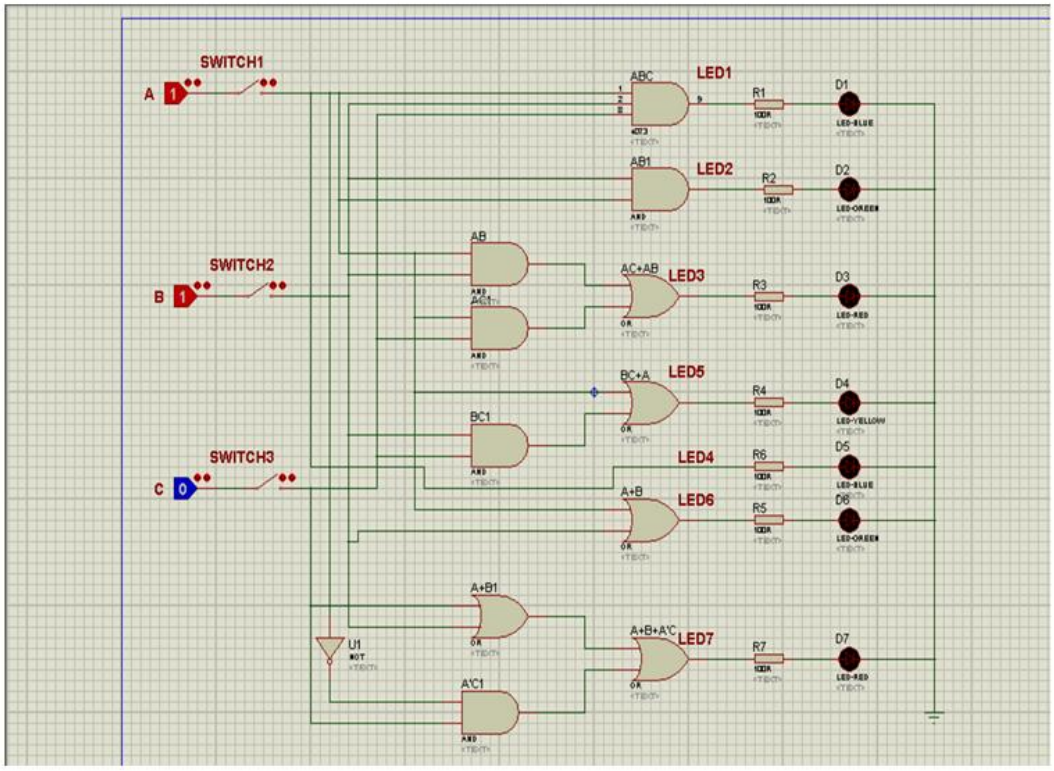
INPUTS			OUTPUTS						
A	B	C	LED1	LED2	LED3	LED4	LED5	LED6	LED7
0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	1
0	1	0	0	0	0	0	0	1	1
0	1	1	0	0	0	0	1	1	1
1	0	0	0	0	0	1	1	1	1
1	0	1	0	0	1	1	1	1	1
1	1	0	0	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1

K-MAPS



Step two: Proteus Design Circuit

PROTEUS CIRCUIT DESIGN BEFORE SIMULATION



SIMULATION ON PROTEUS: PRIORITY IS HIGHEST FROM THE BOTTOM

BINARY CODE: 110=DECIMAL 6 LIGHT 6 LED