

Lab 02
ECE 380
The University of Alabama

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Introduction

The objective of this lab was to become familiar with building circuits using a breadboard. We experimented with constructing different types of circuits to learn about basic guidelines for circuit construction that facilitate the testing and debugging process.

Procedure

a) Pre-laboratory

For the pre-lab, we went through the video links given in instructional manual to learn about intro to breadboards, number systems and logic gates. We then identified the components as listed in the table below, the polarity of the breadboard and the PIN-1s. We then looked up the appropriate pin assignments.

Quantity	Components	PIN-1 or polarity
1	L7805 (Voltage Regulator)	PIN 1: Leftmost
1	74HC04 (NOT gates)	PIN 1: Lower left corner
1	74HC08 (AND gates)	PIN 1: Lower left corner
1	74HC32 (OR gates)	PIN 1: Lower left corner
3	LED	Positive: Longer leg
3	100 Ohm resistors	Not applicable

b) Part I

We built a simple power supply circuit to turn on an LED following the schematic built for the same.

c) Part II

We experimented with AND, OR and NOT gates on the breadboard and built a functional circuit for the OR gate using the given schematic.

d) Part III

We followed a similar process to analyse logic functions for NAND, NOR and XOR gates and followed the schematic to build a circuit for the NAND gate.

Image 1:- Simple circuit to light up an LED

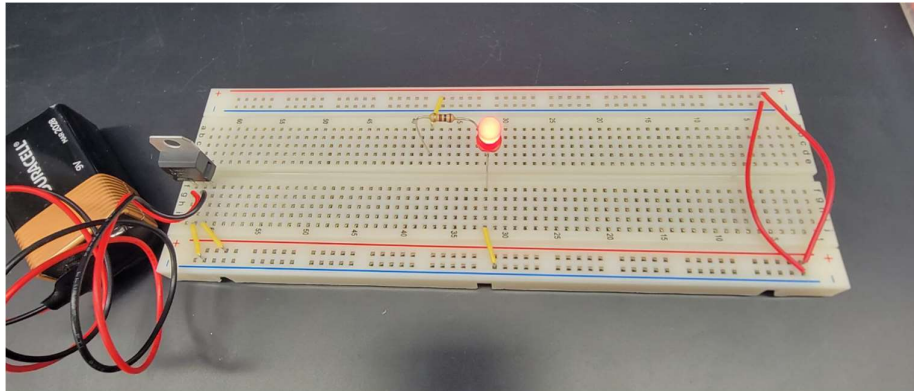


Image 2:- Schematic for simple circuit

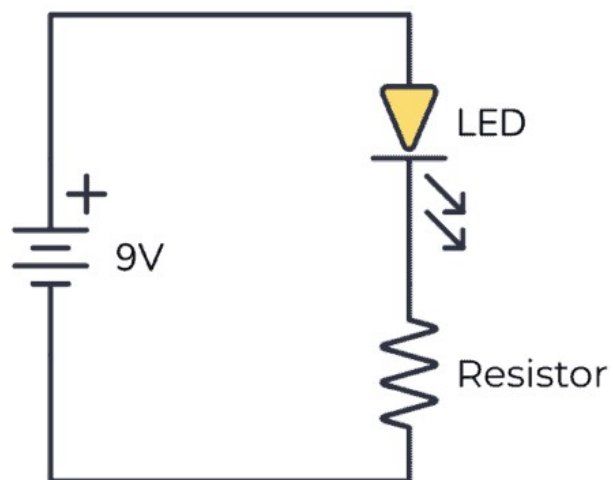


Image 3:- Schematic for OR Gate

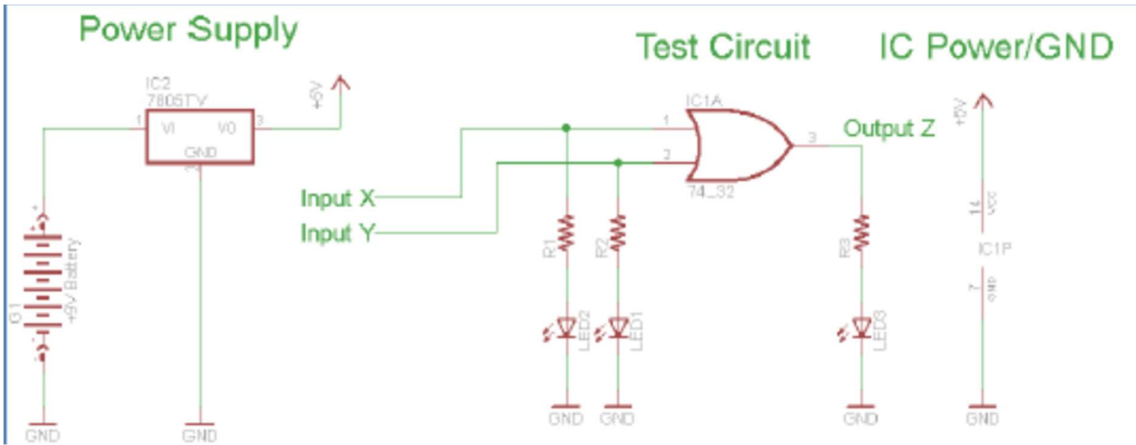


Image 4:- Breadboard implementation of OR Gate

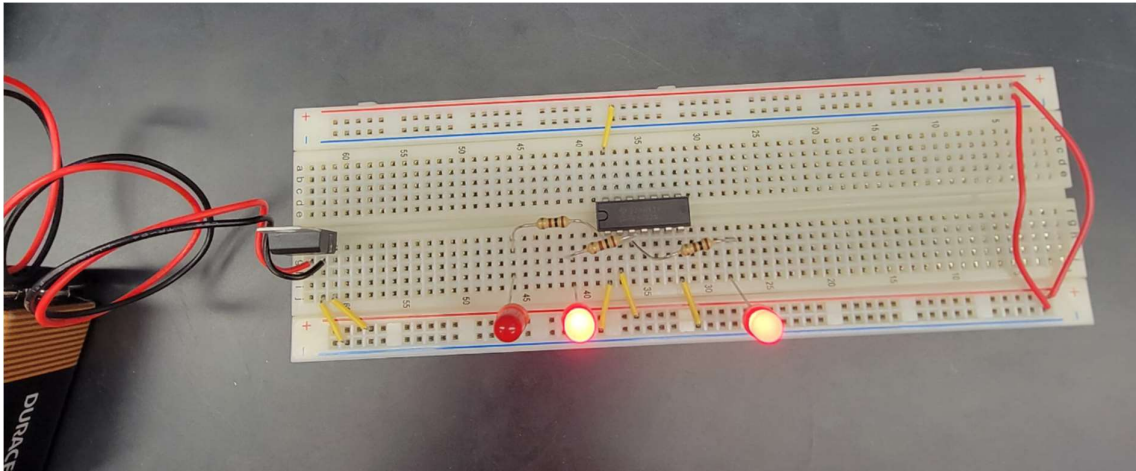


Image 5:- Breadboard implementation of NAND Gate

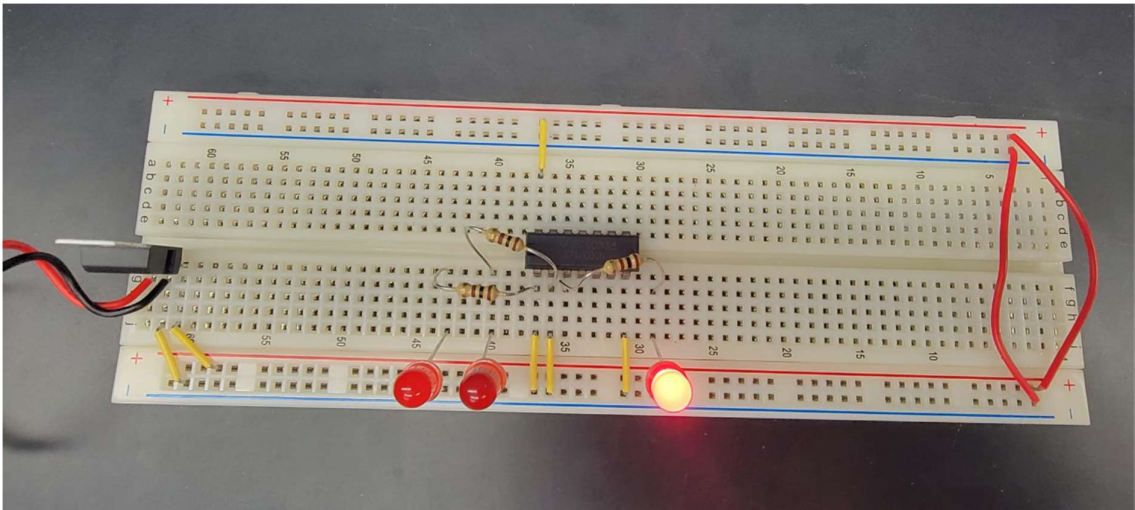
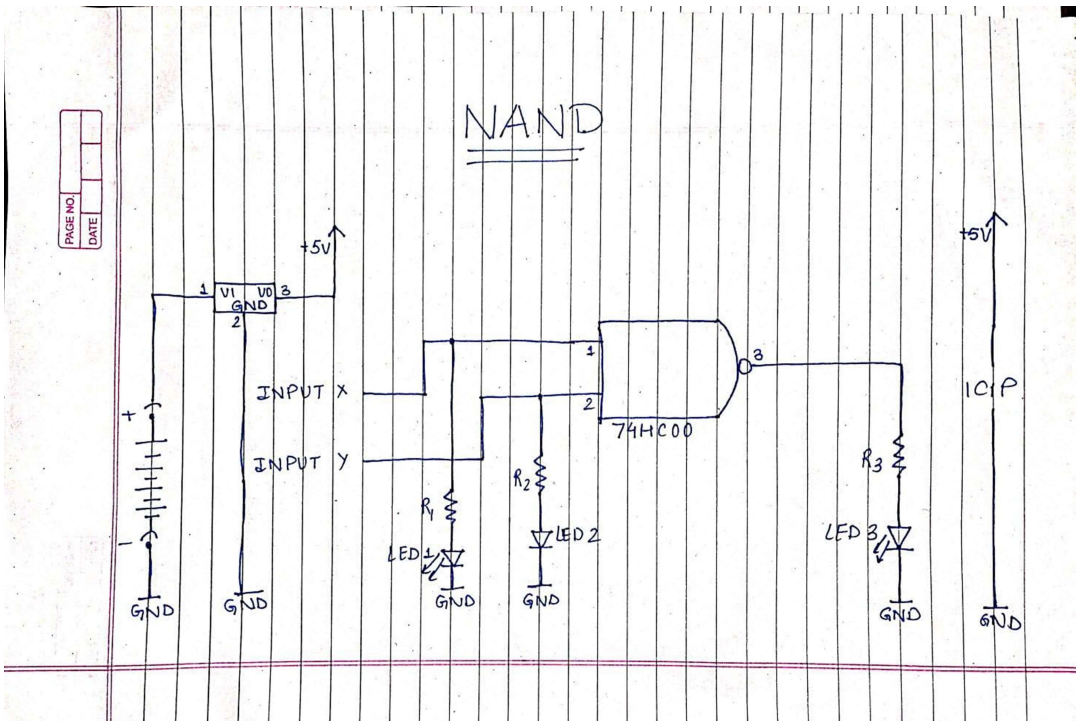


Image 6:- Schematic for NAND Gate



Lab 2 scoring sheet (Please print a copy and ask the TA to sign it for your demos. Include the signed scoring sheet in the report).

Lab demo (60 pts)	Score	TA initial
Part I: 5 volt Power setup Demo: 20 pts	20	MR.
Part II: AND, OR, NOT Demo: 20 pts Demo at least one of the gates.	20	MR.
Part III: NAND, NOR, XOR. Demo: 20 pts Demo at least one of the gates.	20	MR.
Report (40 pts)		
Lab 2 Total Grade (100 pts)		

