ADNAN MENDERES UNIVERSITY
Faculty of Engineering
Electrical and Electronics Engineering

EE207 LOGIC DESIGN LABORATORY

EXP 1: DIGITAL LOGIC GATES

Objective(s):

In this experiment, you will investigate the logic behavior of various IC gates:

7400 quadruple two-input NAND gates
7402 quadruple two-input NOR gates
7404 hex inverters
7408 quadruple two-input AND gates
7432 quadruple two-input OR gates
7486 quadruple two-input XOR gates

The pin assignments to the various gates are shown in Fig. 1.1. "Quadruple" means that there are four gates within the package. The digital logic gates and their characteristics are discussed in Section 2.8. A NAND implementation is discussed in Section 3.7.

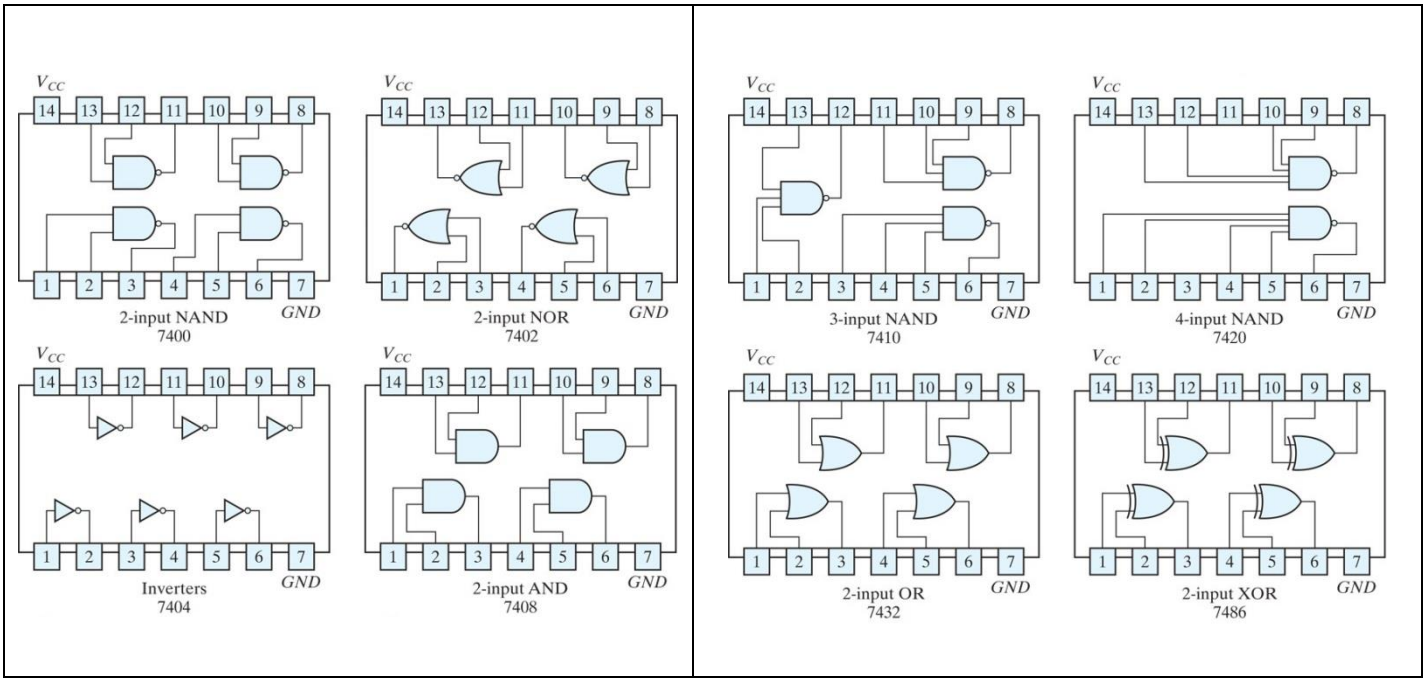


Fig. 1.1. The pin assignments to the various gates

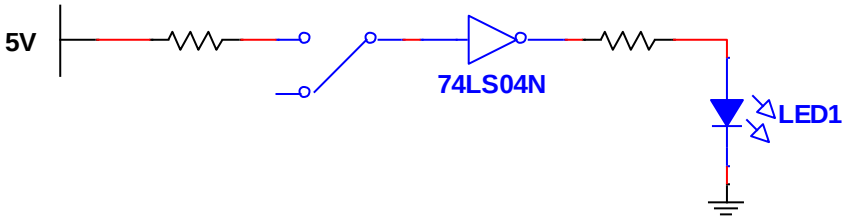
Preliminary Work:

Using PSpice or any circuit design program, obtain the truth tables listed in Fig. 2.5 in your textbook.

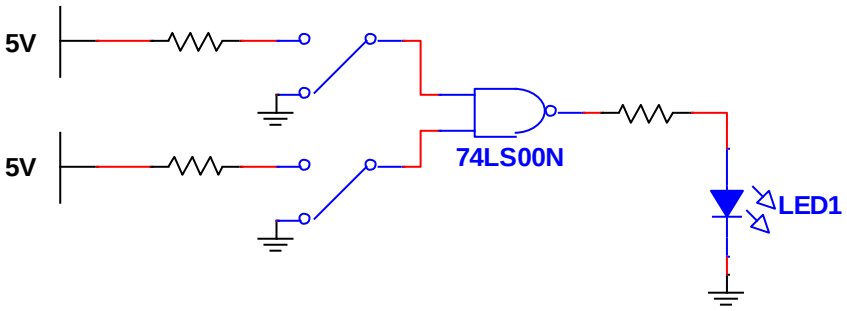
Laboratory Work:

Truth Tables

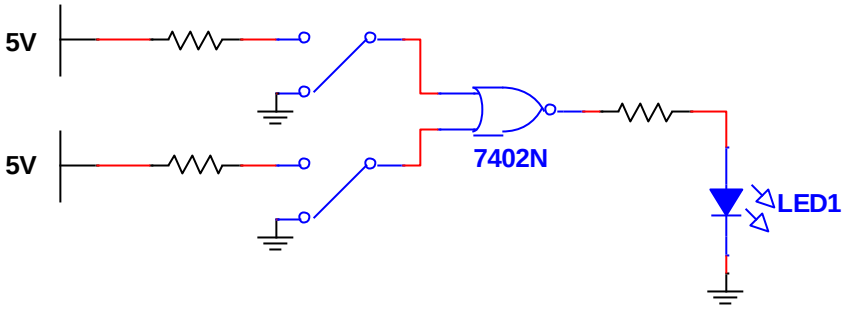
Use one gate from each IC listed and obtain the truth table of the gate. The truth table is obtained by connecting the inputs of the gate to switches and the output to an indicator lamp. Compare your results with the truth tables listed you prepared at your preliminary work.



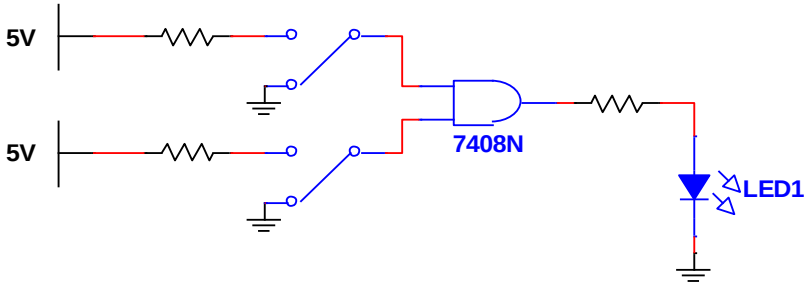
In	Out
0	
0	



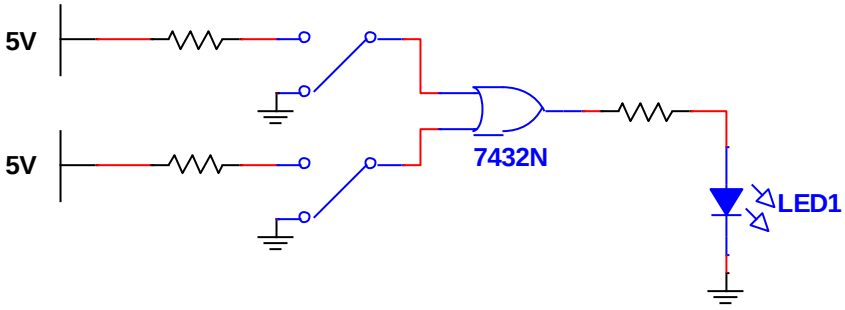
In1	In2	Out
0	0	
0	1	
1	0	
1	1	



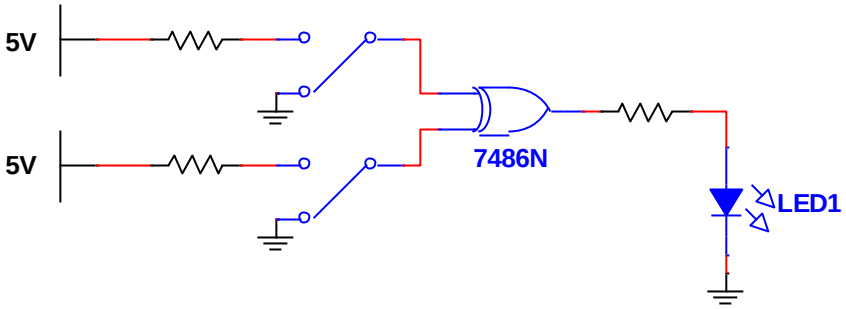
In1	In2	Out
0	0	
0	1	
1	0	
1	1	



In1	In2	Out
0	0	
0	1	
1	0	
1	1	



In1	In2	Out
0	0	
0	1	
1	0	
1	1	



In1	In2	Out
0	0	
0	1	
1	0	
1	1	

Universal NAND Gate

Using a single 7400 IC, connect a circuit that produces

(a) an inverter,

(b) a two-input AND,