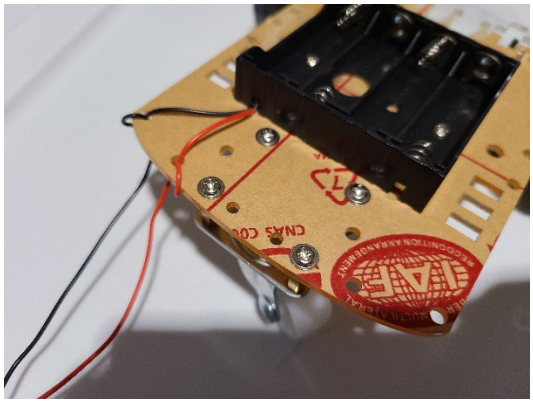
Adapted from: https://www.twi-global.com/technical-knowledge/faqs/what-is-soldering

Module 2: Soldering the Power Switch

For this module you will need:

- Power switch
- Wire cutters/splitters
- A male-to-male jumper cable
- Electrical tape

1. The red and black wires of the battery pack are very fragile and can break off from the battery pack easily. Secure the red and black battery pack wires by threading them through a hole in the body and looping them through once. This will ensure that any tension on the wires will not put stress on the connection at the battery pack.



2. Our red and black battery leads are not able to be the plugged into a breadboard. We will prepare a cable assembly to make our battery leads breadboard friendly. Take a short male-to-male jumper cable (color does not matter) and the wire cutters.

3. Work with your Mentor(s) to strip the ends of the wires by removing some of insulating material of the cut jumper cable and assemble the power cable assembly with the switch. Following these instructions:

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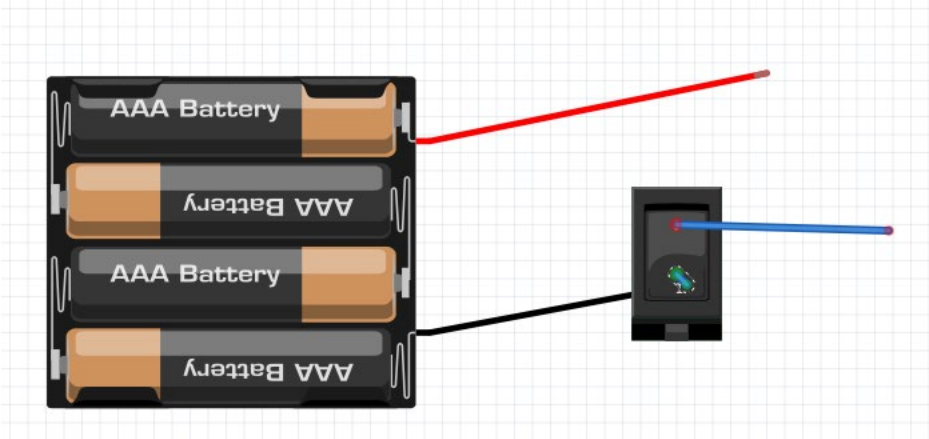
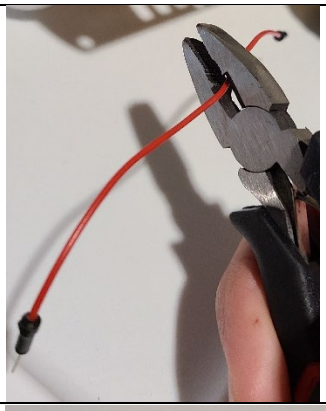
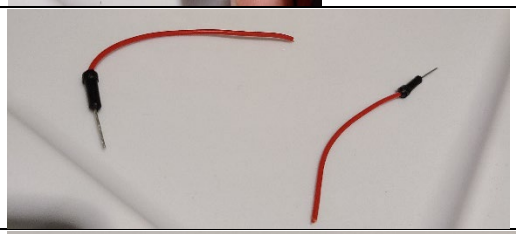
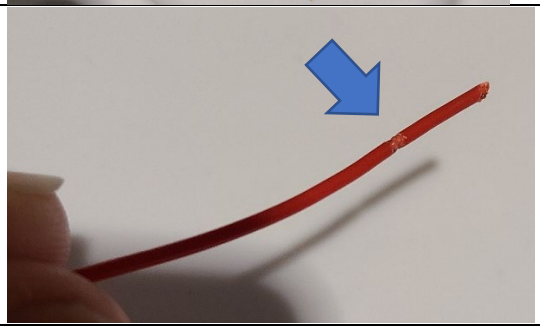


Cut in half	
Lay pieces down	
Take one piece, and use the wire cutters to gently cut the insulation while rotating the wire, but **do not cut the wire**. There should be a small indentation like shown in the picture.	

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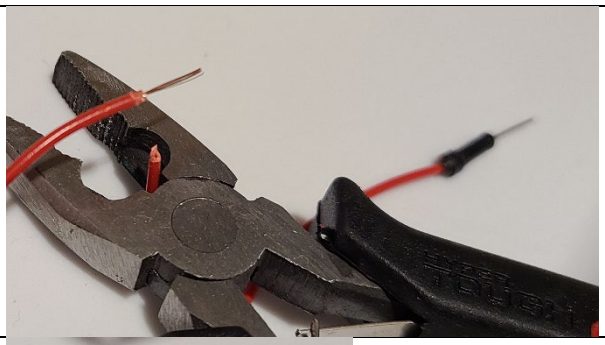
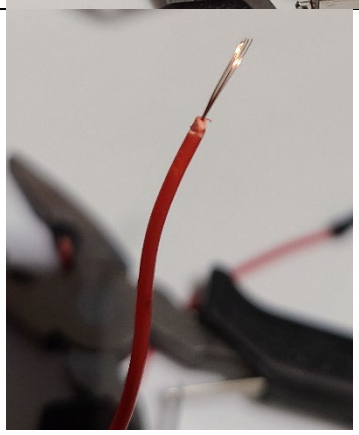
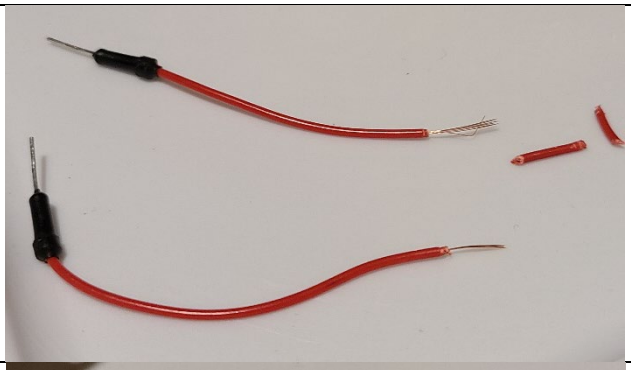
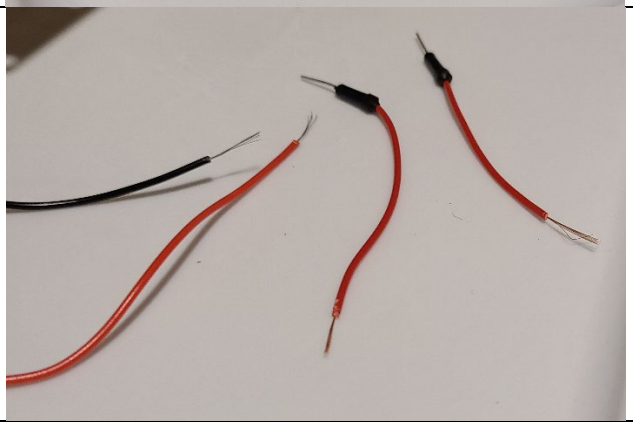
Next, use the wire cutters to remove the insulation by pulling the insualtion off of the wire lead. The exposed wire should be intact.	
Notice the wire is made of multiple smaller wires. Cabling made up of smaller wires bunched together allows the wire to be flexible, durable, and provides a path for electricity to flow through. Repeat for the previous steps for the other half.	
Congrats! You have just stripped the wires.	
Repeat the same steps for the battery lead wires.	

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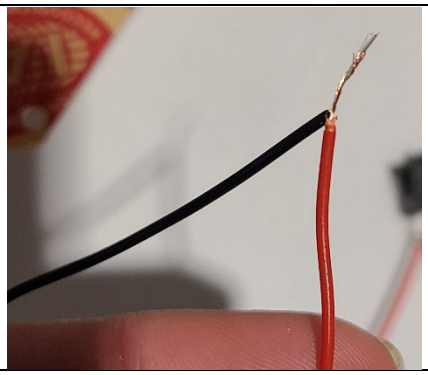
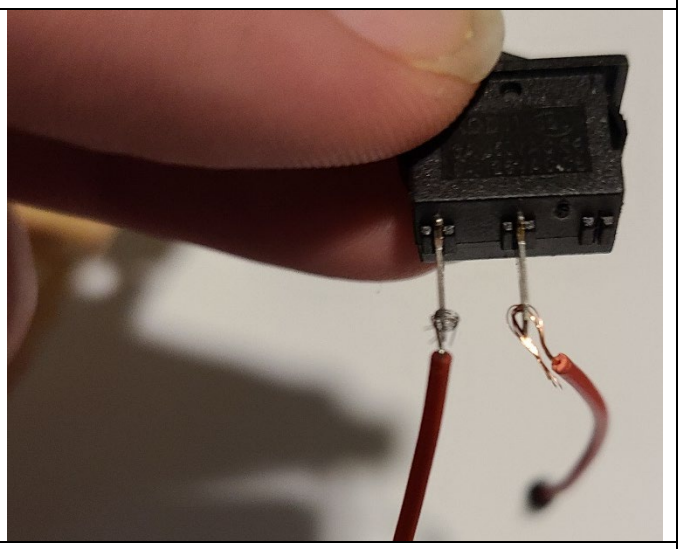
Take one of the battery leads (red or black) and twist the wires together.	
Solder the two wires together.	
Take some electrical tape and wrap around the joint to hid the exposed wires.	
Next use the switch to connect the other battery lead to one terminal and the other lead to the other striped jumper wire.	
Solder the leads to the battery terminal. Protect the exposed metal with some electrical tape.	

What is soldering?

Soldering is a joining process used to join different types of metals together by melting solder. Solder is a metal alloy usually made of tin and lead which is melted using a hot iron. The iron is heated to temperatures above 600 degrees fahrenheit which then cools to create a strong electrical bond.

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Solder is melted by using heat from an iron connected to a temperature controller. It is heated up to temperatures beyond its melting point at around 600 degrees fahrenheit which then causes it to melt, which then cools creating the soldered joint.

As well as creating strong electrical joints solder can also be removed using a desoldering tool.

Solder is a metal alloy used to create strong permanent bonds; such as copper joining in circuit boards and copper pipe joints. It can also be supplied in two different types and diameters, lead and lead free and also can be between .032” and .062”. Inside the solder core is the flux, a material used to strengthen and improve its mechanical properties.