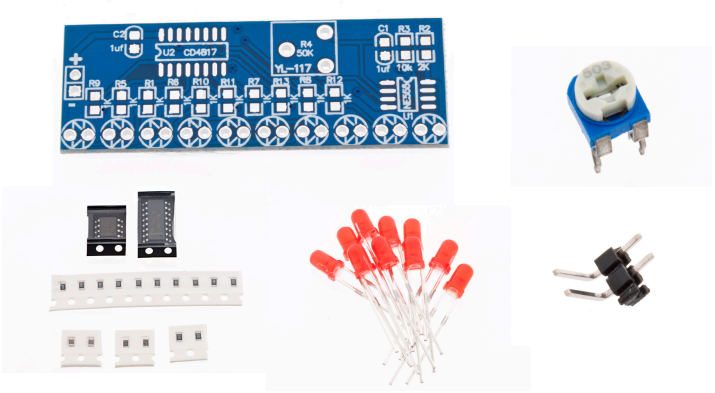
Running lights 10 LEDs – SMD Kit

This guide will help you assemble your kit in the easiest way possible. Please read through the guide before you start soldering! You should make first make sure that you have all the components and that they all look ok (no bent leads on the ICs for example). Inspect the PCB for etching faults and make sure that there are no scratches or other defects. A good set of tools and an ergonomic work place with adequate lighting is necessary for a good result.

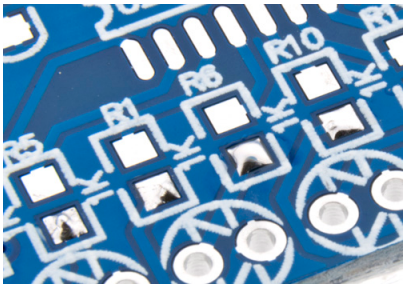
Component list:

- 1x Printed circuit board
- 1x 555-timer IC (SOIC-8)
- 1x CD4017 decade counter (SOIC-16)
- 10x 1kohm resistors (102)
- 1x 10kohm resistors (103) (+1 spare)
- 1x 220ohm resistors (222) (+1 spare)
- 2x 1uF ceramic capacitors (no markings)
- 10x Red LEDs
- 1x 50kohm potentiometer
- 1x Angled header



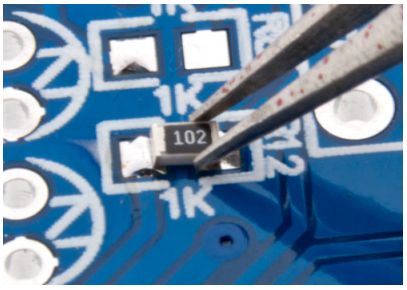
Recommended tools:

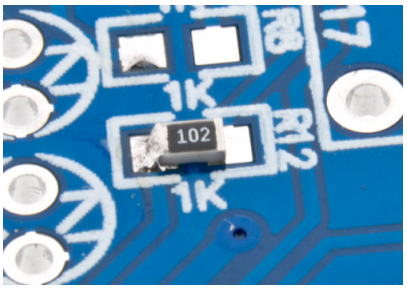
- Solder iron with a fine tip
- Precision tweezers with fine tips
- Side cutter
- Desoldering pump
- Solder flux
- Thin solder wire
- Vice or PCB holder
- Smoke absorber or other ventilation



Start by pre-tinning one pad for each of the passive components. Only a small amount of solder is required.

Place the component on the correct place on the board. Use tweezers to hold the component (unless you have really tiny, heat-resistant fingers).

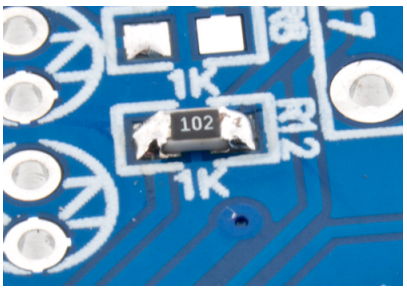




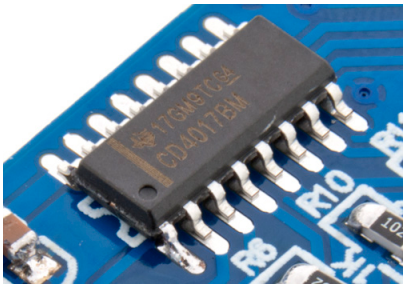
Melt the solder on the pre-tinned pad to fixate the component. As long as only one pad is attached, you can make adjustments by melting the solder again and again until a perfect alignment has been achieved.

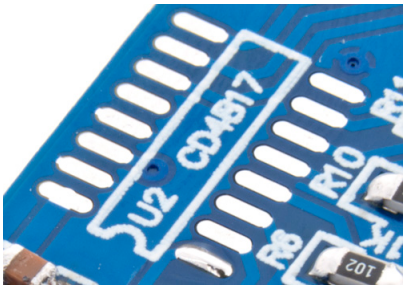
Solder the opposing pad. Redo the first pad if necessary. Continue mounting the rest of the passives.

Only one of each of the 10kohm and 220ohm resistors are used! You have been blessed with two spare components.



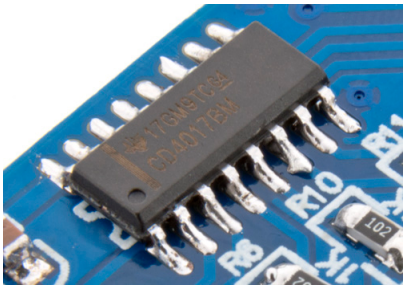
The next step is to mount the two ICs. The process for mounting these is the same as for the passives. Begin by melting a small amount of solder to one pad.

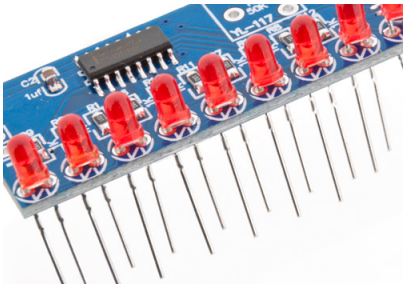




Place and align the IC using tweezers. Make sure both rows of the IC align up with the pads. Alignment must be correct before soldering the rest of the pins!

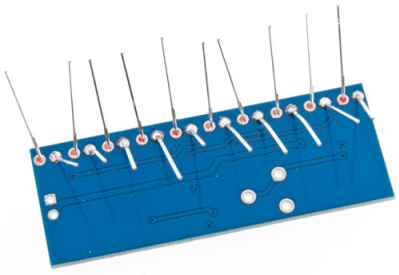
Continue soldering the rest of the pins. If you should bridge two pins with solder, you have a few options. You can melt the solder and quickly drag the tip away from the IC to break the bridge. If this doesn't work, try adding flux. A last resort is to use a desoldering pump to remove the excessive solder.

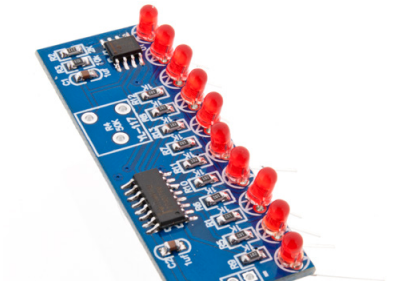




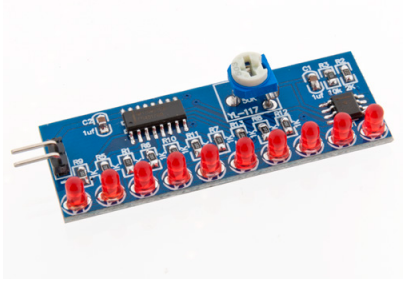
When all the surface mounted components are in place, continue with the LEDs, the potentiometer and the pin header. All the LEDs should be facing the same direction. The short leads should be inserted in the holes closest to the 8-pin IC. You can also refer to the symbols on the PCB.

Bend the leads alternating to prevent the LEDs from falling out when the board is flipped. Begin by soldering one leg of each LED first so you can align them later.

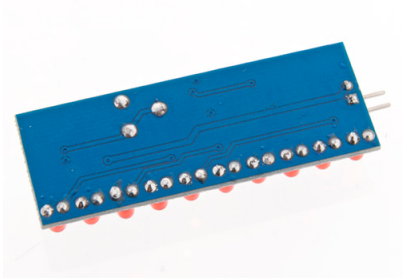




Flip the board and notice the poor alignment. Melt the solder and press down on each LED to align them properly. When they are all in a straight line, solder the other lead.



Using the same method as the LEDs, mount the potentiometer and the pin header.



Trim all the leads and make a final visual inspection to make sure there are no bad solder joints, bridges, debris or other faults in the assembly. Connect a power supply to the pin header (3 – 12VDC) and watch in awe as the LEDs light up and flow like water in the spring.