Laura Medina

Nabib Ahmed

L007 Section

Part2: Using Arduino to Generate DC Signals

1. Turns on because the circuit is complete.
2. Voltage between pin 13 and GND is 4.8 V. Voltage across resistor is 2.9 V. Voltage across LED is 1.9 V. The voltage of the resistor and the LED light adds up to the voltage between Pin 13 and GND because it is a complete circuit.
3. Voltage between pin 13 and GND is 2.1 V. Voltage across resistor is 0.01 V. Voltage across LED is 2.1 V.
4. Measured a voltage of 0. It is much less than the previous two voltages.
5. As you lower the resistance in the potentiometer the LED gets brighter because more current is able to pass through the resistor. As you increase the resistance the LED gets dimmer because less current can pass through the resistor.

Part3: Using Arduino to Generate AC Signals

1. Arduino code pops up in the Arduino program
2. The LED is rapidly blinking because we programmed it to.
4. Frequency is 5 Hz. We have square waves.
5. You cannot see the LED blink with the naked eye, but if you look at the Oscilloscope you see that it is actually blinking and the frequency is at 50 Hz.
6. One would believe that when you take out the “delay” then the wave would be moving infinitely fast, meaning the frequency is infinite. But arduino can’t drive and the oscilloscope can’t measure infinitely so the frequency comes out smaller than expected. Still a square wave and it lost functionality as the delay became 0. Without the delay, we can’t see it blink so it becomes useless for its purpose.
7. You cannot hear anything until you put the delay back in the code. As frequency changes on the scope the sound, specifically the pitch, changes.

Part4: Sensing and Controlling the Physical World with Arduino

1. When its pointing to light R­light = 3.1 K Ohms and when it is covered R­Dark= 0.0 K Ohms. (Aside: These numbers were verified by two of the TFs).
2. We calculated this with the voltage divider equation (A0 = (V \* R2)/(R1+R2)): The voltage on PIN A0 is 3.8 V when the lights are on (Here, V =5V, R2 = 10 K Ohms, R1 = 3.1 k Ohms, so A0 = (5 \* 10 K)/(10 K+3.1K) = 50K/13.1K=3.8V). The voltage on PIN A0 when the lights are off is 5 V (Here, V =5V, R2 = 10 K Ohms, R1 = 0.0 k Ohms, so A0 = (5 \* 10 K)/(10 K+0.0K) = 50K/10K=5V).
4. As we cover the photo resistor the LED light gradually gets dimmer until the photo resistor is completely covered and the LED is completely dark.
5. Yes it does depend on the pressure. As you apply more pressure the LED light gets brighter.