

EVIL MAD SCIENTIST LABORATORIES PRESENTS THE

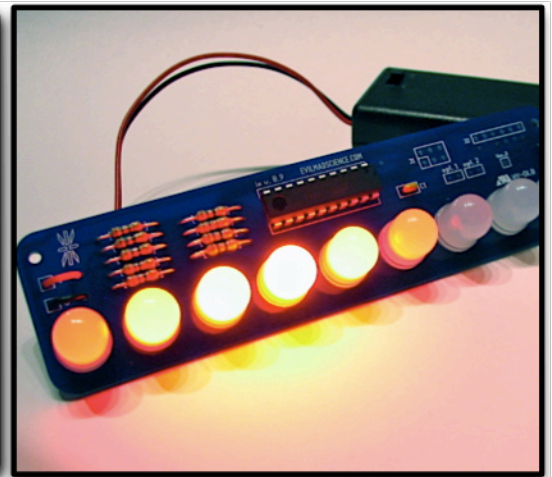
# LARSON SCANNER

## SOLDERING KIT

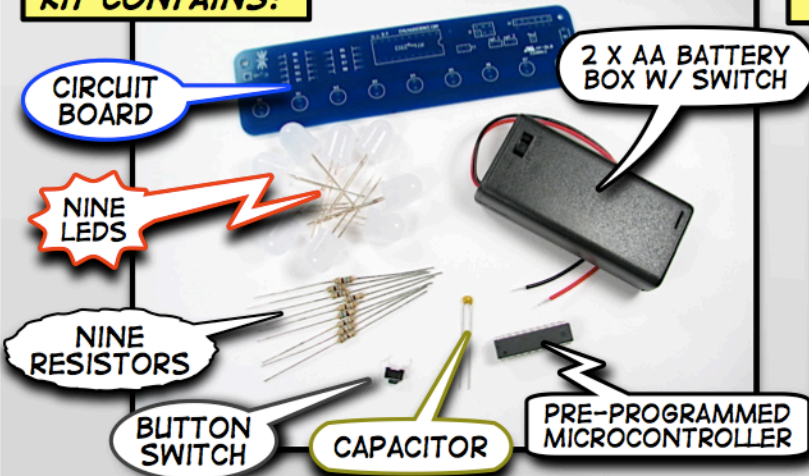
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### KIT CONTAINS:



CIRCUIT BOARD

NINE LEDs

NINE RESISTORS

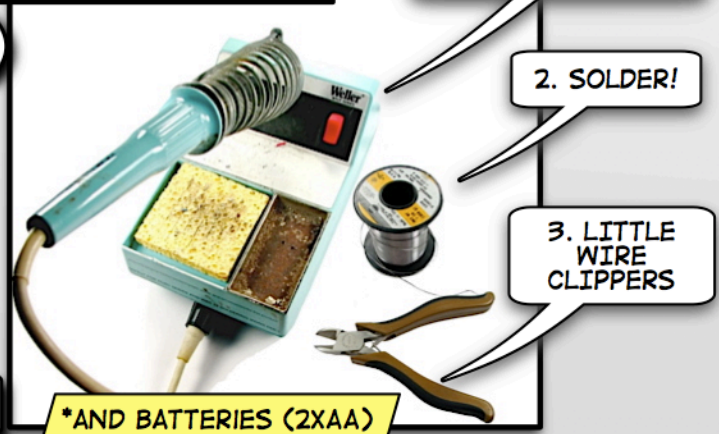
BUTTON SWITCH

CAPACITOR

PRE-PROGRAMMED MICROCONTROLLER

2 X AA BATTERY BOX W/ SWITCH

### YOU NEED... TOOLS!



1. SOLDERING IRON

2. SOLDER!

3. LITTLE WIRE CLIPPERS

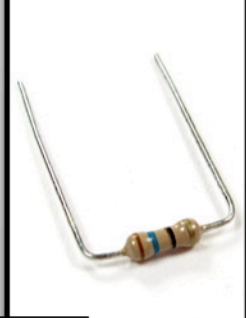
\*AND BATTERIES (2XAA)

1. OUR FIRST STEP IS ADDING RESISTORS TO THE CIRCUIT BOARD.

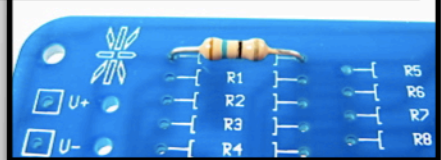


THEY GO IN LOCATIONS R0 - R8.

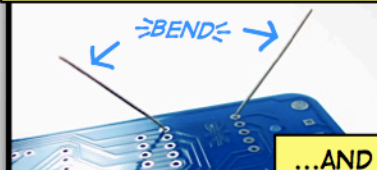
BEND ONE LIKE SO...



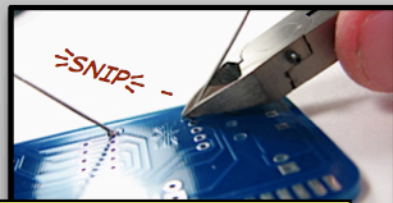
...AND INSERT IT AT LOCATION R0, FLUSH TO THE BOARD.



ON THE BACK SIDE, BEND BOTH LEADS OUT...



...AND SOLDER THEM IN PLACE.

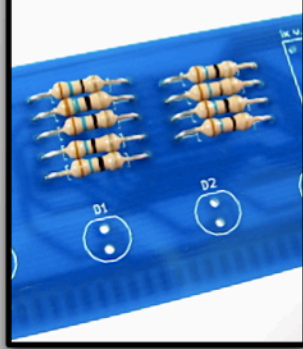


TRIM THE LEADS USING THE LITTLE CLIPPERS.

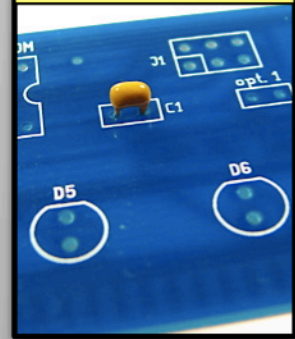


(WEAR EYE PROTECTION!)

REPEAT FOR RESISTORS R1-R8.



2. USE THE SAME PROCEDURE TO INSTALL THE CAPACITOR AT C1.

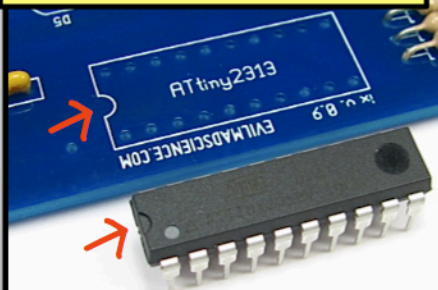


3. NEXT: ADD THE SWITCH AT S1. SNAP IT INTO PLACE AND SOLDER BOTH PINS.



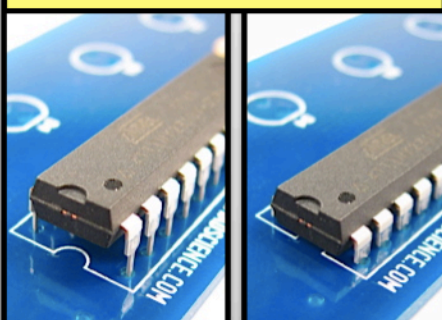


**4. THE MICROCONTROLLER CHIP, AN ATtiny2313.**



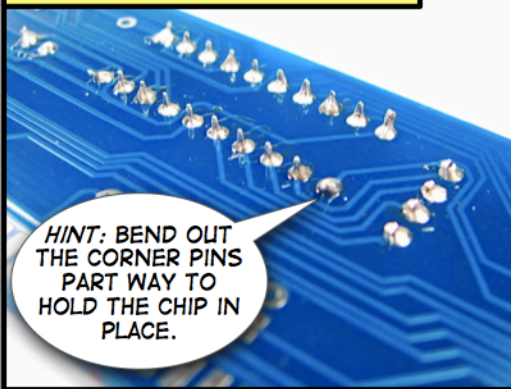
LOCATE THE END WITH THE HALF-CIRCLE SHAPE, BOTH ON THE BOARD AND CHIP.

**MATCHING THESE ENDS...**



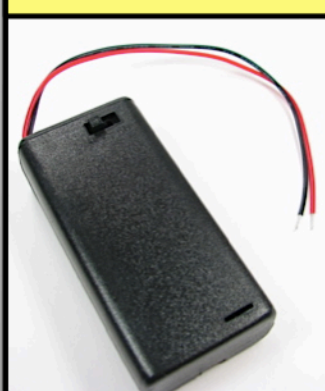
...**INSERT** THE CHIP, FLUSH TO THE BOARD.

**SOLDER ALL 20 PINS OF THE CHIP TO THE BOARD.**

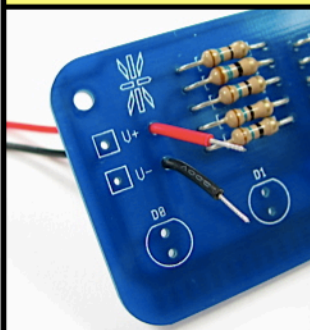


*HINT:* BEND OUT THE CORNER PINS PART WAY TO HOLD THE CHIP IN PLACE.

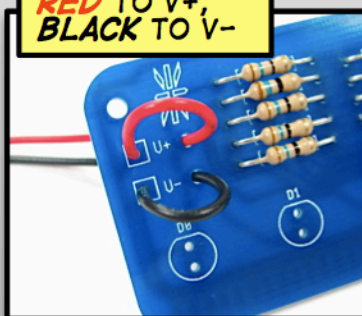
**5. DUUUUDE! IT'S THE BATTERY BOX!**



PULL WIRES THRU THE BOARD: **RED** BY V+, **BLACK** BY V-

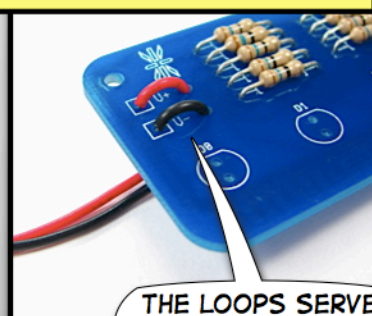


LOOP 'EM: **RED** TO V+, **BLACK** TO V-



**SOLDER BOTH WIRES.**

THEN, PULL ANY EXCESS WIRE BACK THROUGH.



THE LOOPS SERVE AS A STRAIN RELIEF FOR THE WIRES.

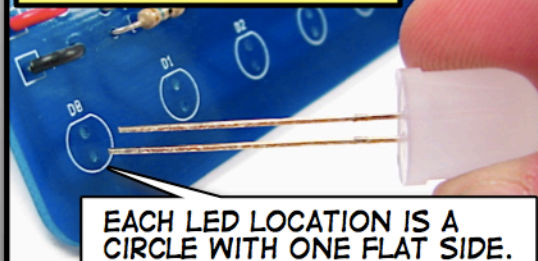
**6. LEDs: THERE ARE MANY VARIETIES.**

10MM LED

5MM LED

BOTH TYPES HAVE ONE SHORT LEAD.

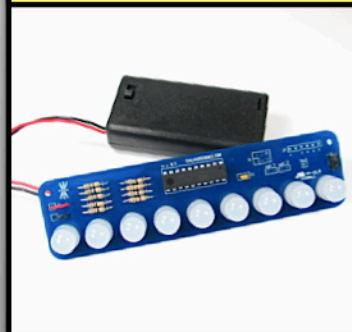
INSTALL THE 9 LEDs IN LOCATIONS D0 - D8.



EACH LED LOCATION IS A CIRCLE WITH ONE FLAT SIDE.

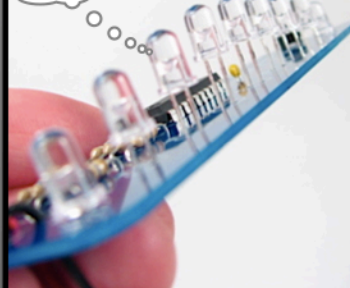
THE **SHORT** LEAD GOES TOWARDS THE **FLAT** SIDE.

AS BEFORE, SOLDER BOTH PINS AND CLIP THE EXCESS LEADS SHORT.



ADVANCED OPTION: INSTALL LEDs AT DIFFERENT HEIGHTS.

CURVY!



**CONGRATULATIONS! YOU BUILT IT!**

YEP, THAT'S IT. PUT TWO AA BATTERIES IN THE HOLDER AND SWITCH IT ON.

(AND SWITCH IT OFF TO SAVE THE BATTERIES!)

THE PUSHBUTTON CHANGES BETWEEN SLOW, MEDIUM, AND FAST BY YOUR COMMAND. HOLD IT TO TOGGLE BETWEEN LOW-POWER AND HIGH-POWER MODES.

AN OPEN-SOURCE PROJECT. DOWNLOAD SCHEMATICS & SOURCE CODE AT: [HTTP://WWW.EVILMADSCIENTIST.COM/GO/LARSONKIT](http://www.evilmadscientist.com/go/larsonkit)

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