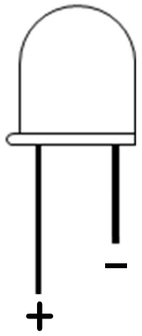
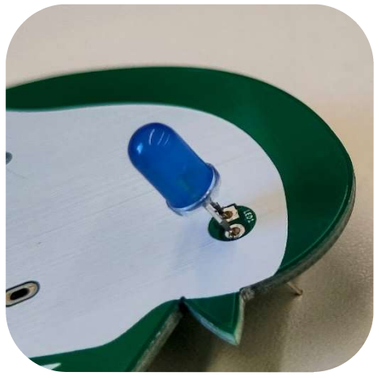
Step 5: LEDs



- ☐ LEDs have **polarity**. They will only work if connected the right way around.
- ☐ For each of your LEDs:
  - ☐ Identify the **negative leg** of your LED, this is the short leg.
  - ☐ Line the negative leg with the **square hole** on the circuit board.
  - ☐ Push your LED all the way in, and double check that the **short leg is in the square hole** , and the long leg is in the round hole.



  - ☐ Bend the legs gently so they don't fall out.
- ☐ Solder all the connections.
- ☐ Carefully snip the legs of the LEDs.

Step 6: Testing

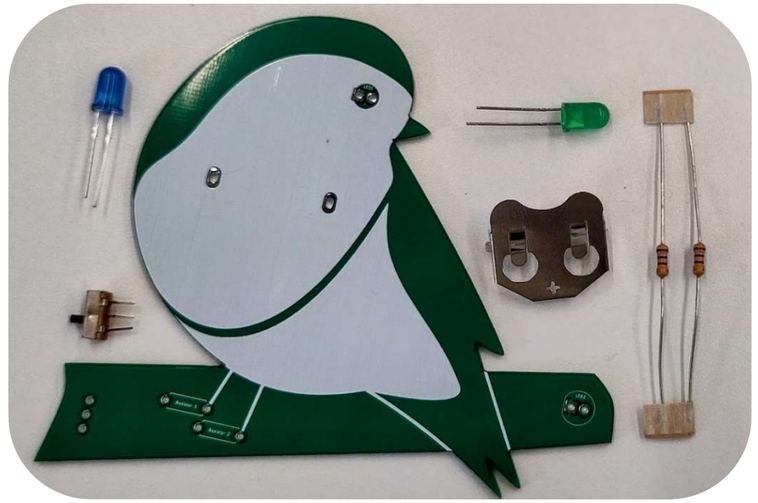
- ☐ Bring your finished circuit to one of the workshop leaders – we will check your soldering joints and give you a battery.
- ☐ Push your battery all the way into the holder, **positive side up** – the LEDs might turn on and off while you do this.
- ☐ Test your board – do the lights turn on and off when you use the switch?
- ☐ If it all works, fantastic! If not, try the troubleshooting tips below.
- ☐ Use a glue gun to cover sharp wires.

Step 7: Troubleshooting

If your board isn't working as you expect, try these tips then speak to a workshop leader.

- ☐ Check that none of the LED legs are touching each other.
- ☐ Check your battery is pushed all the way in.
- ☐ Check your battery is the right way around.
- ☐ Check your LEDs – are they all the right way round? Look at Step 5 for help.
- ☐ Check your solder joints – they should all be touching the board, and not spilling over to touch another joint.

Winter Family Day
Soldering Instructions



Soldering irons can be dangerous.

Don't touch the hot end and put it back in the stand when not in use.

Check your components and tools – do you have everything you need?

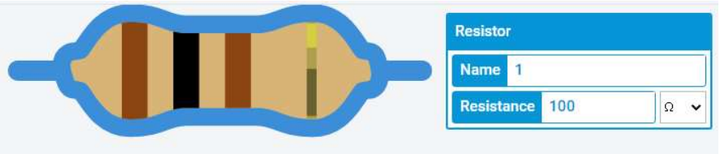
Components	✓	Tools	✓
robin circuit board		heat-proof mat	
2 LEDs		soldering iron	
2 resistors		stand with brass ball	
battery holder		solder	
switch		blue tack	
CR2032 battery		wire snippers	

Coin cell batteries are dangerous when swallowed.

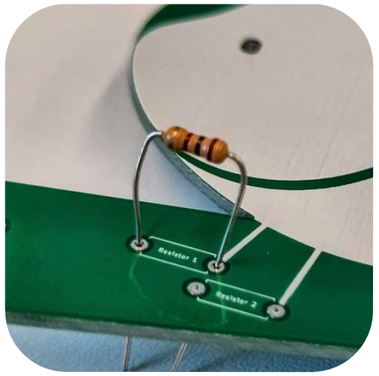
Keep away from small children and pets.

Step 1: Resistors

Resistors have coloured stripes to tell you what type they are. Yours are 100 ohm.



- ☐ On the front of your board, push a resistor into the holes labelled Resistor 1 or 2 – it doesn't matter which way round they go.



- ☐ Flip the board over and bend the legs gently so that the resistor doesn't fall out.

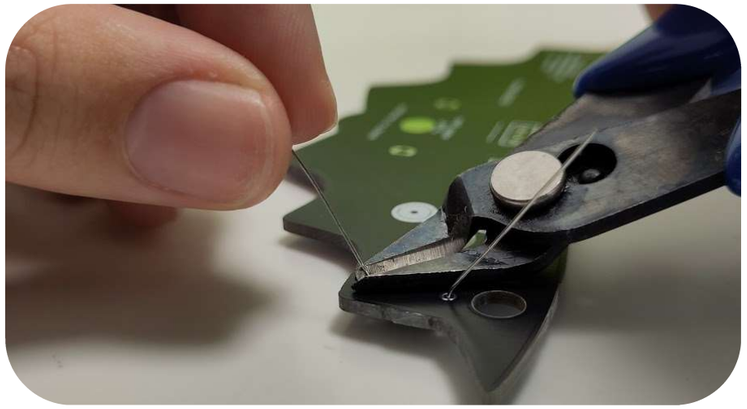
- ☐ Carefully solder your first resistor.
- ☐ Wait for the legs to cool down – about 30 seconds – then try to wiggle them. Is the resistor well attached, or do you need to try again?
- ☐ Repeat for the second resistor.

Step 2: Snipping Wires

Wire pieces can fly off and damage your, or other people's, eyes.

Always hold wires when snipping.

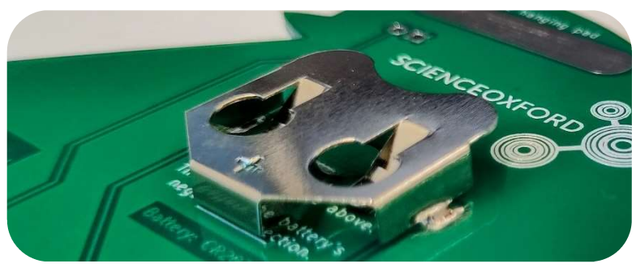
- ☐ Whilst holding a resistor leg, snip it as close to the circuit board as you can.



- ☐ Repeat for all the legs.

Step 3: Battery Holder

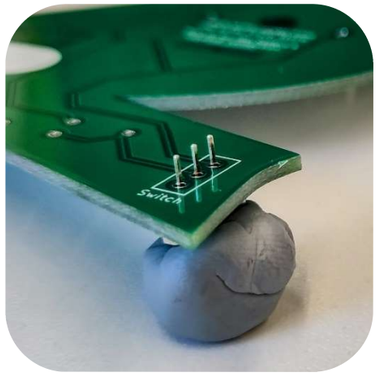
- ☐ On the back of your board, line up your battery holder with the holes and push it all the way in. It should 'click' into place.



- ☐ Turn over to the front and solder the two battery connections.

Step 4: Switch

- ☐ You can put the switch on either the front or the back of the board! Choose, and push into place.
- ☐ Use blue tack to keep the switch secure underneath.



- ☐ Solder all three legs of the switch and check that they have stayed separated.
- ☐ If there is solder connecting the legs of the switch together, ask a workshop leader to help you remove some of it.
- ☐ Once it has cooled down, remove the blue tack.

The switch legs cannot be safely snipped – they are thick & short.

Do not trim the switch legs, cover them with tape or glue instead.

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