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BREAD BOARD & LEDS



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OVERVIEW & INTRODUCTION

- This Lecture and Lab is an introduction to Breadboards, Electrical Circuit basics and LEDs
 - You will learn how a bread board works
 - You will build an LED circuit and get it to light up
- You will use a Breadboard, Resistor, Switch and LED
- You will show me a working LED circuit and be able to explain how and why it is working



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CAN I GET A COPY OF THESE SLIDES? YES, PROBABLY...

Look Here – SVCTE Mechatronics Engineering Blog: <https://svctemechatronics.blogspot.com/>

Or, most presentation lecture slides can be found indexed on www.steamclown.org and maybe blogged about here on [Jim The STEAM Clown's Blog](#), where you can search for the presentation title. While you are there, sign up for email updates



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WHAT YOU WILL KNOW...

- Prior Knowledge
 - I'm not expecting anyone to have any Electronics experience... Some of you may, but it's not expected
- What You Will Know & Be Able To Do
 - Understand the theory of how a bread board works
 - Build an LED, resistor, and switch circuit on a bread board
 - Be able to describe a open and closed series circuit works

HOW WILL YOU BE MEASURED

- You will, in your Labbook (or graph paper) draw a bread board and show and label electrical connections. This will be graded.
- You will show me a working LED, Resistor, Switch connected to power on your Breadboard
- Your demonstration of a working circuit will be recorded in my grade book



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NEW WORDS...

- Bread Board
- LED
- Resistor
- Circuit
- Series Circuit



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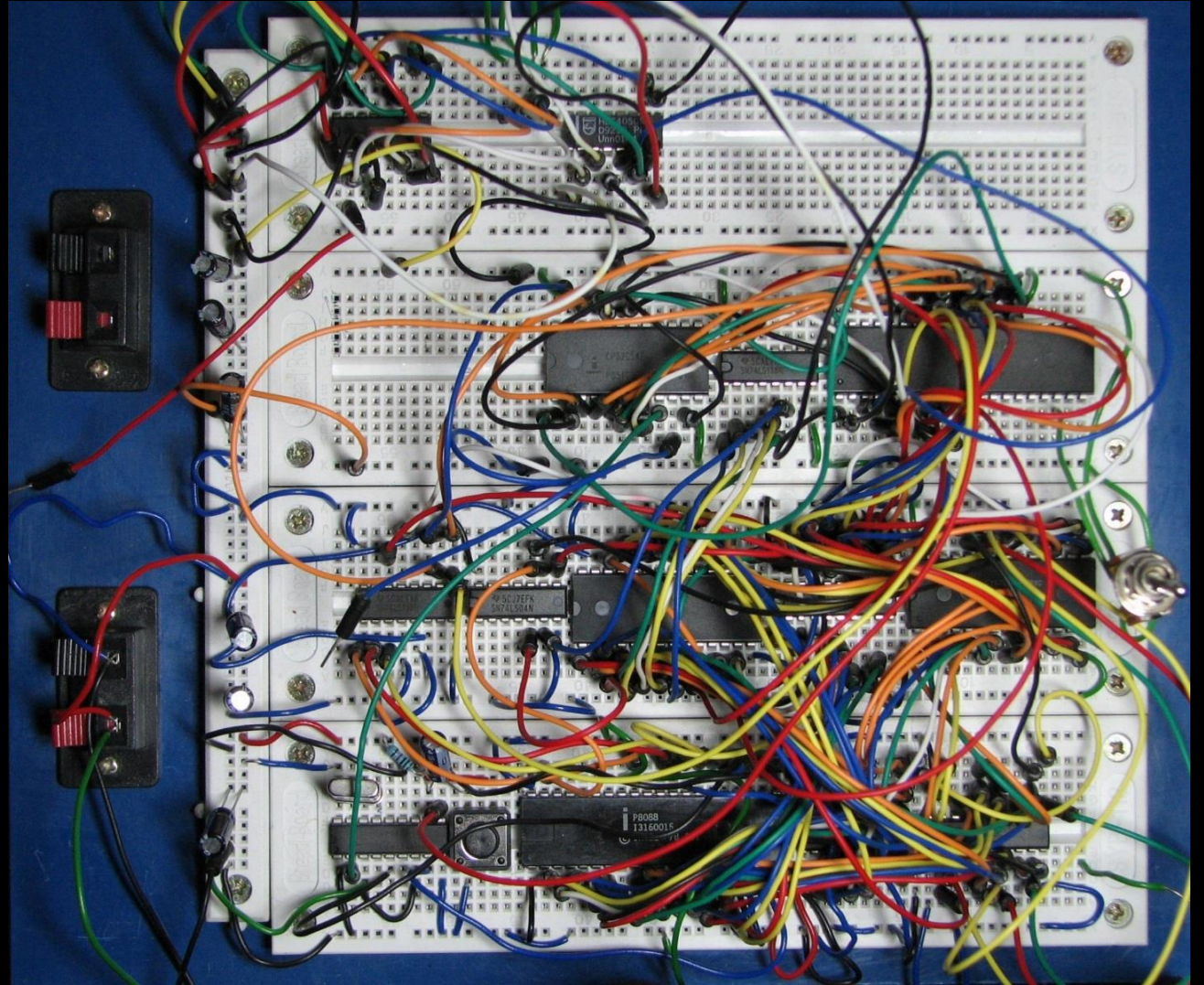
HOW BREAD BOARDS WORK



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WHAT IS A BREAD BOARD?

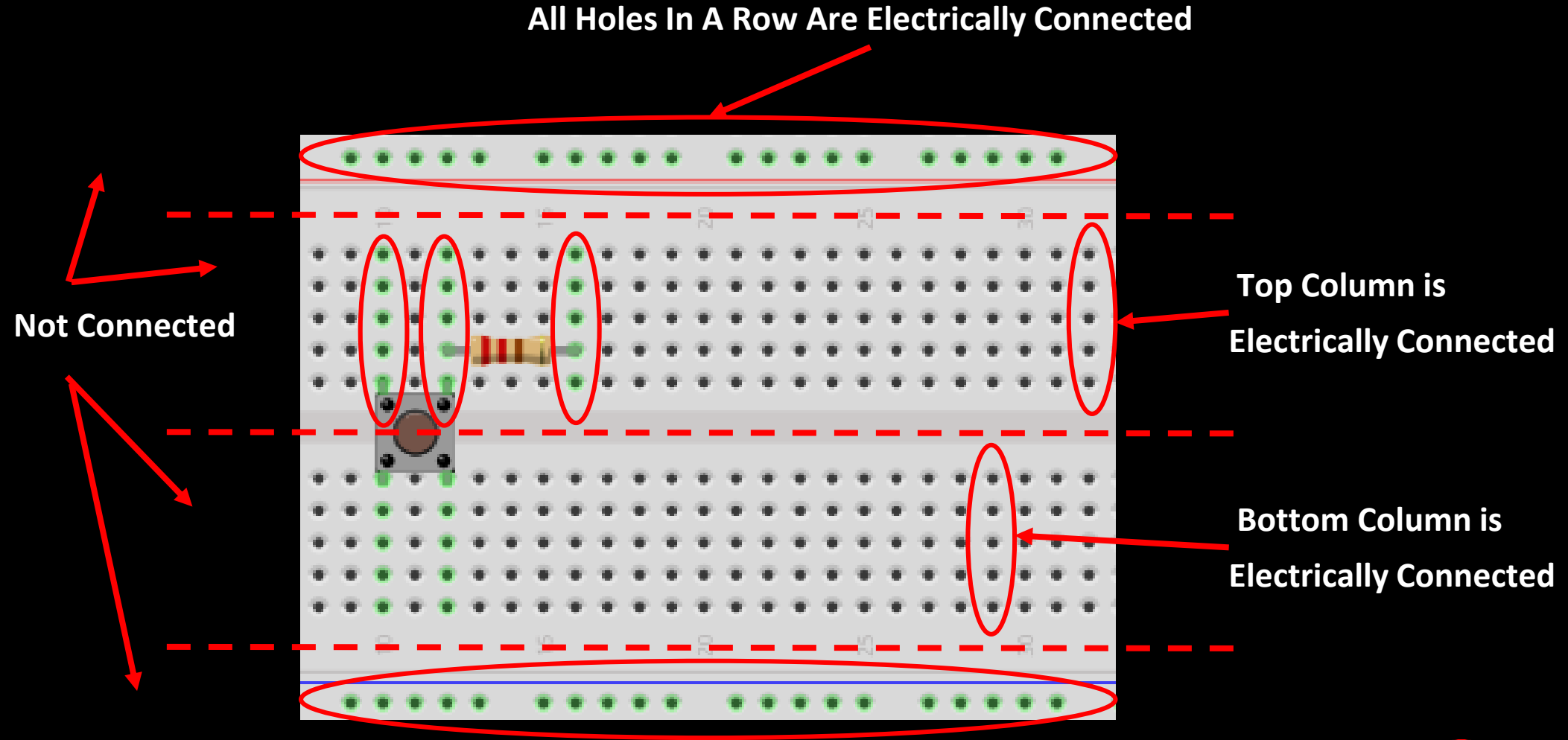
- The **breadboard** derives its **name** from an early form of point-to-point construction. In the early days of radio, amateurs would nail copper wire or terminal strips to a wooden board (often literally a board for cutting bread), and solder electronic components to them.



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HOW DOES THE BREADBOARD WORK?

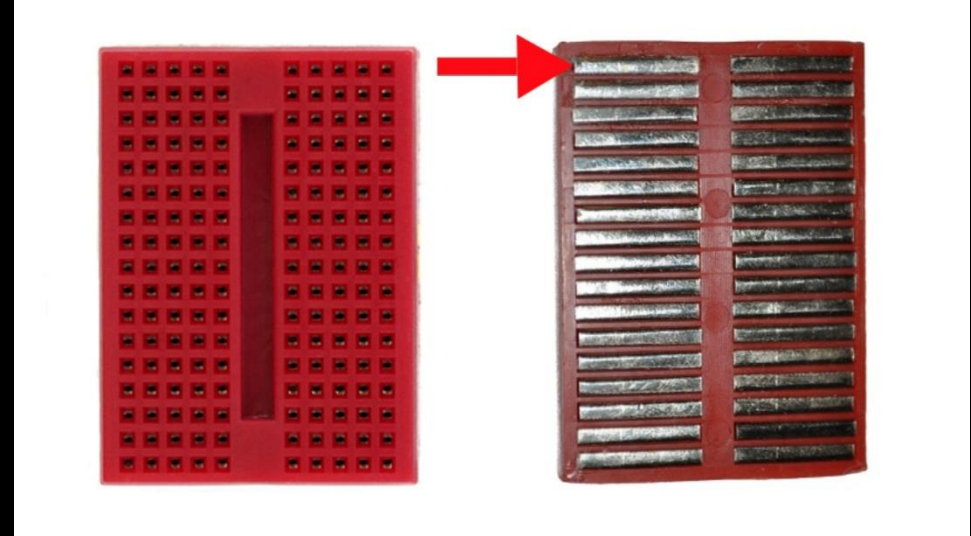
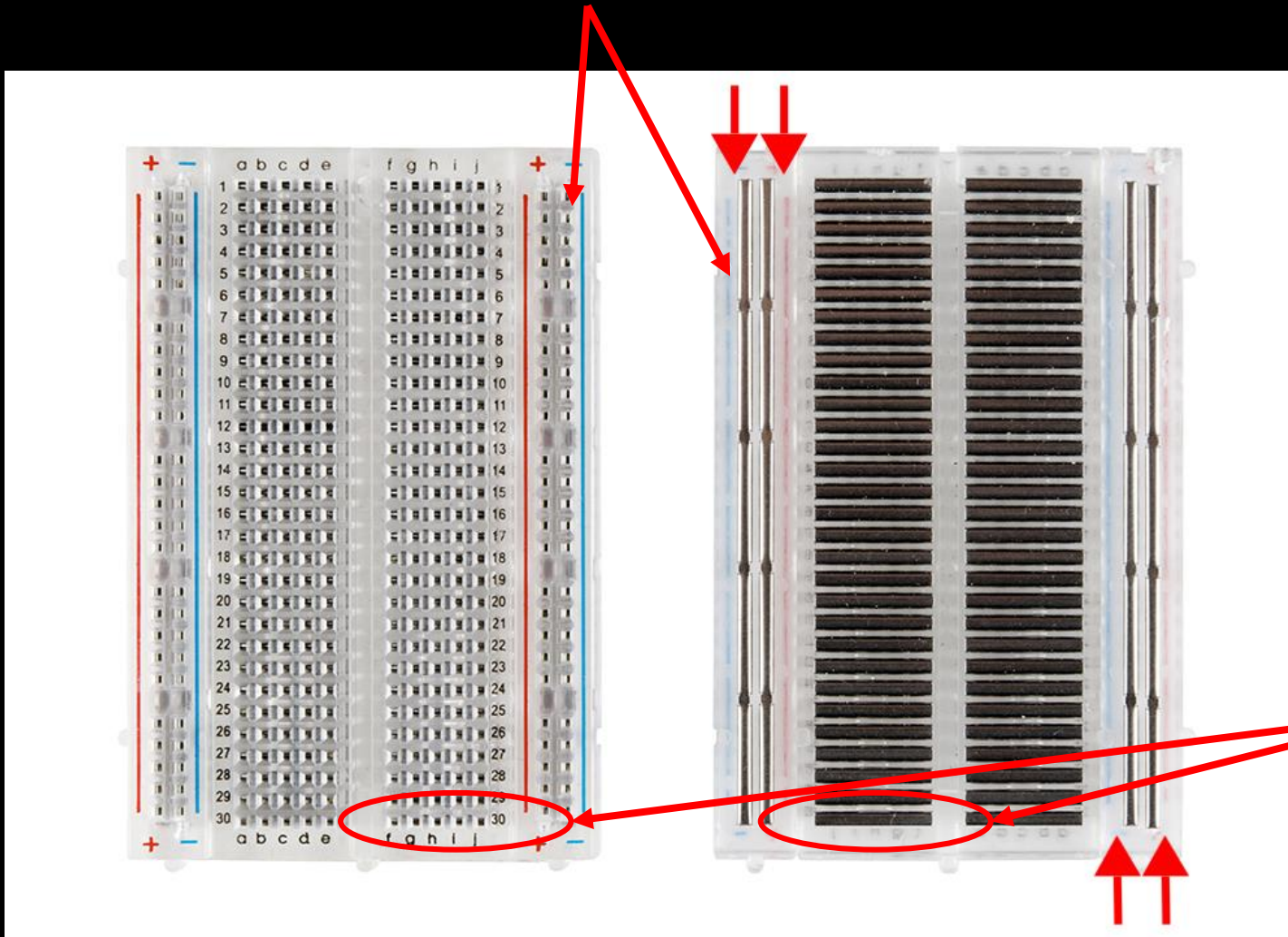


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HOW DOES THE BREADBOARD WORK?

All Holes In A column Are Electrically Connected



Row Electrically Connected



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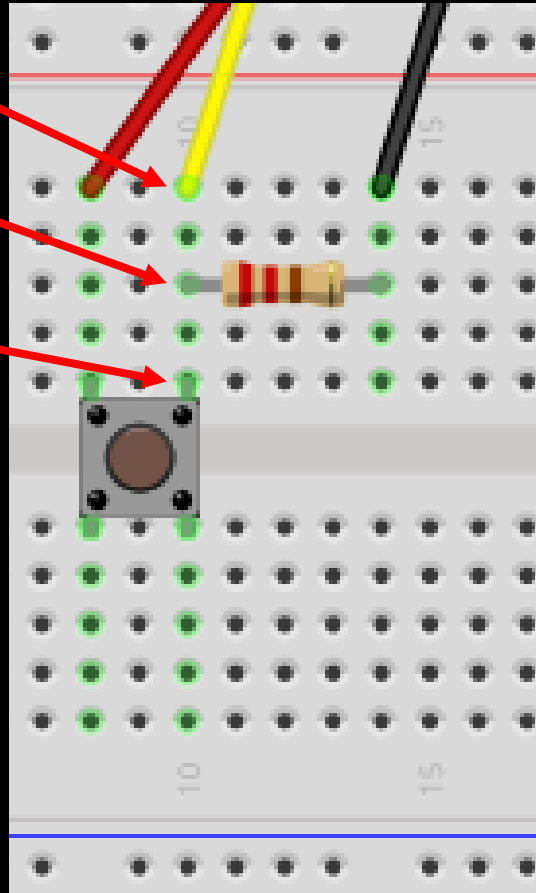
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ROWS & ROWS OF ELECTRICAL CONNECTIONS

This Yellow Wire is Connected to

this Resistor pin and

this pin on the Button

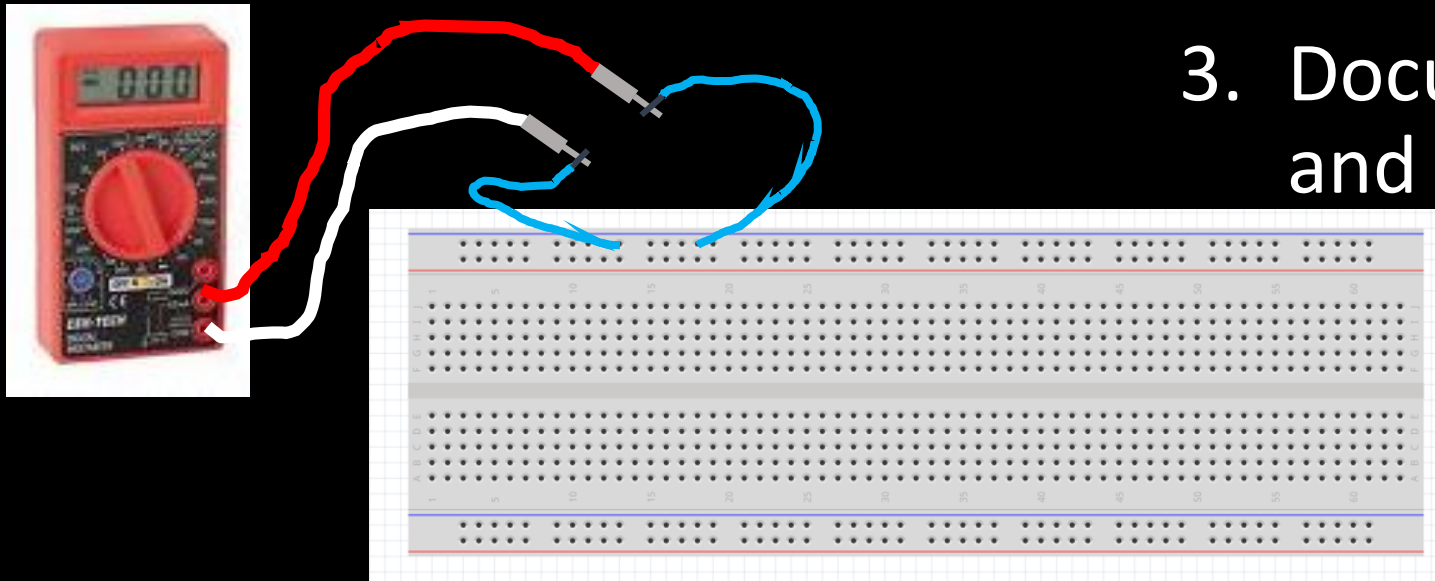


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BREAD BOARD DEMO

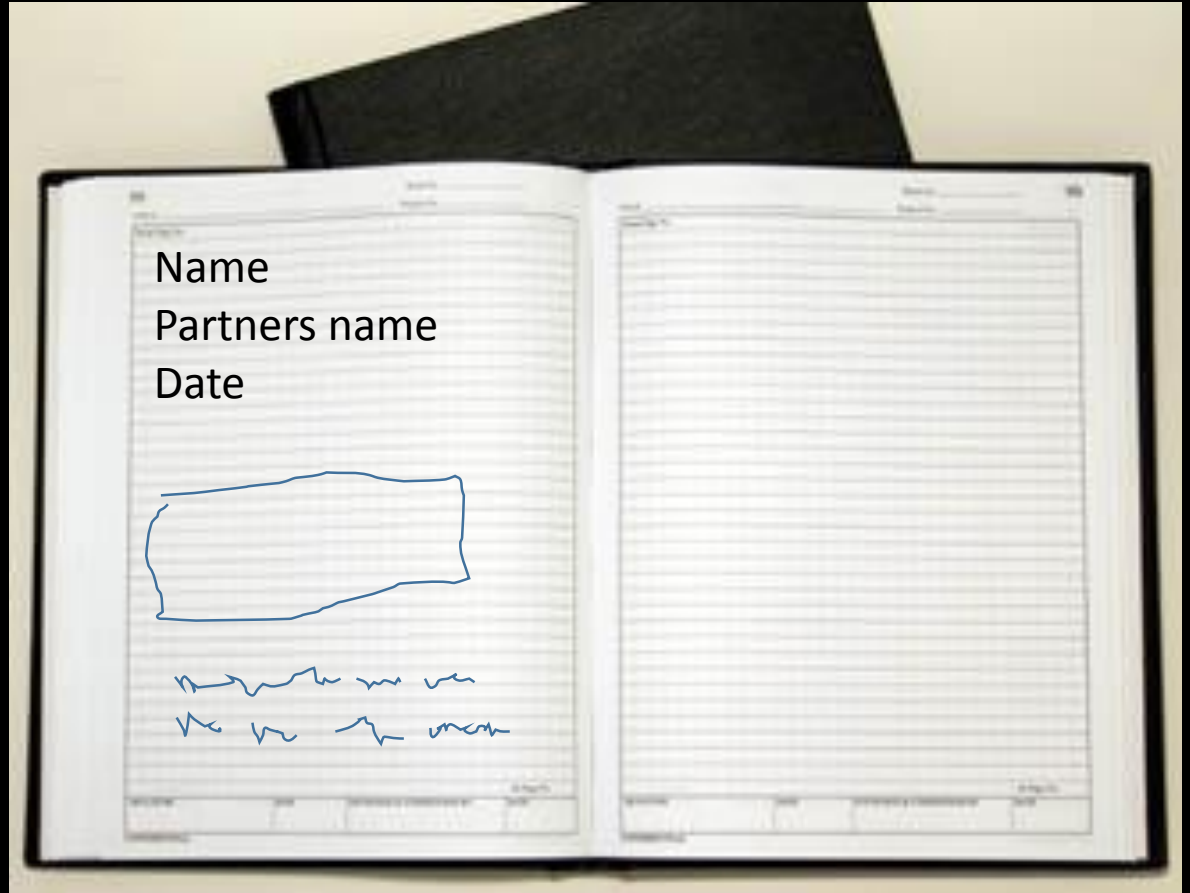
- Use A Digital Multi Metter (DMM) to probe the breadboard connections
- Use the Breadboard wires



1. Set the DMM to Ω (to measure Resistance)
2. Test and verify what sections are connected
 - How do you know? Explain how the DMM works
3. Document with drawings and text in your lab books

HOW TO DOCUMENT THIS LAB

- On the next blank page
 - List your name
 - List your partners name
 - Note the date and time
- Draw a representation of the breadboard that you have
- Experiment with different connections
- Document what rows and columns are electrically connected

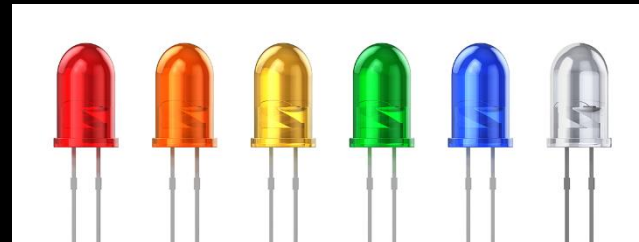
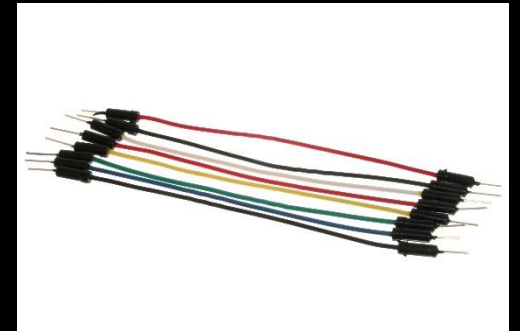
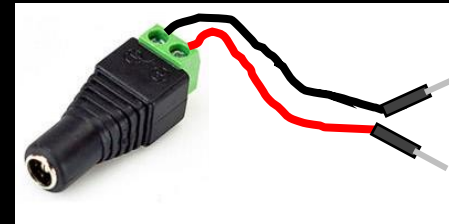
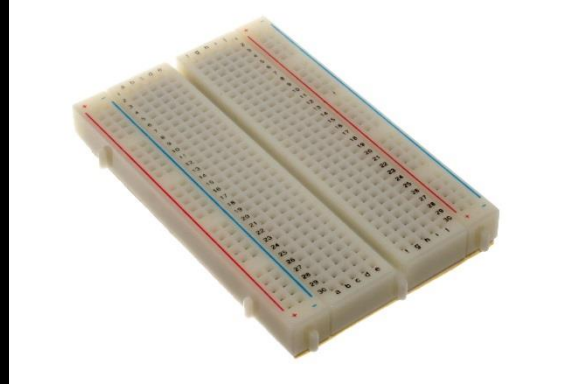


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LAB TIME - WORKING WITH A BREAD BOARD

- What Do You Need?
 - (1) Breadboard
 - (1) 5 volt Wall Wort
 - (1) Power Adaptor
 - (3-5) Jumper Wire (Male-Male)
 - (1) LED
 - (1) 330 Ω Resistor
 - (1) Push Button Switch

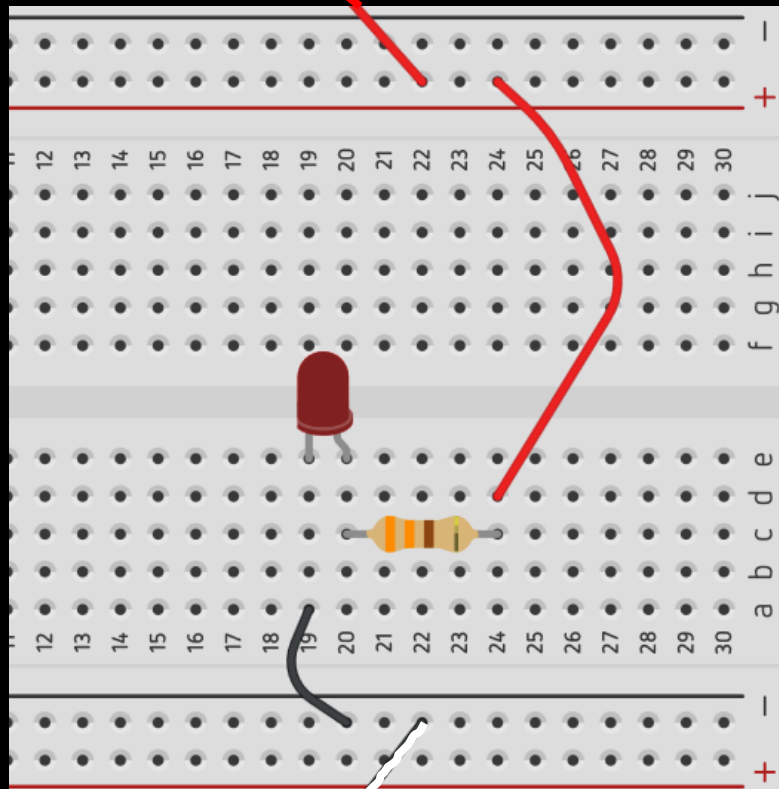


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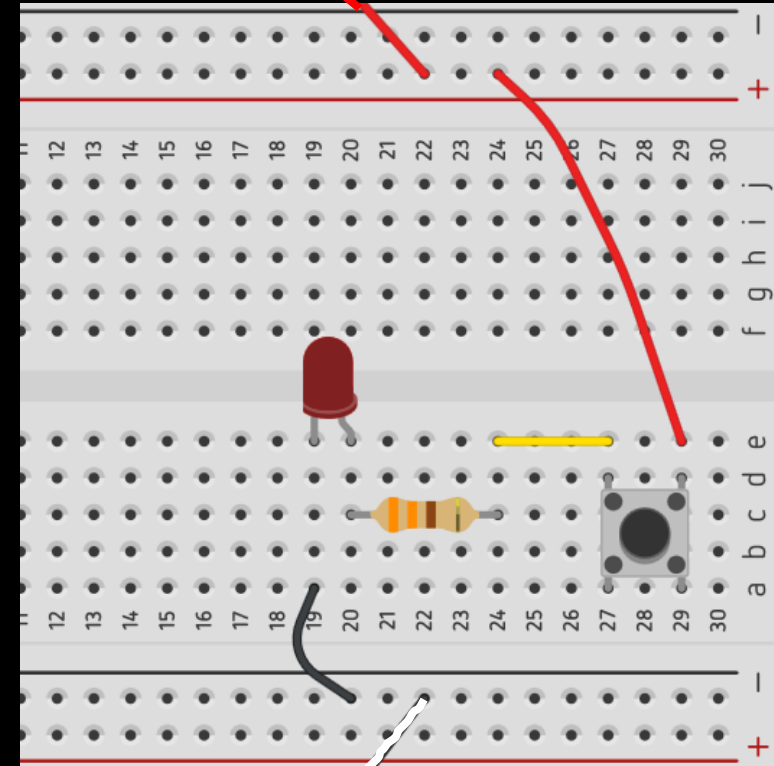
BREAD BOARDING AN LED CIRCUIT

5 volts



GND

5 volts



GND



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REFERENCE SLIDES



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APPENDIX B: ATTRIBUTION FOR SOURCES USED

- 5 Breadboarding Quick Tips – MAKE Magazine
 - <https://makezine.com/2016/12/22/breadboarding-quick-tips/>
- What's a Breadboard Graphic – By Jody Culkin



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