	AIR UNIVERSITY
	DEPARTMENT OF COMPUTING AND AI
	EXPERIMENT NO 7

LAB TITLE: LAB REPORT 7

STUDENT NAME: Ruhma Lodhi **REG NO:** 230452

LAB ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Ability to Conduct Experiment					
Ability to assimilate the results					
Effective use of lab equipment and follows the lab safety rules					

Total Marks: _____ Obtained Marks: _____

LAB REPORT ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Data presentation					
Experimental results					
Conclusion					

Total Marks: _____ Obtained Marks: _____

Date: _____ Signature: _____

Experiment 7

Seven Segment display

OBJECTIVES:

- To experimentally check the operation of 7-segment display using BCD to 7-segment decoder 4774.

Requires component and Equipment's:

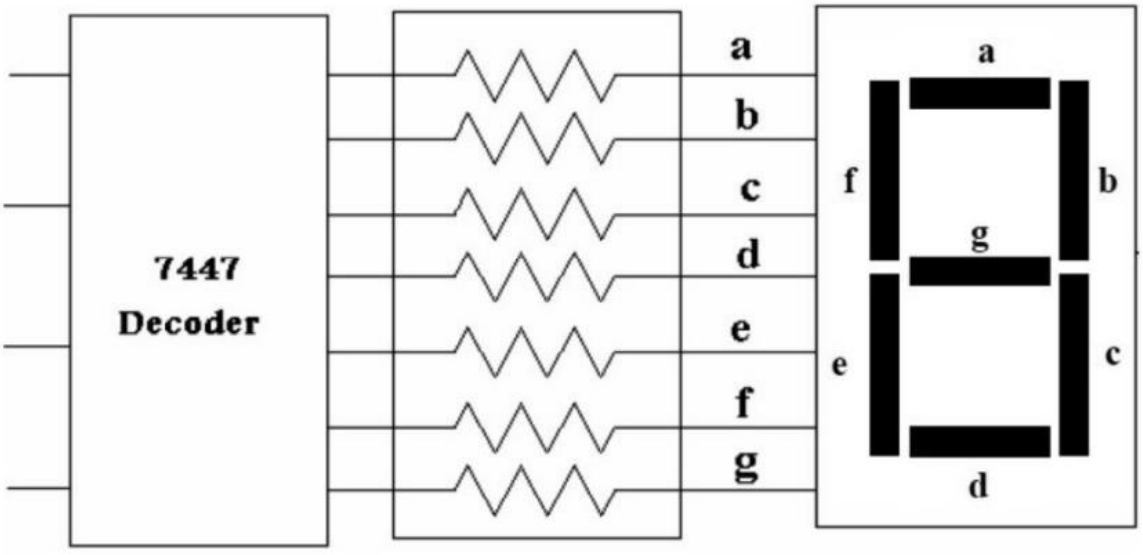
- ICs as required.
- Digital Electronic trainer.

Procedure:

- Check the configuration of your 7-segment display using multi-meter. Find out its configuration and pin-assignment.
- Create the truth table to describing the function of a BCD to 7-segment decoder accordingly to the configuration of your display.

INPUT				OUTPUT						
A	**B**	**C**	**D**	**a**	**b**	**c**	**d**	**e**	**f**	**g**
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	1	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	1	0	1	1

1. Design a circuit showing the proper connections of the decoder and the 7-segment display. Invert the outputs of the decoder in case of common cathode display. The output pins of 7447 are connected to the pins of seven segment display chip via resistances as shown below:



2. Implement the circuit on the trainer. Enter, BCD numbers from O to 9 and see the corresponding decimal digit on the display**.**

Student Exercise:

Make K-maps for each of the output of the BCD to 7-segment decoder. Find out the minimal SOP for each output. Design the decoder using minimum number of gates.

Equation for "a":

AB \ CD	**00**	**01**	**11**	**10**
00	1	0	1	1
01	0	1	1	1
11	X	X	X	X
10	1	1	X	X

F=A+C+BD+B'D'

Equation for "b":

AB \ CD	**00**	**01**	**11**	**10**
00	1	0	1	1
01	0	1	1	1
11	X	X	X	X
10	1	1	X	X

F=B'+C'D'+CD

Equation for "c":

AB \ CD	**00**	**01**	**11**	**10**
00	1	1	1	0
01	1	1	1	1
11	X	X	X	X
10	1	1	X	X

F=B+D+C'

Equation for "d":

AB \ CD	00	01	11	10
00	1	0	1	1
01	0	1	0	1
11	X	X	X	X
10	1	1	X	X

F=A+B'C+CD'+B'D'+BC'D

Equation for "e":

AB \ CD	00	01	11	10
00	1	0	0	1
01	0	0	0	1
11	X	X	X	X
10	1	0	X	X

F=CD'+B'D'

Equation for "f":

AB \ CD	00	01	11	10
00	1	0	0	0
01	1	1	0	1
11	X	X	X	X
10	1	1	X	X

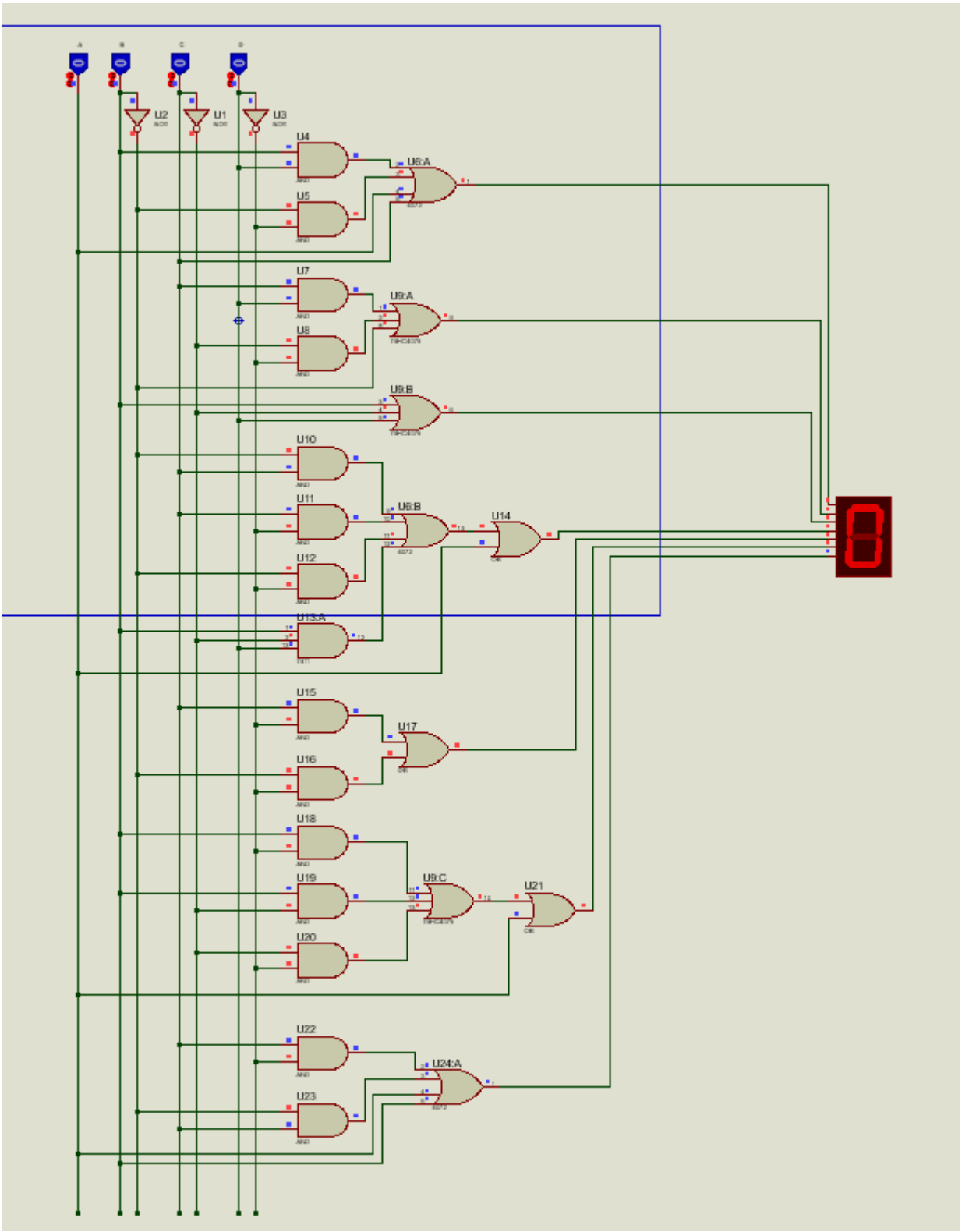
F=A+BD'+BC'+C'D'

Equation for "g":

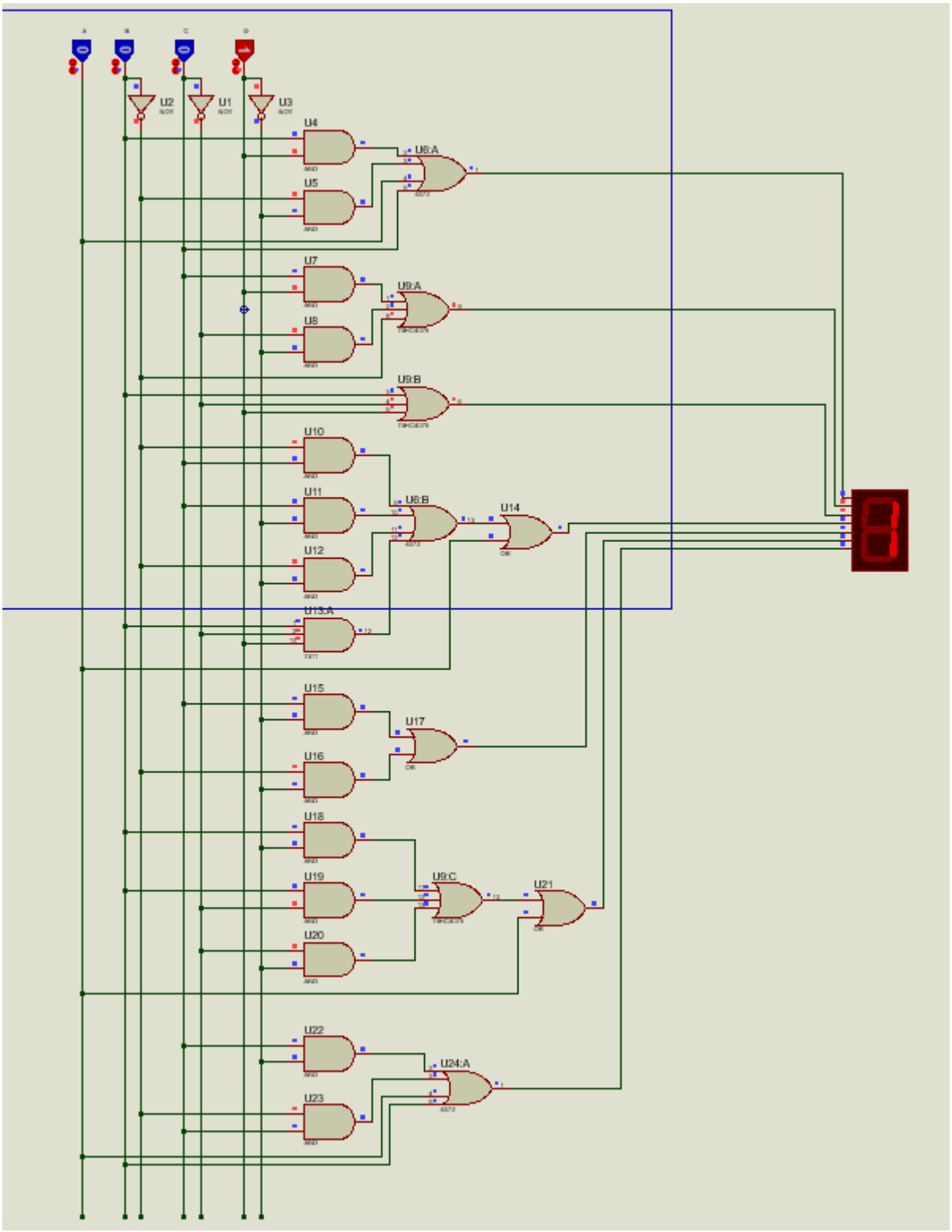
AB \ CD	**00**	**01**	**11**	**10**
00	0	0	1	1
01	1	0	1	1
11	X	X	X	X
10	1	1	X	X

F=A+B+CD'+B'C

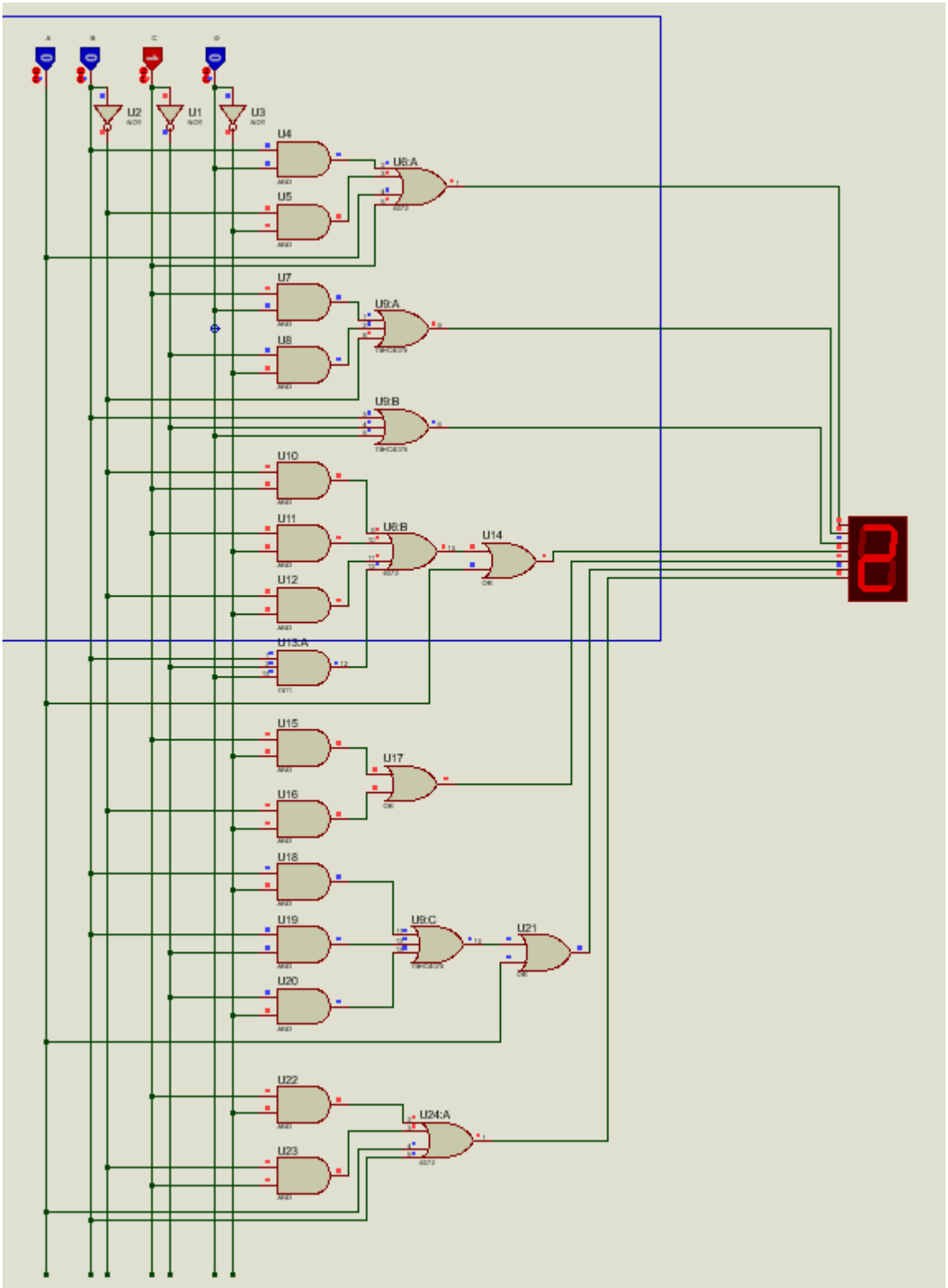
Circuit Diagram:



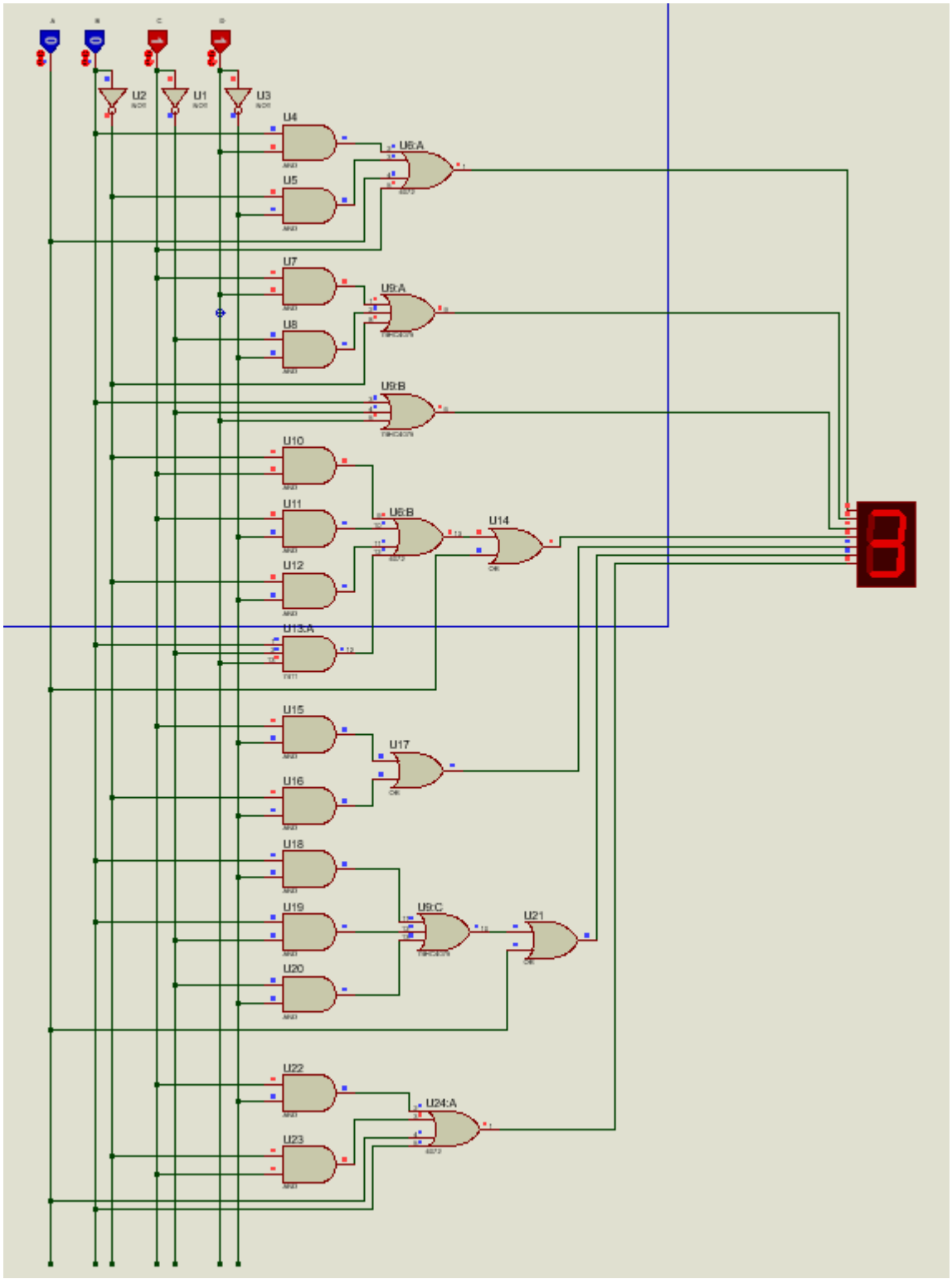
Circuit Diagram:



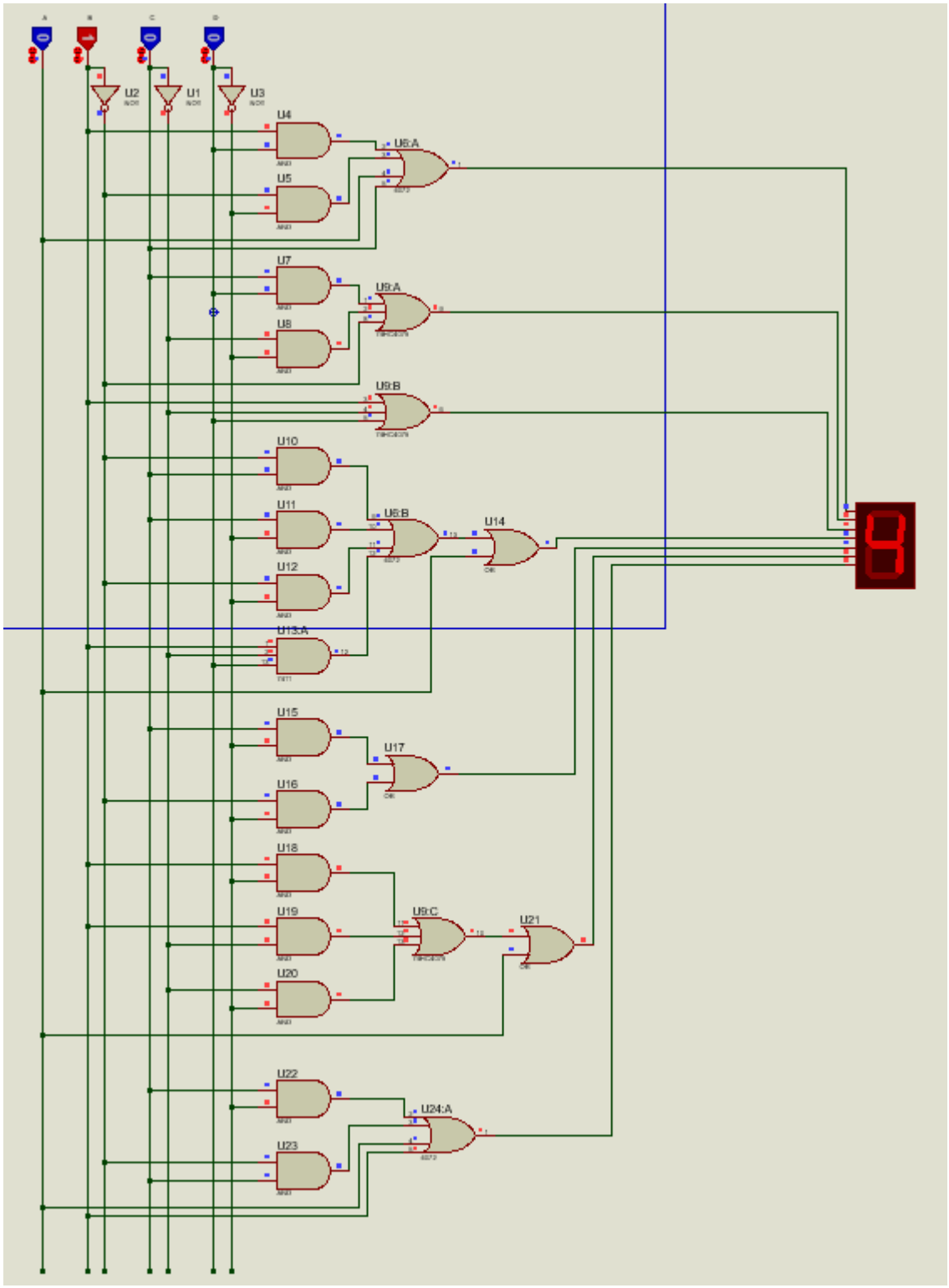
Circuit Diagram:



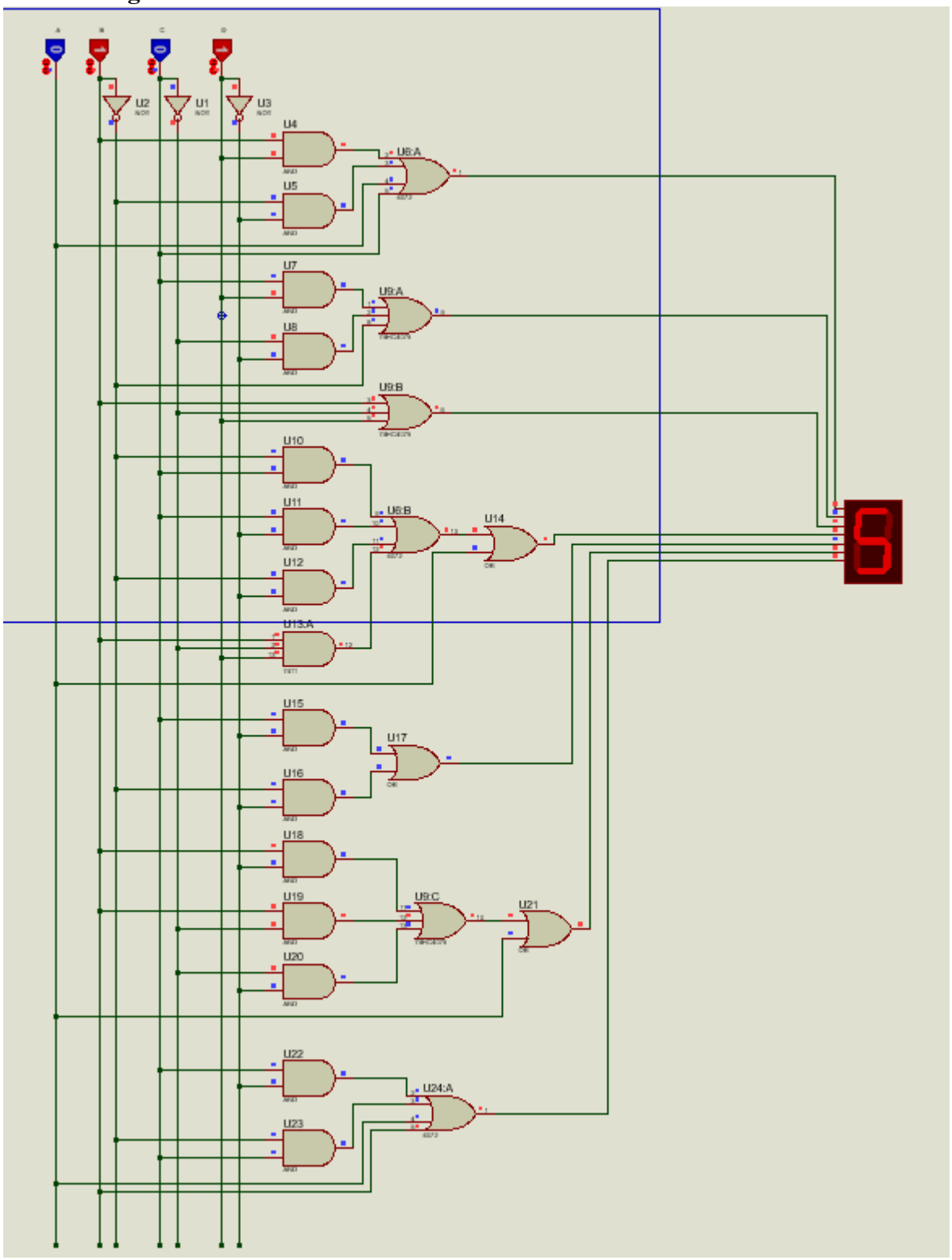
Circuit Diagram:



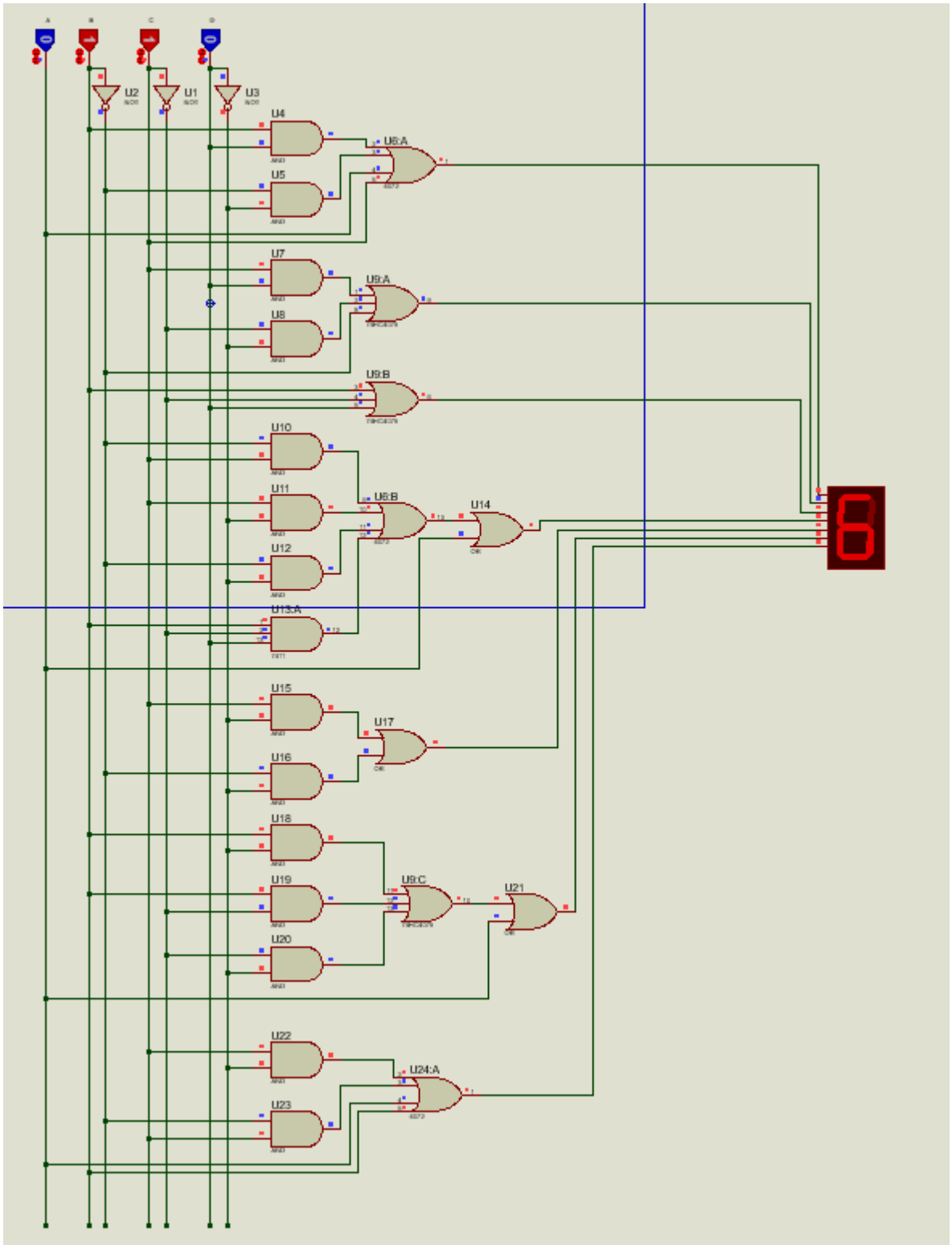
Circuit Diagram:



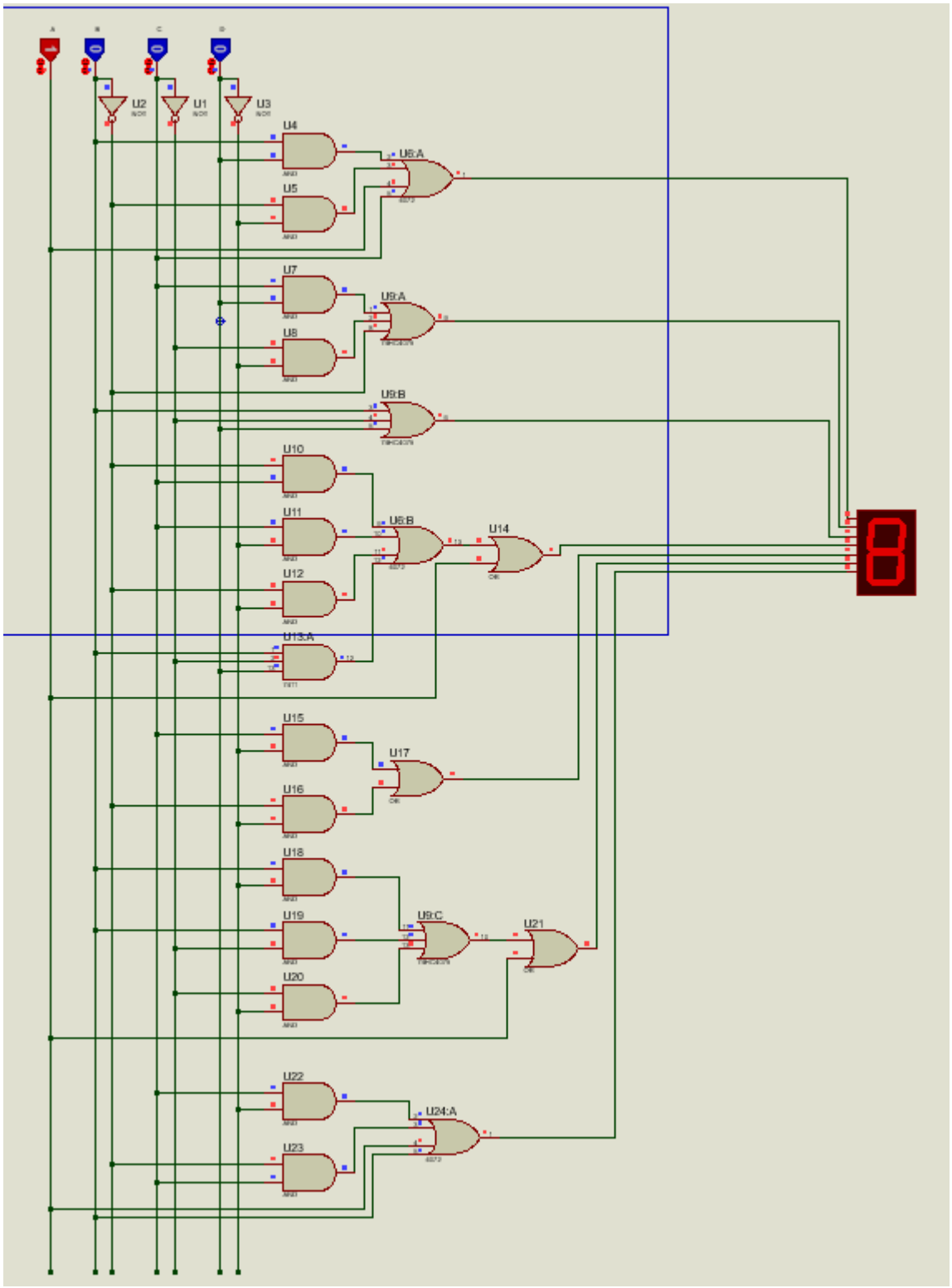
Circuit Diagram:



Circuit Diagram:



Circuit Diagram:



Circuit Diagram: