

Connect a wire from one of the DIP (dual inline package, slide switch with 0 or 5 V output) switches to an indicator (red LEDs that glow when their input voltage is greater than 1.4 V and green ones when less than 1.4 V) and determine how to set the switch to produce a 1 (red) or 0 (green).

Next, connect the output of one of the push buttons to an indicator to test it.

Then connect the TTL output of the function generator to an indicator and set the frequency to about 1 Hz. Verify that the generator can produce digital signals.

DIPs must be connected to 5V and ground to work

2.1

Connecting the logic indicator LEDs to a nearby DIP switch and the protoboard ground resulted in the low logic indicator lighting up, regardless of whether the DIP was in the V+ or +5. Couldn't figure out how to work the DIP switches, but the LED indicators function properly when connected to the 0/1 logic switches near the bottom left corner.

A single wire connecting the push button to the LED indicator causes the indicator to light up. If the wire is connected to the NC side of the push button, the HIGH/RED indicator lights up. If it is connected to the NO side, the LOW/GREEN indicator lights.

TTL gives single signal that causes RED/HIGH to light.

NOT

74x04

Connect the 14th pin of the IC (integrated circuit) chip (V_{cc}) to the 5 V power supply and 7-pin to the ground. Verify that one of the six gates on the 74LS04 hex inverter inverts the signal. A high input produces a low output, etc.

INPUT	OUTPUT
1	0
0	1

NAND

Connect 74LS00 two-input quad NOR gate to 5 V and ground and test a gate.

INPUT 1	INPUT 2	OUTPUT
0	0	1
1	0	1
0	1	1
1	1	0

NOR

Connect 74LS02 two-input quad NOR gate to 5 V and ground and test a gate.

INPUT 1	INPUT 2	OUTPUT
0	0	1

1	0	0
0	1	0
1	1	0

I/O of an Inverter

Transfer function the variance of output voltage of an inverter as a function of its input voltage

$$\text{transfer function} = \frac{V_{\text{out}}}{V_{\text{in}}}$$

Connect the input of the inverter to a 5 V potential via 10 kOhm potentiometer to allow voltage variance between 0 and 5. Draw a schematic diagram of this circuitry.

Measure input and output of the inverter. Focus on transition region.

- ?
- Up to what voltage can 0 be safely represented?
- ?
- Above what voltage for 1?

Input as Active Source

Disconnect the 5V source from the circuit by keep the potentiometer. Vary the resistance to map out the transfer function. Graph together with measurements in I/O section.

V_{out}

|

|____ V_{in}

I-V curve

Connect a multimeter to measure load current and another to measure voltage as in Lab 1. (Can use same circuit diagrams with potentiometer.) Draw the diagram of the circuit. Take measurements by varying the potentiometer's resistance.

Position of the POT	V _{in}	I _{in}	Output state	LED output state

Got sick, unable to finish the lab.