

Quiz #3

Assignment is due in class on Thursday, February 23, 2012

Quiz #3: Assembling Hardware and reading circuit diagrams

Inputs: See below. The program requires 3 daq subvi's (detect daq, digital-in, digital-out).
Outputs: See below. A baseplate for the LabVIEW vi is provided.
Operation: Run once
Hardware: One USB-6008 DAQ with USB Cable

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|-------------|--|-------------------------|
| Components: | 1 × NPN 222 Transistor | 1 × 7400 Quad NAND chip |
| | 1 × Red LED | 1 × Photodiode |
| | 1 × 10KΩ Resistor | 1 × 100 Ω Resistor |
| | 1 × Lego motor | 1 × Lego motor wire |
| | 4 × 5V relays. | 1 × Prototyping board |
| | Various wires (28 total: 8 long, 5 medium, 4 short, 11 very short) | |

You may not actually connect the circuit to +5V on the DAQ until you are completely done.

You must **build** the circuit below, repair the vi baseplate, and test the vi and hardware. The *Forward* and *Backward* controls operate the motor as indicated, unless the *LED Motor control* is activated. In that case, the motor turns forwards if the LED is blocked, and is otherwise stationary. The panel LED indicates when the photodiode is blocked. In normal operation, once it is blocked, the panel LED remains lit until it is *Reset* from the front panel. However, if the *Ignore* button is active, then the LED is lit only while the photodiode is actually blocked.

