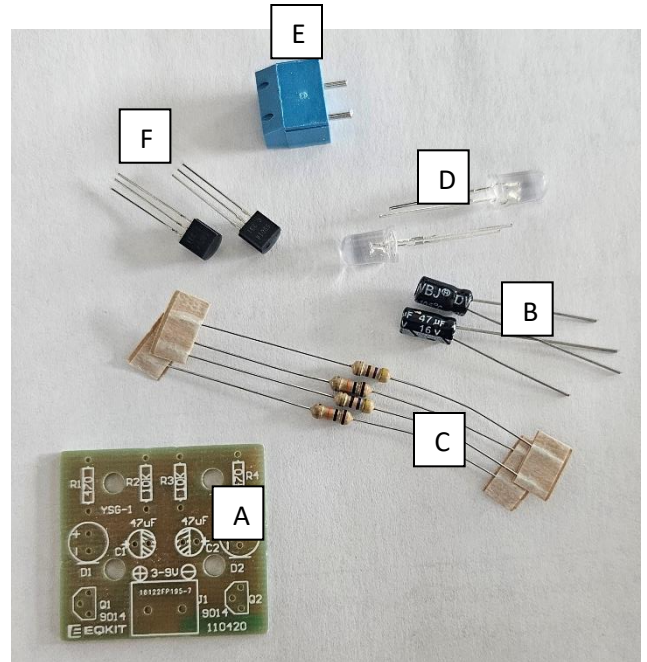


Winky Blink

INFORMATION AND PROCEDURE

Parts List

Part	Description	Quantity
PART 1		
A	Circuit Board	1
B	Capacitor	4
C	Resistor	4
D	Light Emitting Diode	2
E	Wire Socket	1
F	Transistors	2
PART 2		
G	Battery Snap	1
H	Black “negative” Wires	2
I	Red “positive” Wires	2
PART 3		
H	Foam Board	1
I	Wood Base	1

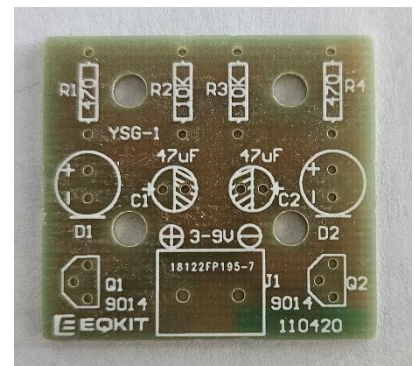


Building Process

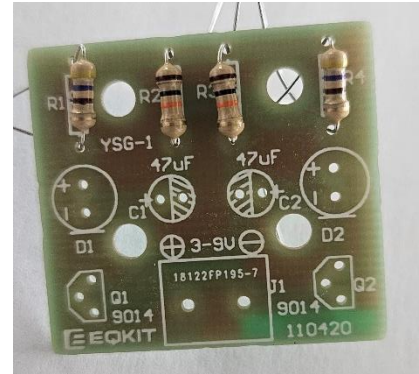
These are general instructions and may need to be adjusted based on student’s project customization.

Assembling Parts

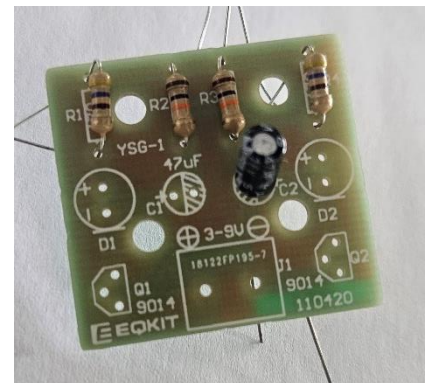
1. PUT YOUR NAME ON YOUR BAGGY.
2. Check to ensure you have every component of **PART 1** listed above.
3. Notice on the circuit board how there is a plastic labeled side and a side that has silver lines on it. The silver is conductive and is what we will be soldering our parts to.



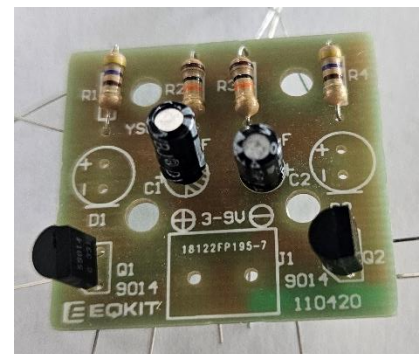
4. Add the 4 resistors to the top of your circuit board. The legs should go through to the silver side.
 - a. Resistors have different values distinguished by a colour code. The ones with **ORANGE** go in the middle of your circuit (R2 & R3).



5. Next, add your capacitors in C1 & C2.
 - a. The **NEGATIVE** side has a silver stripe and the leg is shorter. The negative side of the capacitor goes into the shaded side.
 - b. IF you put these in backwards, they could **EXPLODE!!!**



6. Add the transistors to Q1 & Q2.
 - a. Make sure the “middle leg stays in the middle” and that they don’t cross. The shape of the transistor should match the direction it is facing on the board.



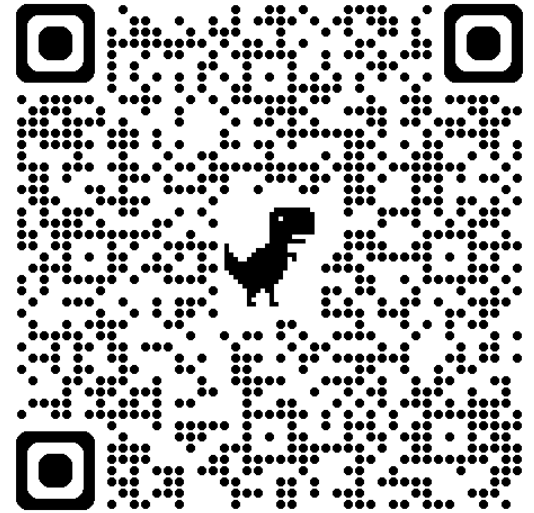
7. Add the wire socket.
 - a. Ensure the connector side is facing away from the circuit board.



8. **Double-check** everything is where it needs to be and bend the legs so that nothing falls out in the next steps. Everything should be flat and flush to the board.

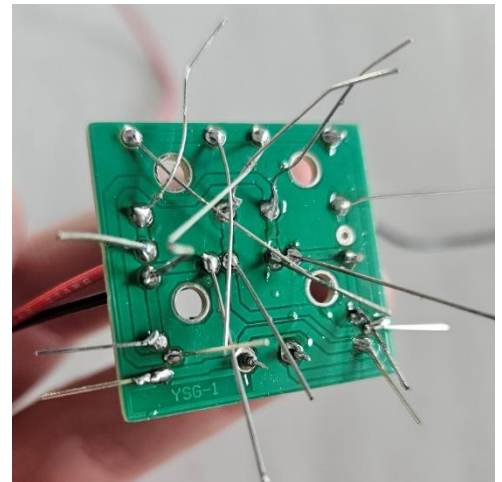
Soldering your Circuit Board

9. Watch the soldering video linked in the QR Code (or when your teacher shows it to you on the screen).
10. If you have any questions about the soldering process, ask your teacher for a demonstration.



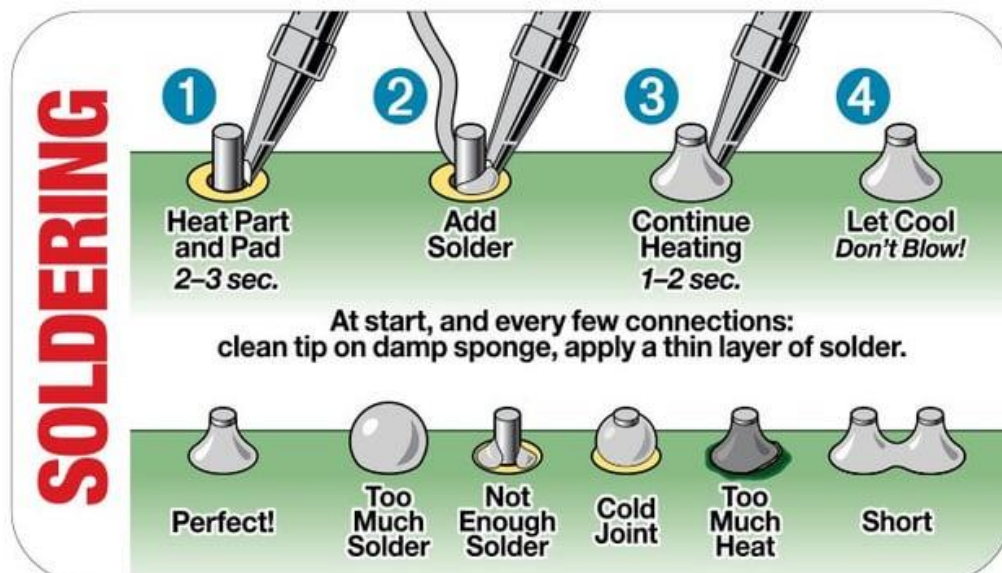
11. Gather a soldering iron, a soldering workboard and a length of soldering wire.
12. Plug in the soldering iron and give it 2 minutes to warm up.
13. First, put your soldering pen against your circuit board and the component leg you are going to solder to warm them up.

Second, add a small amount of solder to make a mini volcano – it should be connected to your board and the electrical component. Remove the solder wire before removing the solder pen.



Solder each component to your circuit board.

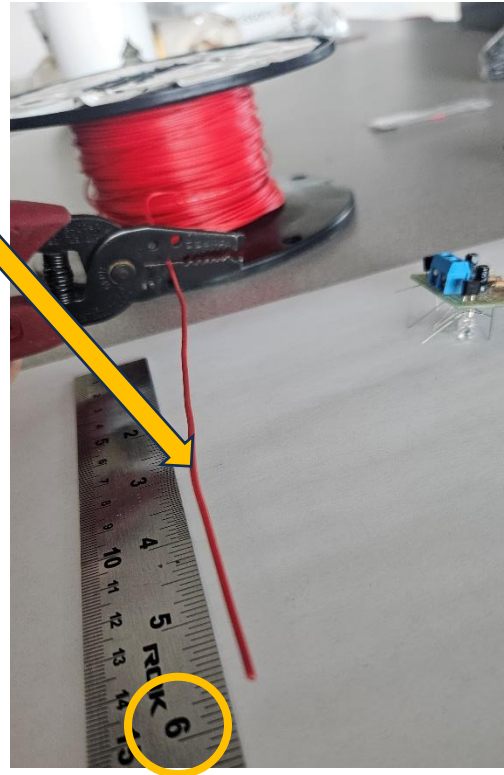
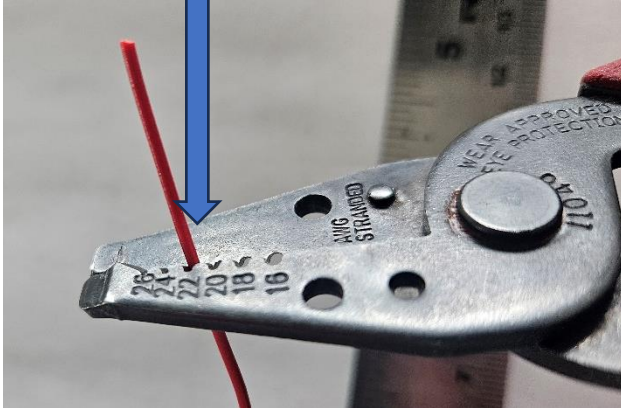
14. Use side cutters to cut the extra length of leg off. It should look like a short stubby volcano.



Add the Light-Emitting Diodes (Light Bulbs)

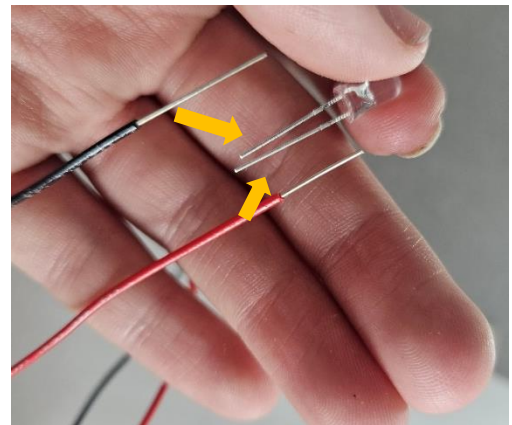
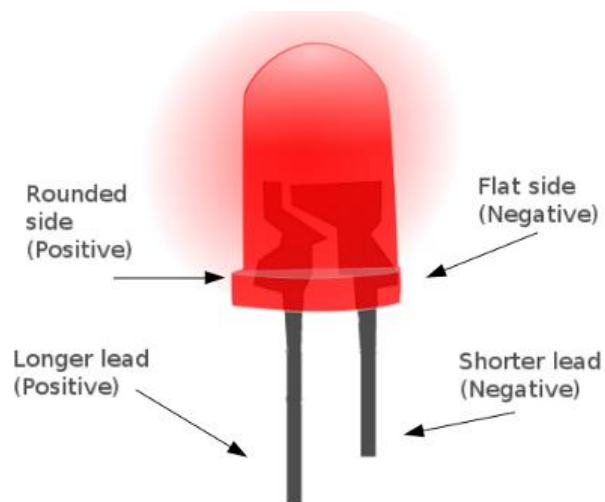
15. Cut 2 red and 2 black wires to 6" each using side cutters. (PART 2)

16. Strip the end of the wires $\frac{3}{4}$ inch using size 22 strippers.



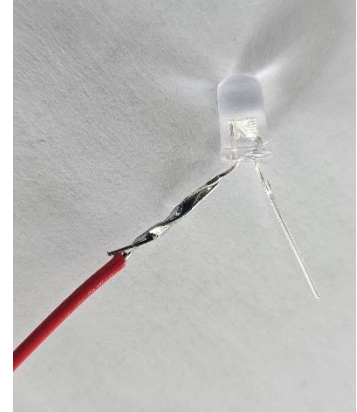
17. Twist the negative short leg of the LED around the negative wire.

18. Twist the positive long leg of the LED around the positive wire.

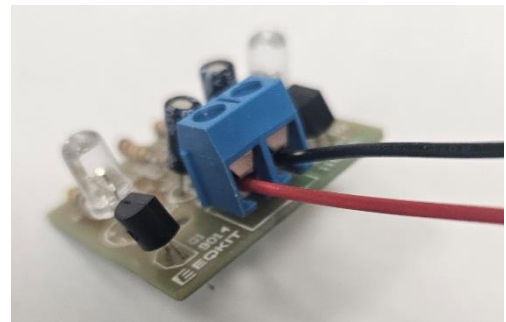


19. Carefully add solder to permanently connect the wire to the LED.

20. Solder the Led wires to the board.



21. Use a small flathead screwdriver to attached the exposed stripped wire end into the wire socket connector. By turning the screws, it will tighten or loosen the connector onto the wire. CHECK your positive and negative.



22. Show your circuit to your teacher.

- a. If you have done something wrong and plug in the battery, your circuit may EXPLODE and you will need to restart.

23. If **everything is correct**, they will give you the final component of Part 2: the battery snap. Solder this onto your board.

24. **Test your circuit with a battery.**

Part 3: Design and Final Assembly

25. Create a foam backboard design of high quality. You may print or paint or colour this. Try to incorporate the lights to add effect to your design.

26. Use a center punch to poke holes through the foam for your LEDs to stick through.

27. Pinch the bottom of your foam board so that it will slide into the base.

28. Add a SMALL dab of hot glue to attach your circuit board to the wood base.

Winky Blink Assessment

Name: _____

Block: _____

Marks/Points Breakdown:

Emerging	Developing	Proficient	Extending
1-3	3-6	6-9	10+

Building Process:

Were you on task throughout the building stage? Did your teacher need to bug you to get to work? Did you show up on time? Were you following proper safety guidelines?

Self-Assessment: /10	Ms. Meyer's Mark: /10
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Project Assessment:

Design Creativity Does your project look like any others in the class? Did you put effort in?	Self-Assessment: /10	Ms. Meyer's Mark: /10
Soldering Does your soldering look like mini volcanos? Did you add enough or too little solder?	Self-Assessment: /10	Ms. Meyer's Mark: /10
Overall Appearance Is there extra hot glue visible? Does it look like a quality project?	Self-Assessment: /10	Ms. Meyer's Mark: /10

Project Functionality:

Circle or highlight where you think your project is on the chart:

Emerging	Developing	Proficient	Extending
- Some pieces are put together, but it is not functional. - The backboard does not exist.	- The circuit is together, but it doesn't light up or doesn't blink. - The base and backboard are incomplete.	- The circuit works and blinks. - The circuit is attached to the base. - A battery holder was made.	- The circuit works and blinks. - It was transformed into the "operation" maze game. - The circuit is attached to the base. - A battery holder was made.