
EECS 16A Touchscreen 1

Insert your names here

Semester Outline



Imaging
Module



Touchscreen
Module



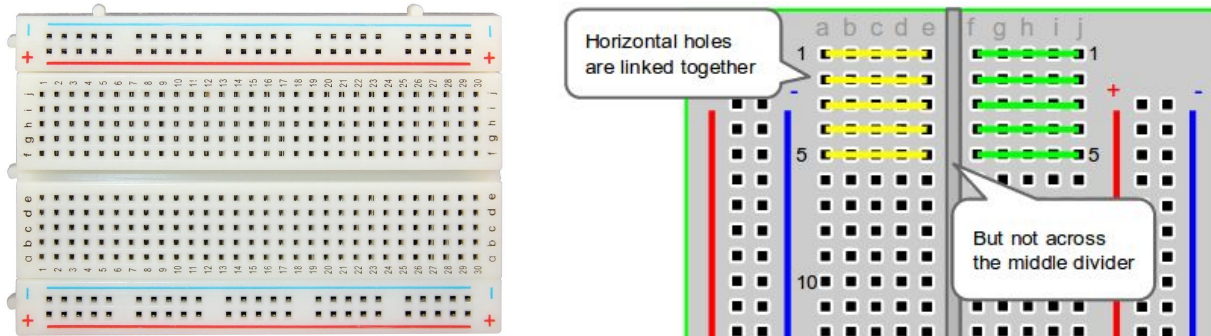
Acoustic
Positioning
Module

Today's lab:

- Breadboarding
- Build multiple functional circuits
- Learn how to use Multimeter

Breadboarding basics

- Similar to Imaging 1: Intro to Breadboarding
- Build up breadboarding skills
 - Connect to concepts in lecture, including Voltage Dividers and KVL
- Very important skill: prototype, debug, and translate theoretical ideas into real circuits



Poll time!

Review of breadboarding practices from Imaging 1.

1. Which of the following are good breadboarding practices?
 - a. Check the resistor value by its color bands
 - b. Plug in a component legs in different rows
 - c. Use black and red wires for the rails

2. For which of the following components does polarity matter?

Resistor

LED

Capacitor

Ambient Light Sensor

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Resistor

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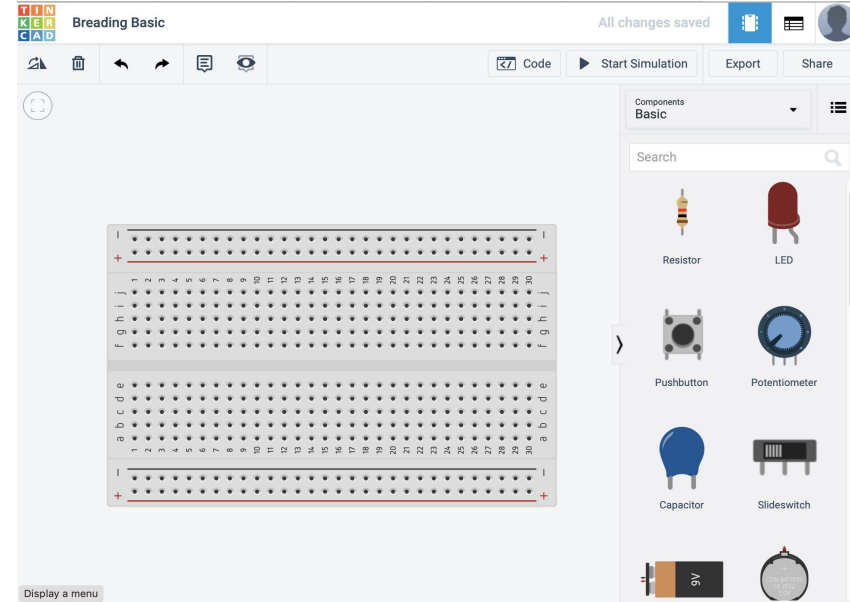
Capacitor

Ambient Light Sensor

TinkerCAD

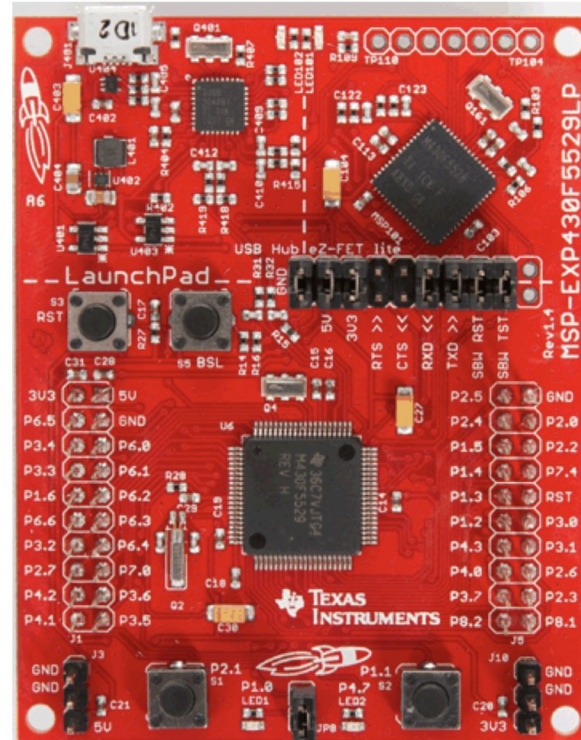
- Circuit design prototyping software
 - Primary circuit software in this course
 - Useful for many different electrical projects

- Run online using an Autodesk account



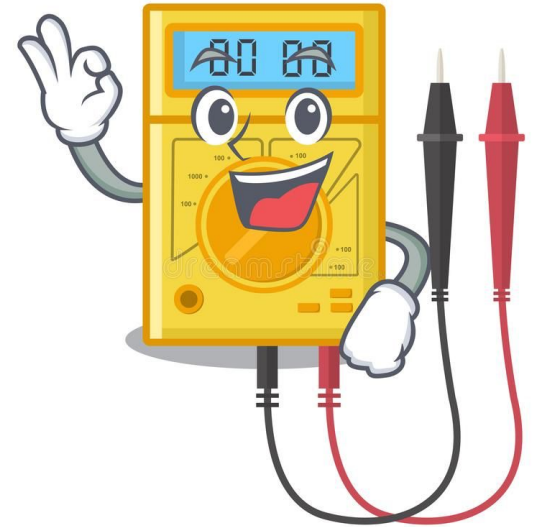
Launchpad Review

- Micro-Controller
- Power Supply
- Voltmeter



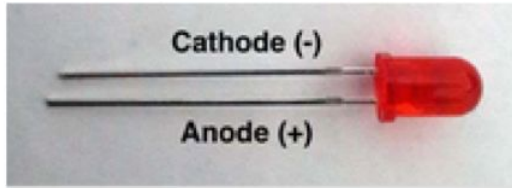
Multimeter (Circuit Debugger)

- Voltmeter
 - Infinite resistance
 - Connect in parallel with component
- Ammeter
 - Very low resistance
 - Act as a wire in the circuit
 - Connect in series with component
- Ohmmeter
 - Remove resistor from circuit before use
 - Connect in parallel with resistor



Circuit Elements

LED



0.5 V



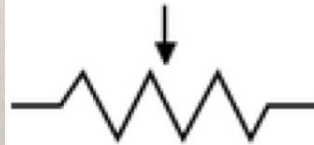
0.6 V



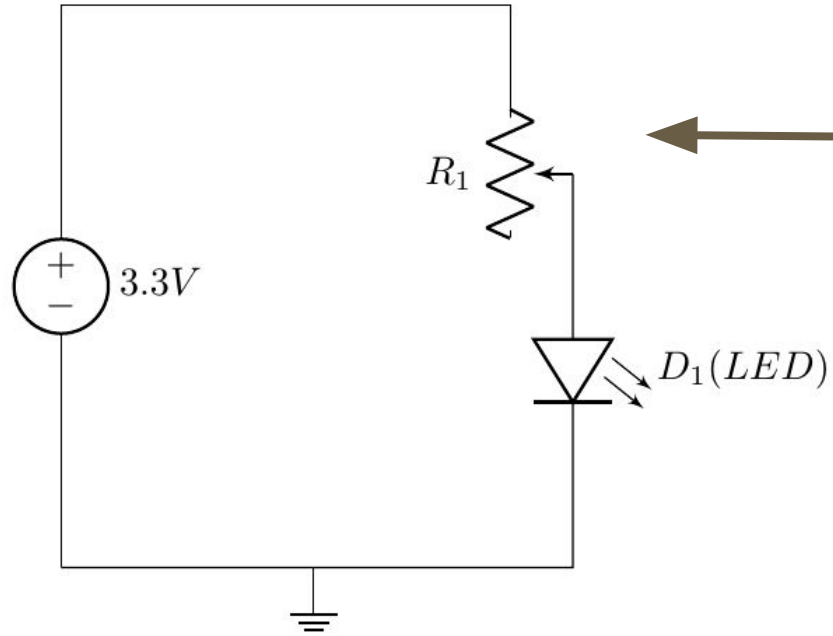
0.7 V



Potentiometer



LED Fader Circuit



Voltage Divider Circuit

What is the voltage value u_2 at Node 2?

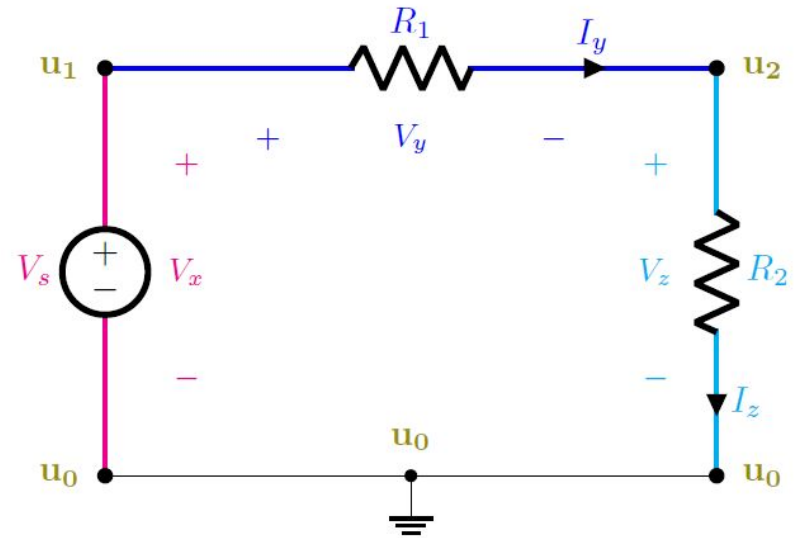
$$I_y = I_z = V_s / (R_1 + R_2) \text{ (Ohm's Law)}$$

$$u_2 - u_0 = R_2 * I_z$$

$$u_2 - 0 = R_2 * V_s / (R_1 + R_2)$$

$$u_2 = V_s * R_2 / (R_1 + R_2)$$

What is the voltage value u_2 if R_1 equals to R_2 ?



Pointers

- Try to debug your circuit by yourself before you ask the TAs
 - However, don't spend too long, after 5 minutes or so ask for help
- Current Limit = 0.1 A
- Voltage = 3.3V