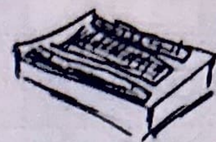
Title: Basic Circuit Notes

Basic Breadboard

A breadboard, sometimes called a protoboard, is a reusable platform to temporarily build electronic circuits



Advanced Breadboards

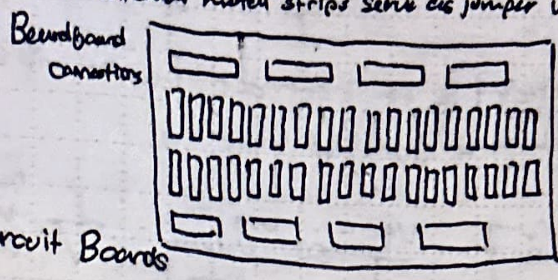
Digital design tools that already have common components in place for you.

They also sometimes have advanced programming abilities to create large circuits

Breadboard Function

Electric components' leads and the wire used to connect them are inserted into holes that are arranged in a grid pattern on the surface of the bread board.

A series of internal metal strips serve as jumper wires that connect specific rows of holes.



Printed Circuit Boards (PCB)

Connects electronic components using conductive pathways etched from copper sheets laminated into a non-conductive substrate.

Components are then attached through soldering.

Breadboards vs PCBs

Breadboards	PCBs
• Low cost	• More expensive
• Less time	• More time
• Ugly	• Pretty

PCBs are often used for the final working design.

How-to-use Breadboards

Use the breadboard internal strips to make the most connections and minimize the use of jumper cables

Minimize jumper wire length to avoid rat's nests, looks a lot better and easier to debug.

Assemble the breadboard as close as possible to your schematic if you have one for easier trouble shooting

Place IC chips in the middle of a gap between pin rows

Have someone check your circuit for errors.

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Witness: Date:

Team Members:

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Title: Basic Circuit Notes

Digitial Multimeter (DMM)

Tool to measure Voltage, Current, and Resistance

Measurement Symbols

(V⎓) Voltage Direct Current

(V~) Voltage Alternating Current

(A⎓) Current

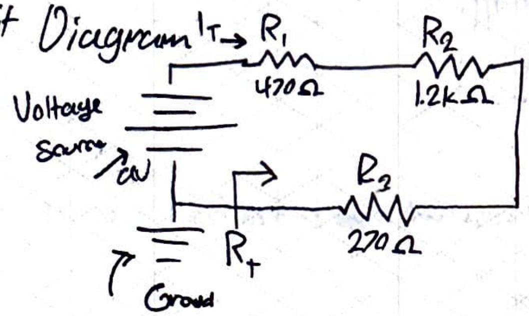
(Ω) Resistence

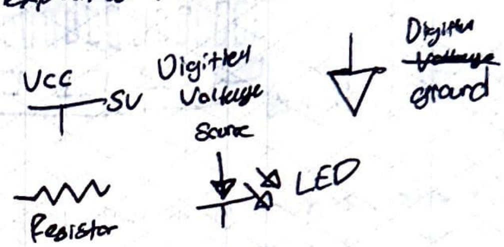
A Data Acquisition Module (DAQ2) supplements your computer with many tools that were traditionally different pieces of equipment including a DMM

How-to-use A DMM

Placing leads (often red and black) in the incorrect location will show incorrect readings and damage the DMM — [illegible] explained how-to

Circuit Diagram





Voltage, Current, and Resistance

Voltage is the electrical force that causes current to flow in a circuit

$$I = \frac{\boxed{V}}{R}$$

Current is the flow of electrical charge through an electronic current

$$\boxed{I} = \frac{V}{R}$$

Resistence is the measure of opposistion to current flow

$$I = \frac{V}{\boxed{R}}$$

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