

# [Digital electronics logic gates - lab report example](https://assignbuster.com/digital-electronics-logic-gates-lab-report-example/)

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## Digital electronics logic gates

Digital Electronic Logic Gates – Lab Report Objective In this lab activity, the purpose was to use the NOR and NAND gates to implement several basic logic gates, and use the pulse waveforms to test XOR and OR gates. Additionally, the experiments aimed at using the XOR and OR gates to setup a circuit that implements 1’s and 2’s complement of a 4-bit binary number. We used two ICs to determine whether an IC had a NOR < NAMD, XOR or OR gates so that we could know exactly where the outputs and inputs of the ICs were. The NAND and NOR gate was first utilized to implement the other basic logic gates and then the XOR and OR gates were tested using the pulse waveforms. The same gates were again used to setup circuits that performed the 1’s and 2’ complements of a 4-bit binary.
Equipment
In order to successfully carry out these experiments, certain lab apparatus were used:
7432, 7400, and 7402 ICs
Connection wires
Signal generator
Oscilloscope
Trainer board
The first experiment required that we find, from the manufacturer’s data sheet, the pin configuration or connection diagram for the 7402 and 7400 quad 2-inputs NOR and 2- inputs NAND gates ICs respectively, and then apply Vcc and ground to the correct pins. We found out that the ground is applied in pin7 and Vcc in pin 14. We then went ahead and setup the circuit as indicated in Figure 1 and Figure 2. Figure 1 is a NAND gate and thus the IC we chose to use is the 7400 IC; on the other hand, Figure is a NOR gate and thus the 7402 IC was used (Kumar 689).

Figure 1
Figure 2
After connecting the input to a 0 and a 1, we recorded each output and produced the truth tables indicated below, Table 1 and Table 2. Given these circuit configurations only had one input and one output, the circuits implemented produced the following truth tables.
A
X
0
1
1
0
Table 1Table 2
Work Cited
Kumar, A. Anand. Fundamentals of Digital Circuits. New Delhi: Tata Mc Graw-Hill, 2009. Print.