MATLAB/ARDUINO LABS

LAB 5 - MATLAB + ARDUINO

Materials: Arduino Redboard
USB Cable

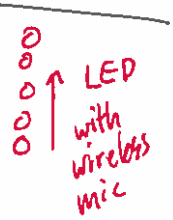
Goals: Get students to program "blink" functionality using MATLAB

LAB 6: - EXTERNAL LED "TRAFFIC LIGHT"

Materials: Arduino
Breadboard
RED, GREEN, YELLOW LED
JUMPERS
Resistors (pull down so doesn't REALLY matter)
Trim pot

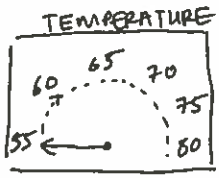
GOAL
use loops to create a function traffic light
→ trim pot to change speed of light changes

LAB 7 - TMP 36 + LED + SERVO (chris DB meter idea) condenser microphone



Materials: Arduino
Breadboard
Jumpers
SERVO motor ✓
TMP 36 Temp sensor
Cardboard ? 3D Print ?
Resistors (pull down)

GOAL
Make an "analog" temp sensor



LAB 8 - PHOTORESISTOR NIGHT LIGHT

Materials: Arduino + Bread
Trimpot
LED 2x
Digital Button
Pull down Ω
Photoresistor

GOAL
students make a night light that can be on/off (state indicated by one LED) that is toggled by button
→ other LED turns on only when dark enough
← threshold adjusted by trim pot

LAB 9 – MUSIC DAY

Materials: Arduino + Bread
4 digital buttons
Trimpot
Speaker

GOAL
Make a musical instrument
↳ Each button = note
↳ plays when pressed
↳ stops when released
Trimpot "whammy"
Also, make a function that plays a song

LAB 10 – RADAR LAB? (cooler) OR PROXIMITY SENSOR?

Materials: ~~BREADBOARD~~ Ard + Bread
Ultrasonic prox sensor
servo motor
Digital button
Trim pot

GOAL
Make a radar that sweeps once on button press.
Trim pot → adjust speed

↓ OUTPUT

0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0

Or something to show where objects are...
Need to think more...

→ have LA conduct workshops on soldering, etc