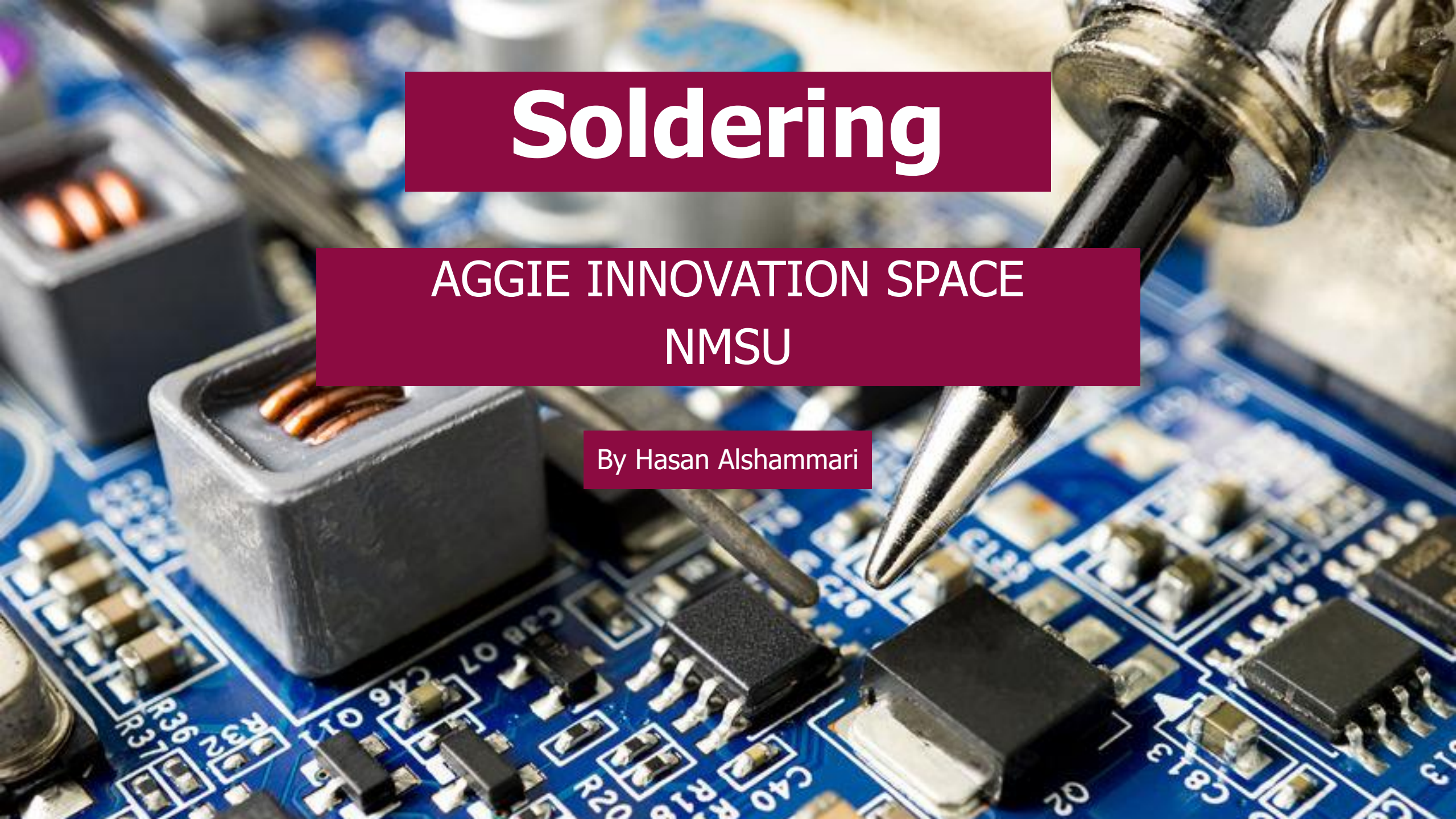


Soldering

AGGIE INNOVATION SPACE
NMSU

By Hasan Alshammari

What is Soldering?

THE PROCESS OF JOINING TWO DIFFERENT ELECTRICAL COMPONENT TOGETHER USING HEAT AND METAL

Type of solder

- Two main solder types:

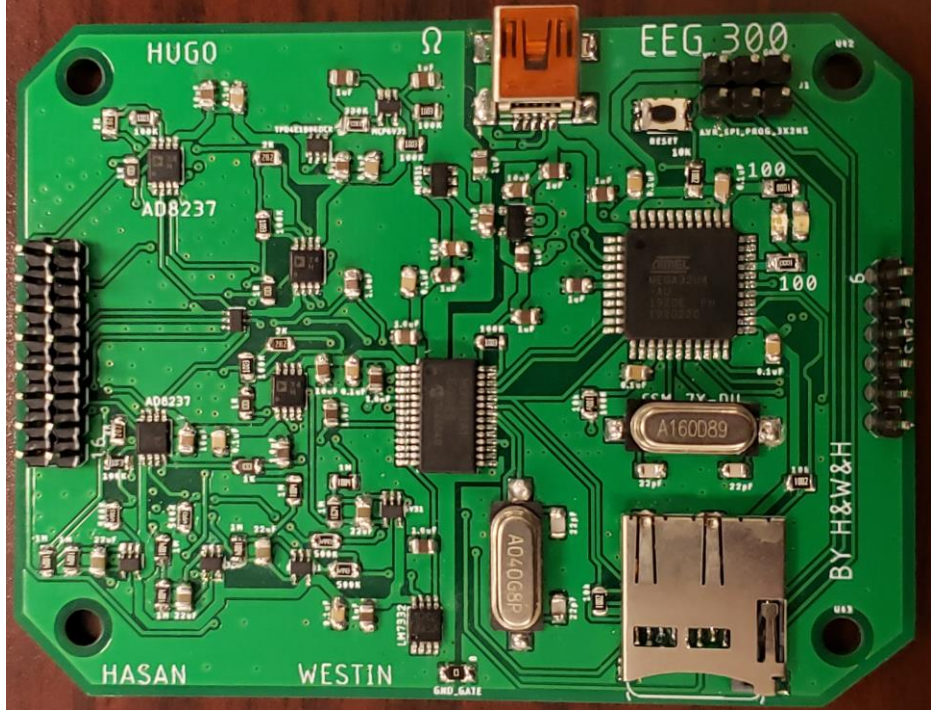
1. **Lead solder (tin-lead)**
   - Easier to use
   - Harmful for the environment
2. **Lead free solder (mostly tin-copper)**
   - Harder to use
   - Safter for the environment

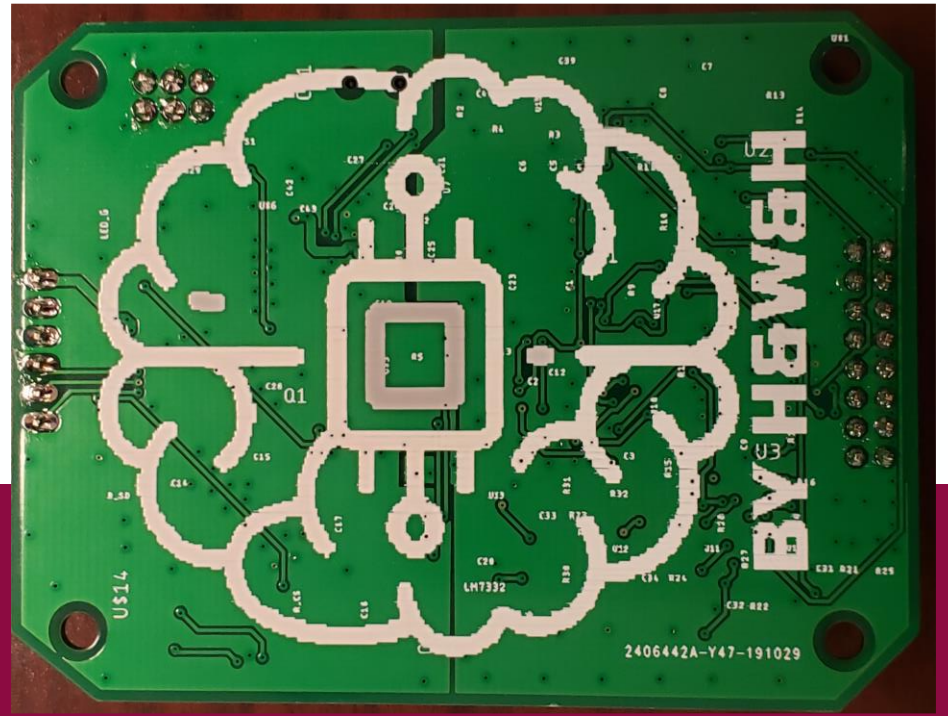
Where is soldering used?

EVERYWHERE!!!

PCB

- Printed Circuit Boards (PCBs) are considered the building block of electronic devices
- PCBs consists of insulting material (i.e. FR-4 glass epoxy) and conductive (copper) to connect electric component together.
- PCBs boards can have 1-2 layer (simple design) or up to 100 layers (extremely complex design)

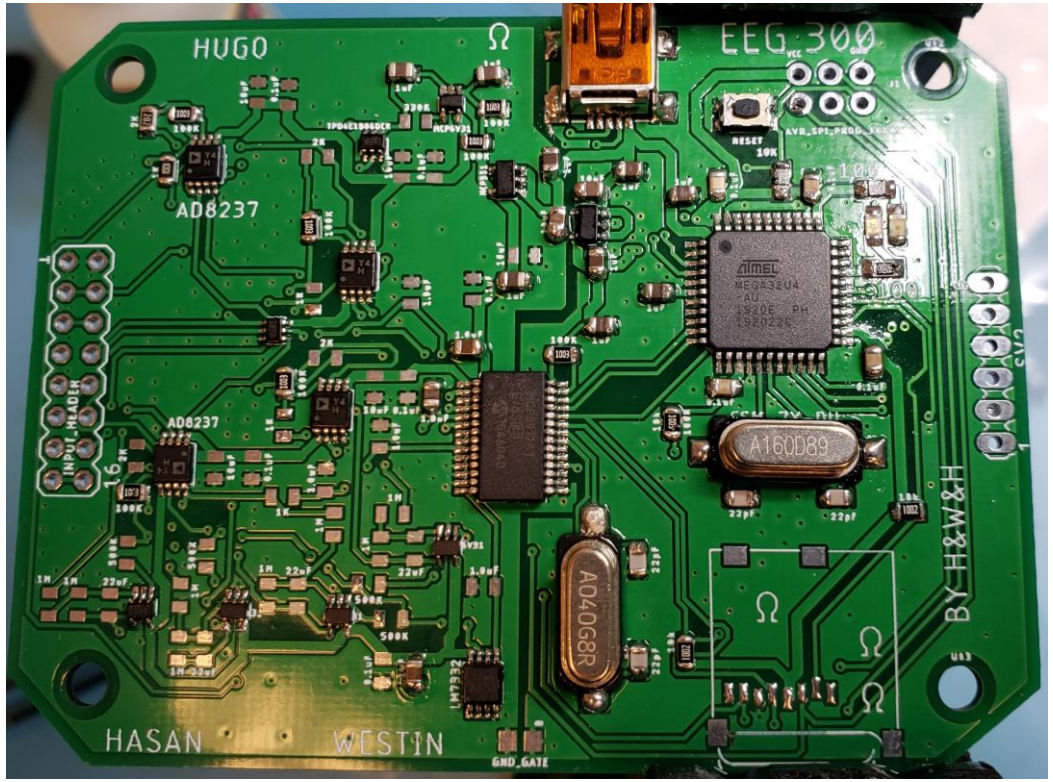




Type of PCB

- There are 2 types of PCB boards:

1. **Surface mount boards**
   - Electric components are mounted onto a pre-designed pads and connection is created by melting solder into the pad
2. **Through-hole boards**
   - Electric components are passed through holes and soldered from the other side



WARNING! NEVER TOUCH THE IRON

- Remember not to touch the hot part of the iron
- The heating core of a soldering iron can reach very high temperatures 200 to 480 °C (392 to 896 °F)
- Even if the soldering iron is **not plugged** in, it **can still be hot** from previous user

Let’s Start Soldering!

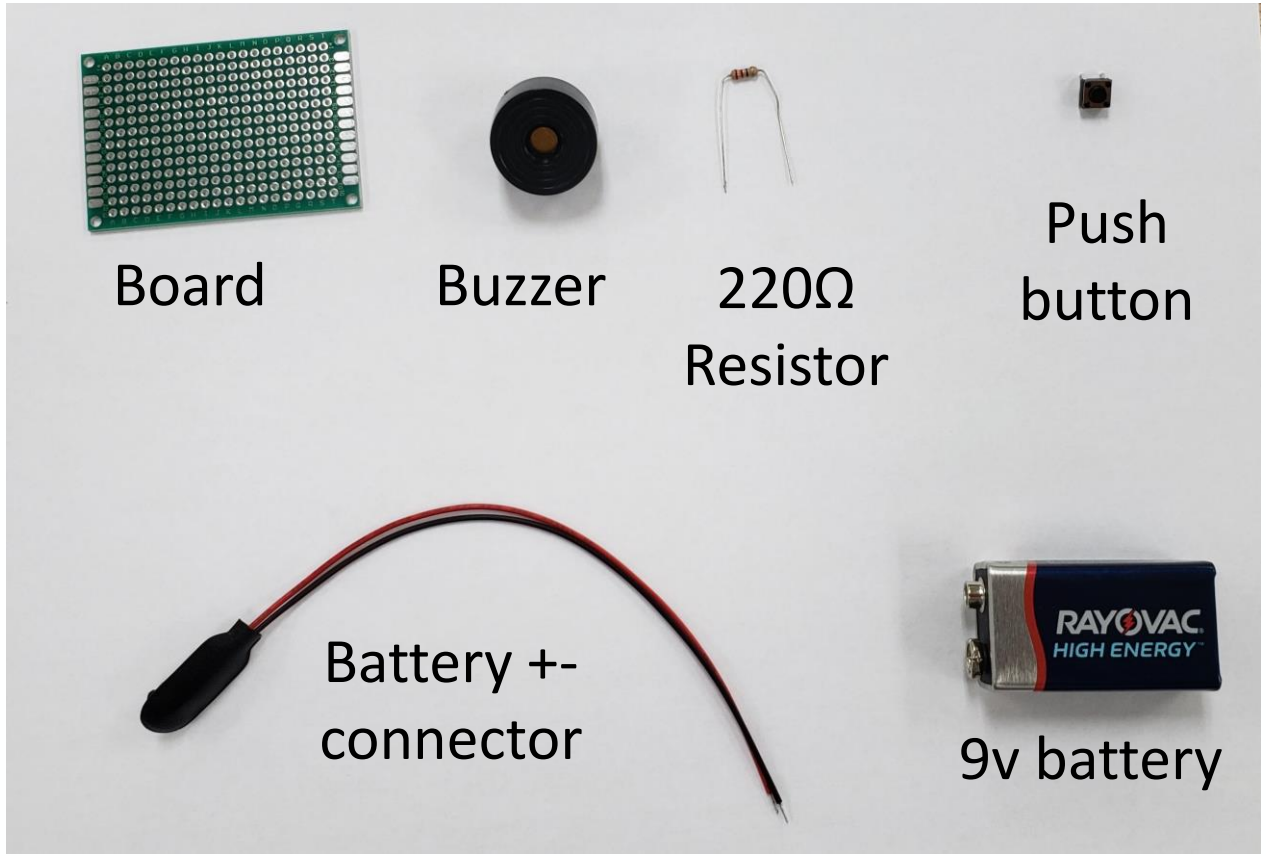
- Pick your kit!

- Kit #1
  - Momentary push button activated buzzer

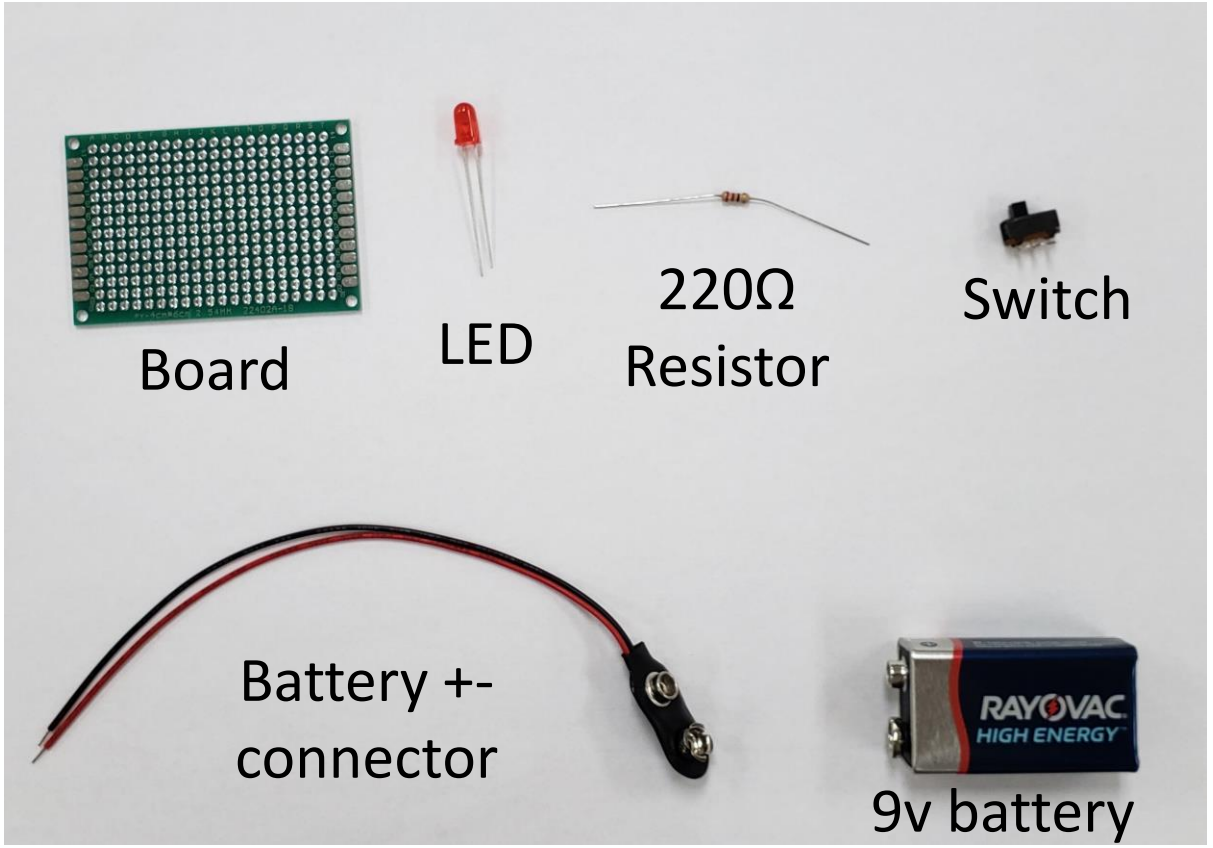
- Kit #2
  - Switch activated LED

Kits contents

Kit 1

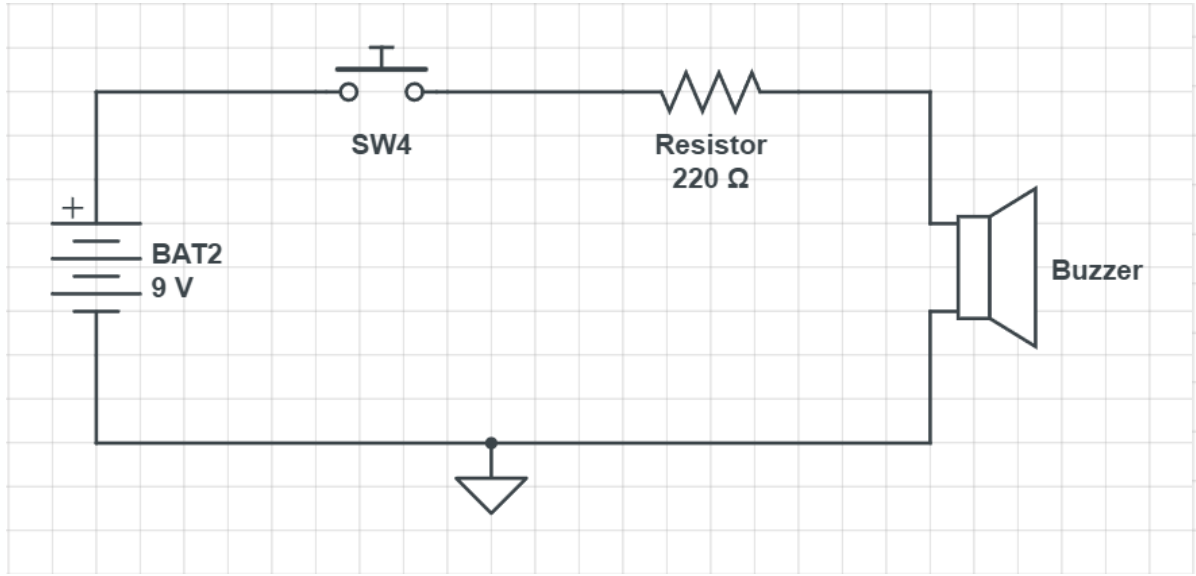


Kit 2

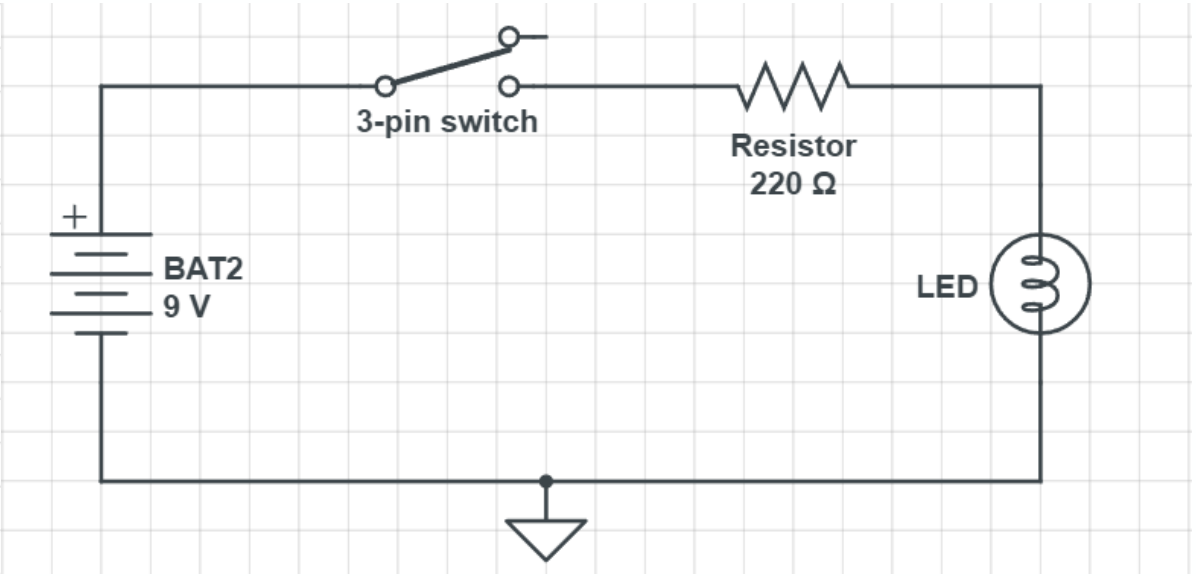


Schematic

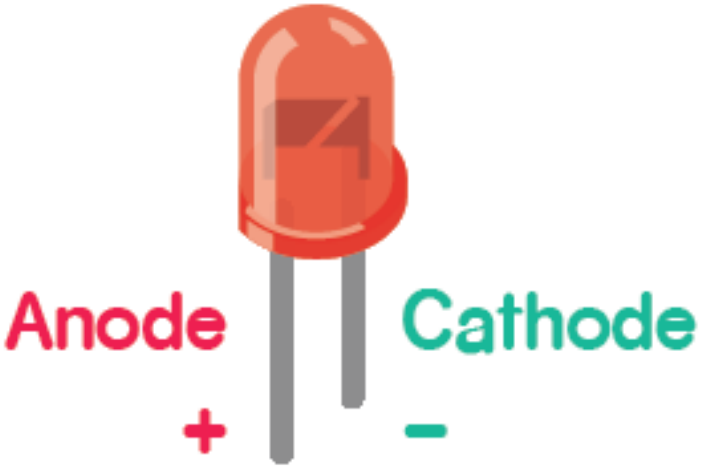
Circuit 1

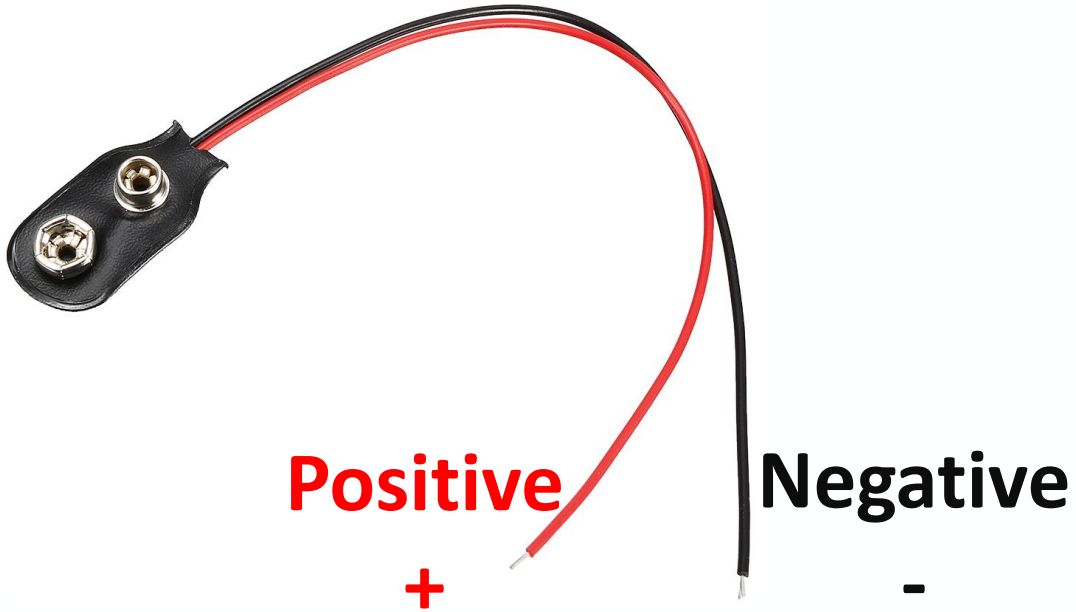


Circuit 2

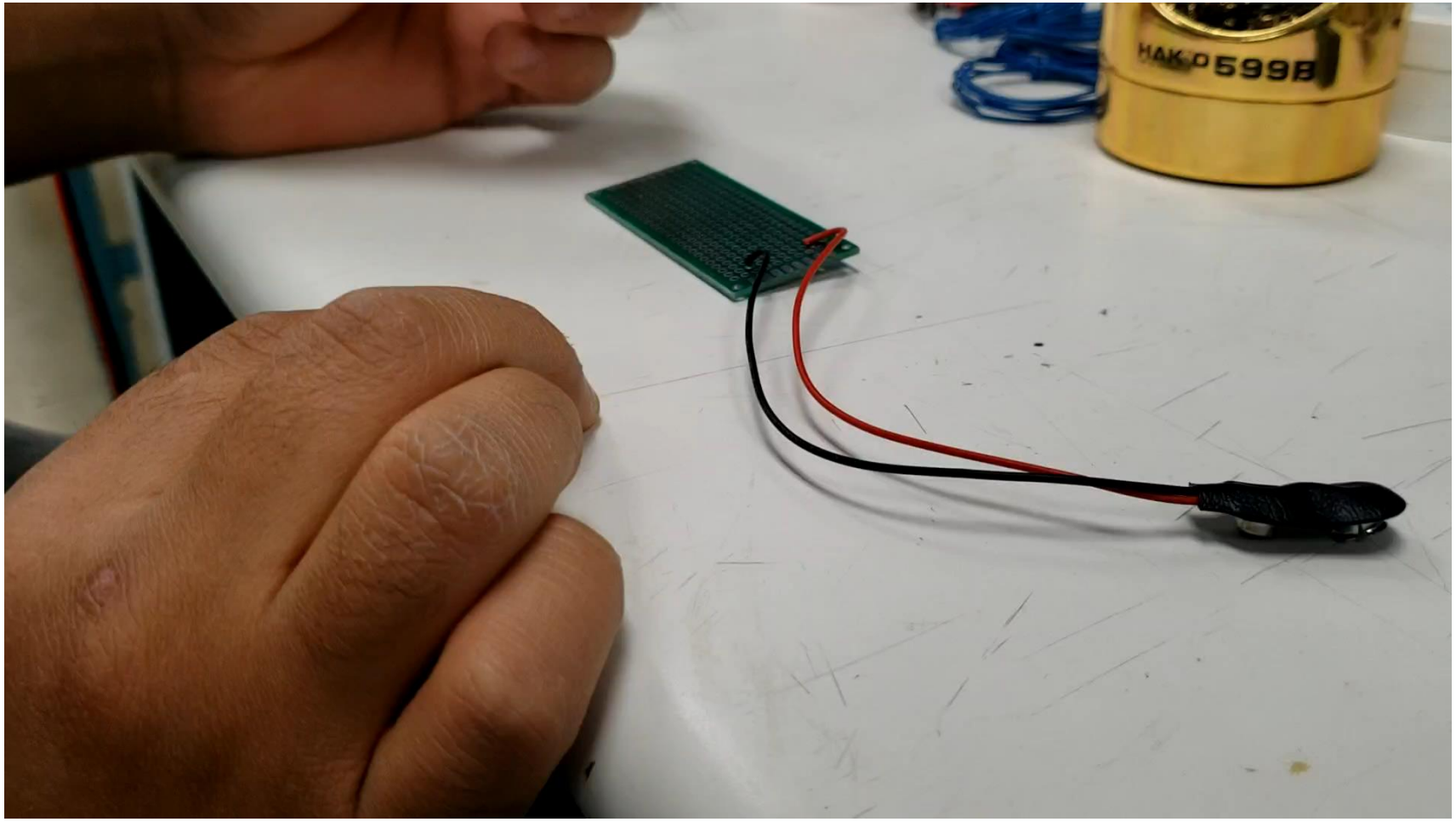


Polarity

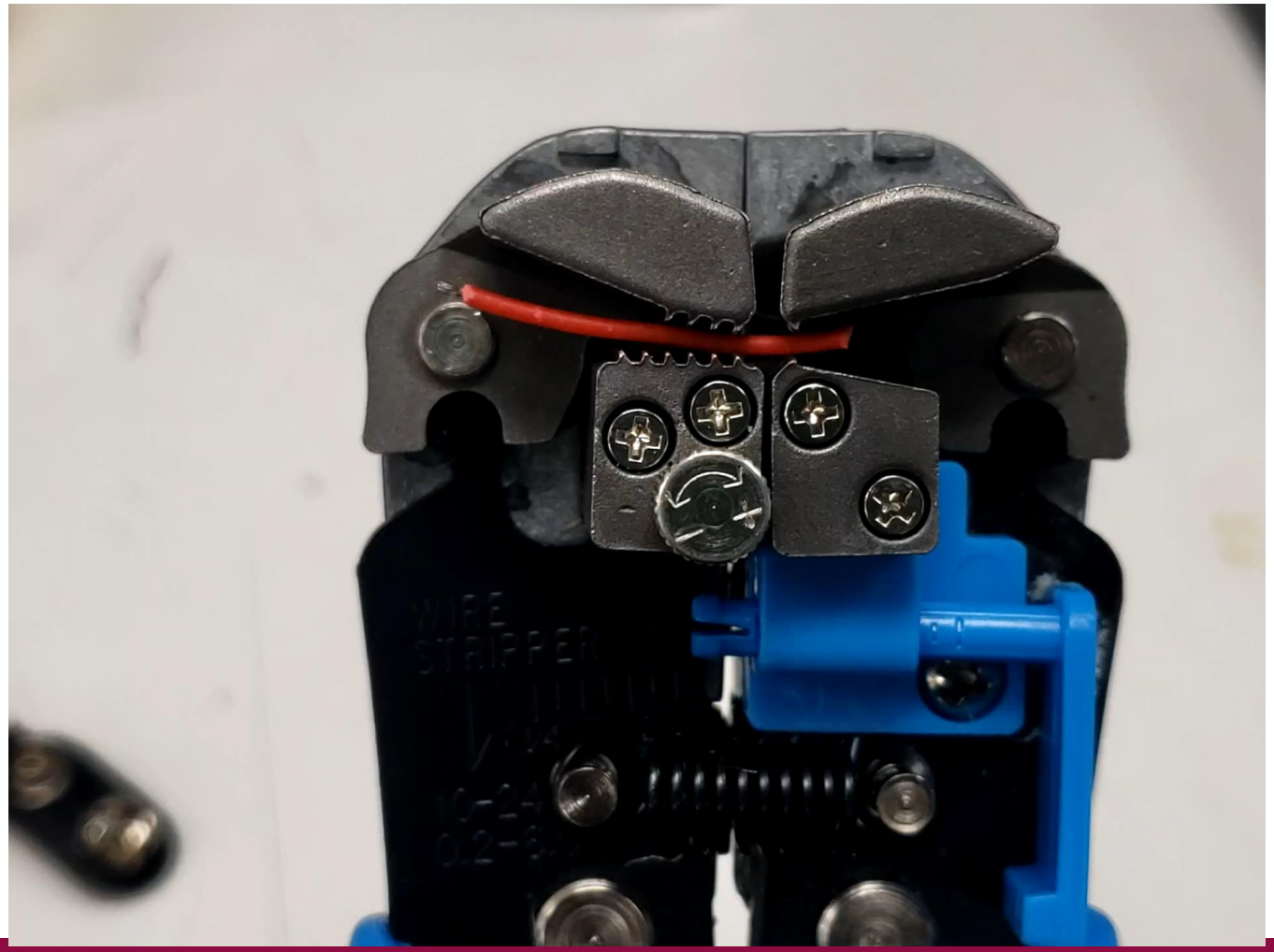




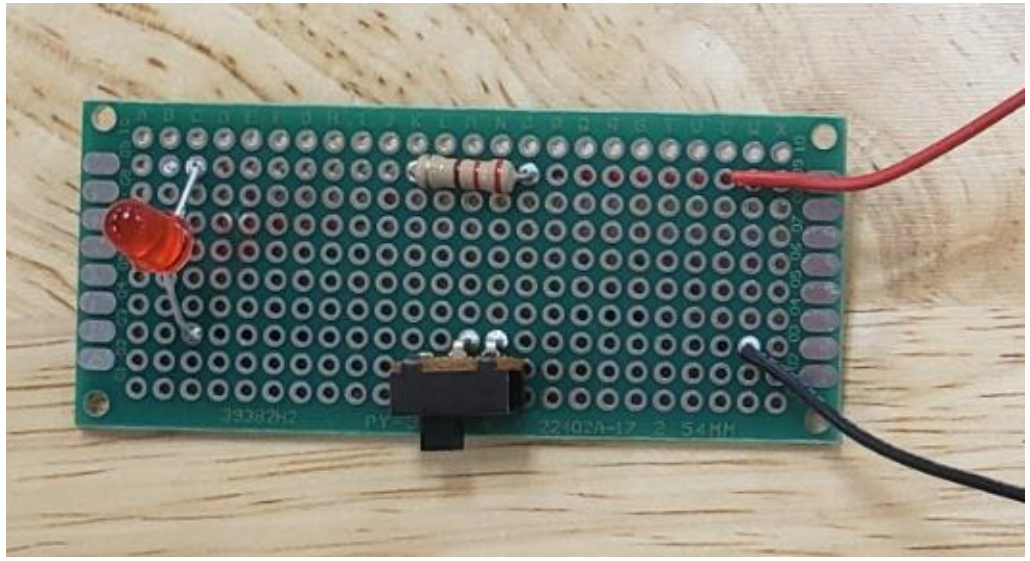
How to Solder?

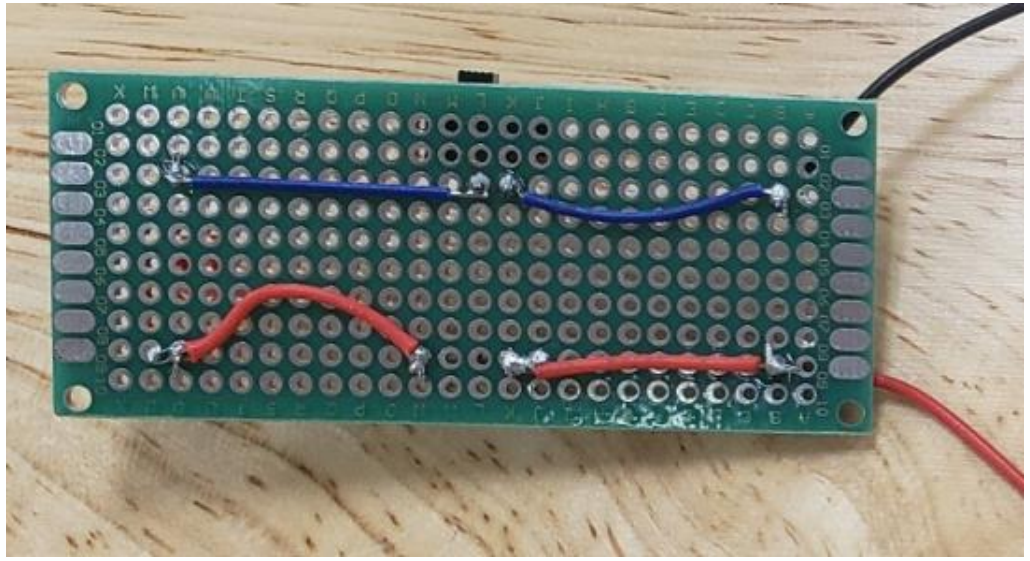


Stripping wires!



Results





Thank you!