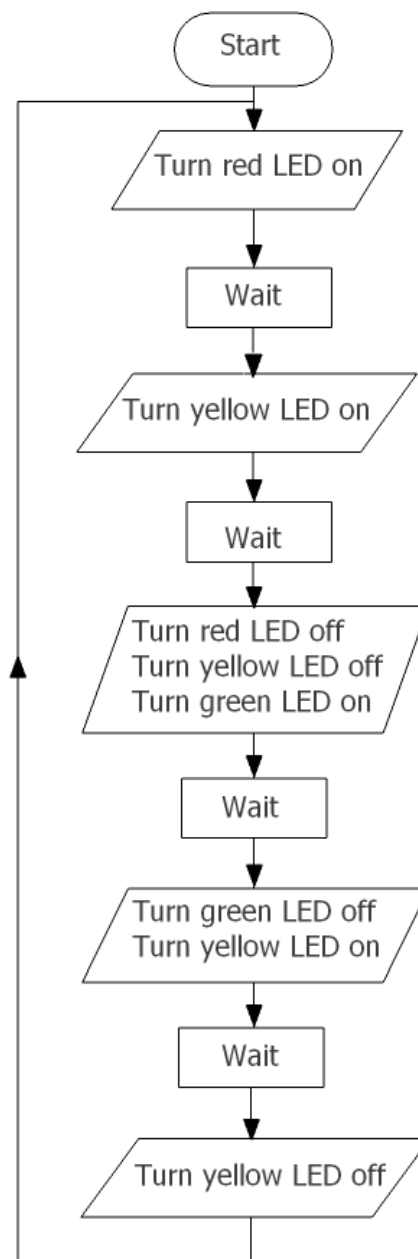
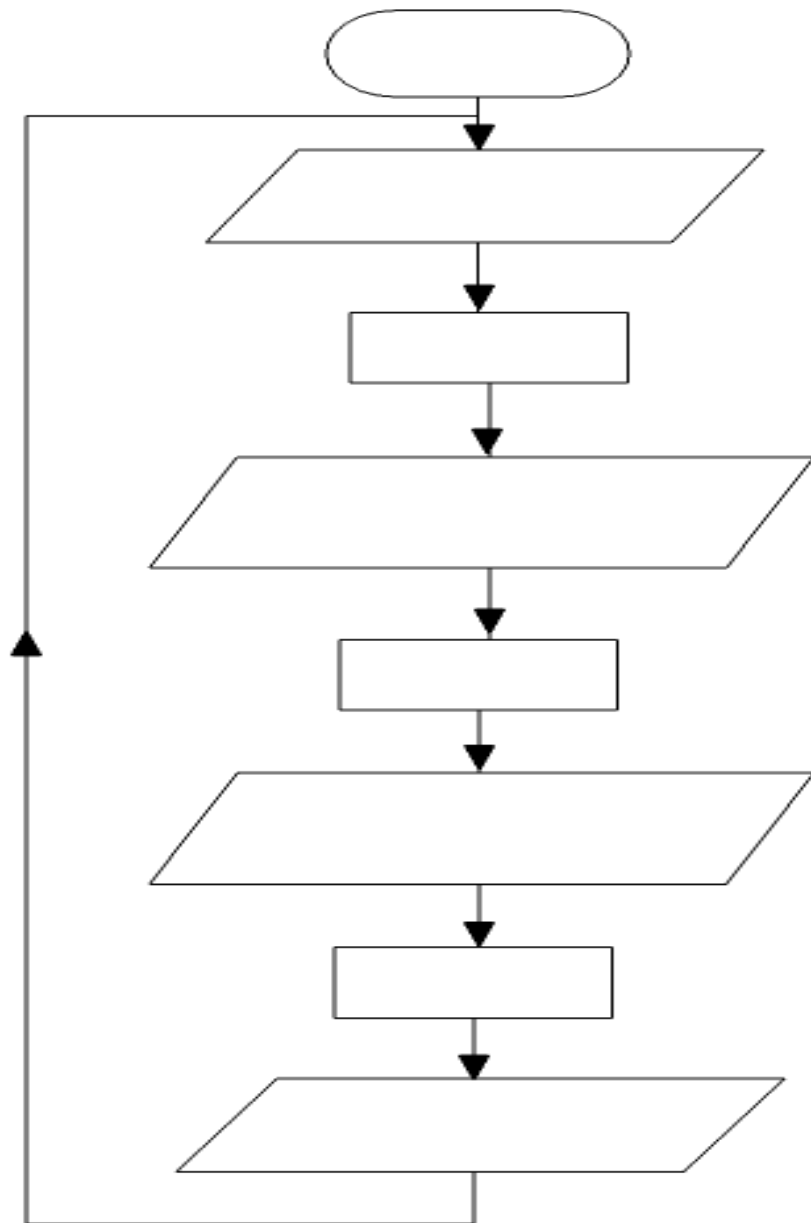


STEP 6

The traffic light sequence in the UK starts with red, then changes to red and yellow, then green, then yellow and then back to the beginning (red). The sequence is shown in the flowchart on the right. Create your own program to switch the LEDs on in this sequence. Run the program and check the traffic lights behave as you expect.

EXTENSION ACTIVITY (optional):

The traffic light sequence in America starts with red, then goes green, then yellow, then back to the beginning (red). Fill in the flowchart below and then create a program to switch the LEDs in this sequence. Run it and check the traffic lights behave as expected.



CRUMBLE WORKBOOK 3 TRAFFIC LIGHTS

NAMES:

.....

.....

.....

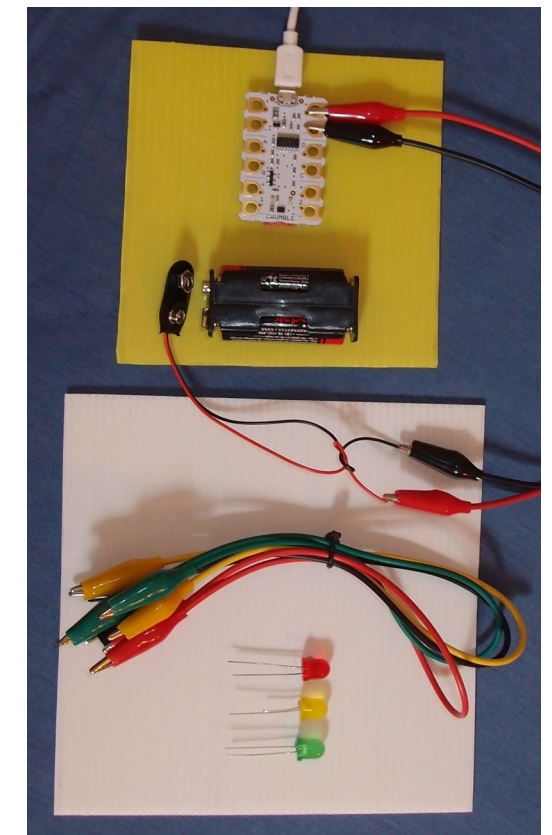
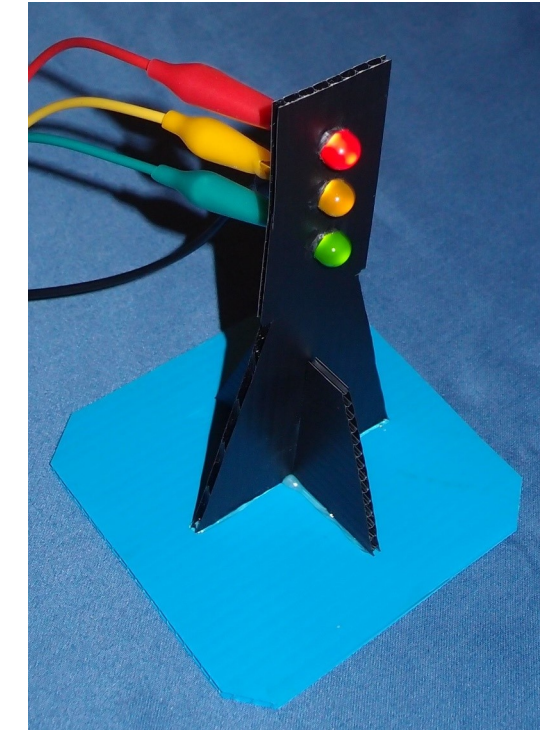
YOU WILL NEED:

Parts

- 1 Crumble controller unit
- 1 square of corrugated plastic
- 4 crocodile leads
- 1 red LED
- 1 yellow LED
- 1 green LED

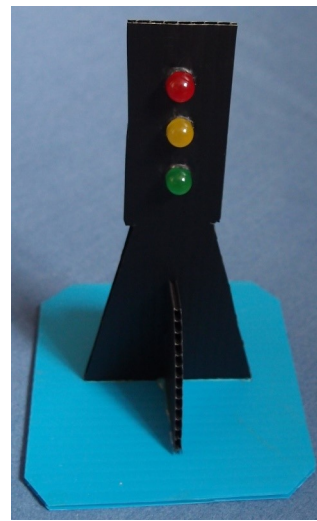
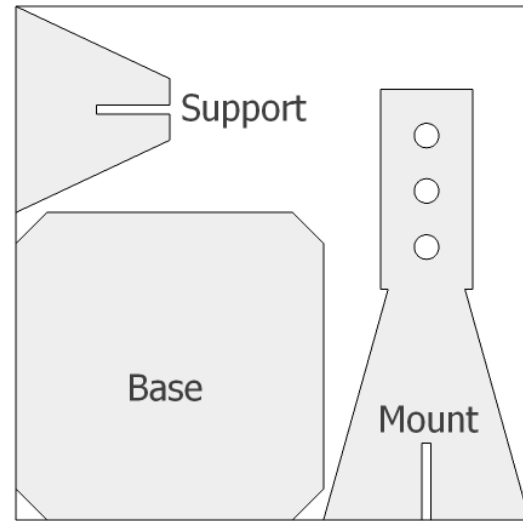
Tools and consumables

- Computer
- Pencil
- Ruler
- Pair of large scissors
- Pair of pointed nail scissors
- Low melt glue gun



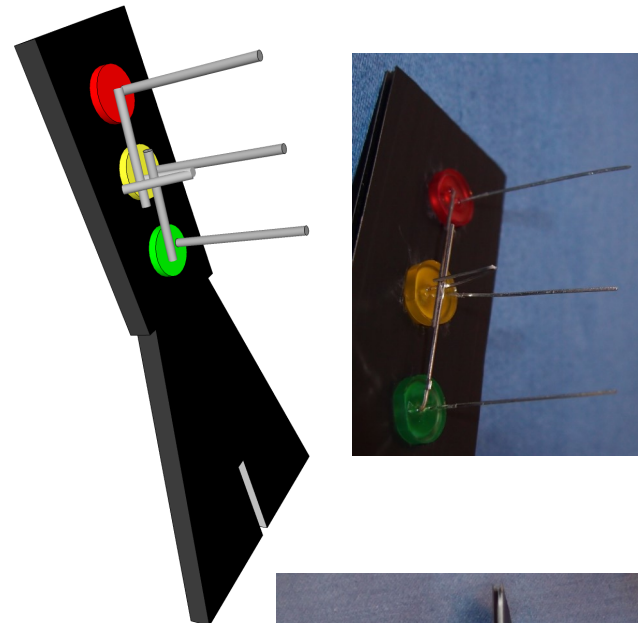
STEP 1

Design and make a traffic light stand to mount your LEDs. Here is an example to help you. In order to get the holes for the LEDs in line you can pierce them with the pencil initially and then enlarge them with the nail scissors until the LEDs just fit tightly. Push the three LEDs into the holes with red at the top and green at the bottom.



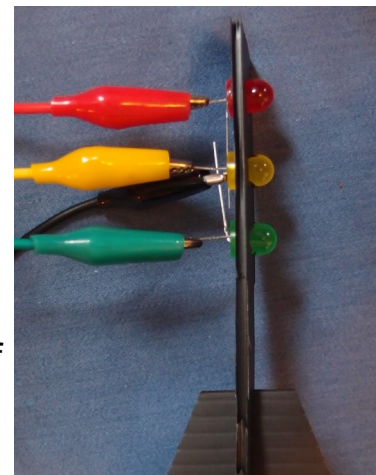
STEP 2

Rotate the LEDs in the holes until the short legs are all on the same side. If the LEDs are loose in the holes then glue them in. Gently bend the short leg of the red LED down and the short leg of the green LED up so they are touching the short leg of the yellow LED. Be careful not to snap them off. Gently bend the short leg of the yellow LED in half so that it traps the other two legs as shown.



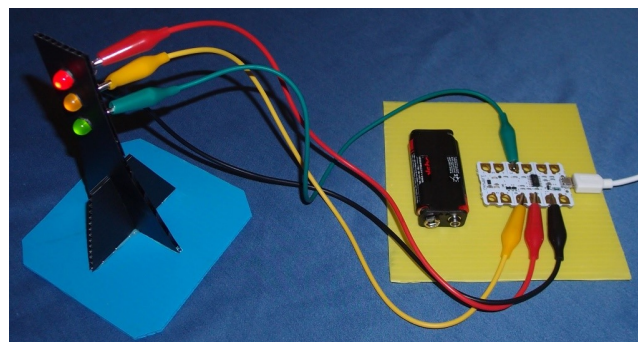
STEP 3

- Use one crocodile lead to connect from the long leg of the red LED to terminal A on the Crumble.
- Use a second crocodile lead to connect from the long leg of the yellow LED to terminal B.
- Use a third crocodile lead to connect from the long leg of the green LED to terminal C.
- Use the remaining crocodile lead to connect from the three joined short legs of the LEDs to the negative (-) terminal on the Crumble.

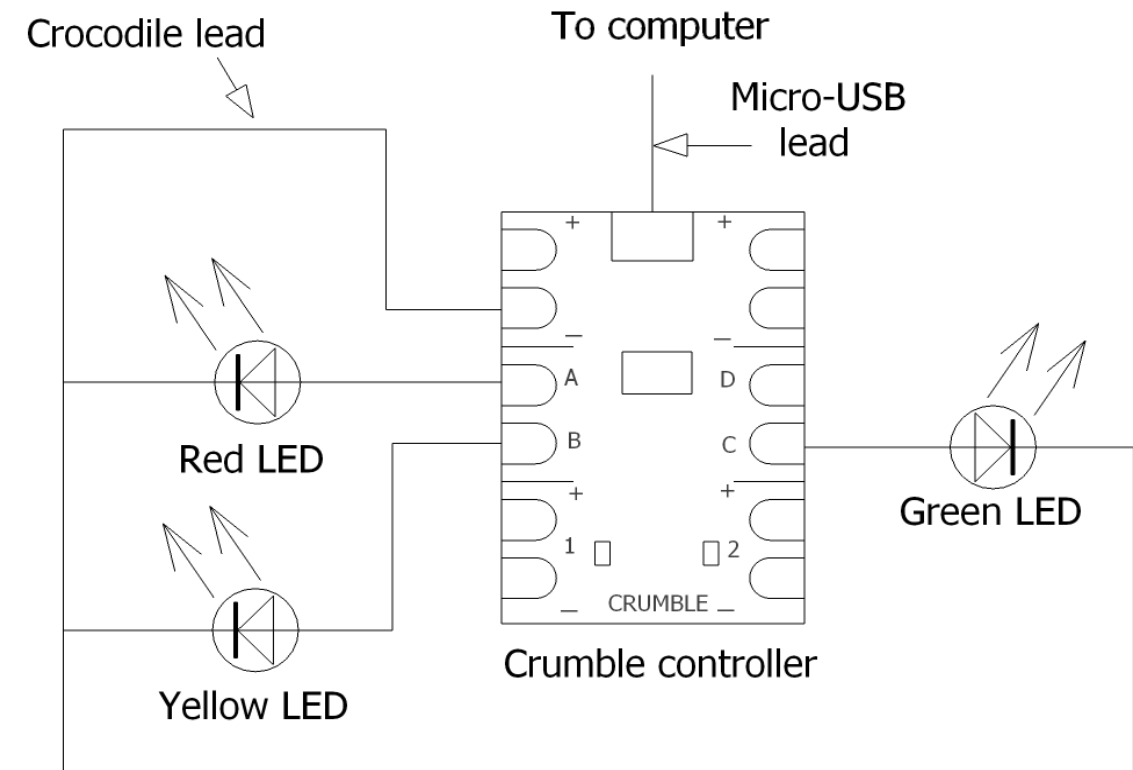


The circuit diagram is given on page 3.

Don't clip on the battery snap connector; unlike the motor, the LEDs are powered from the computer via the micro-USB lead.

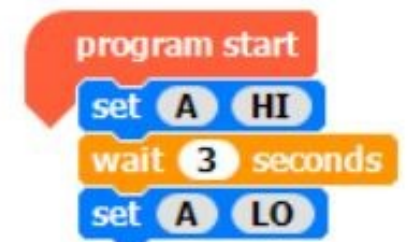


STEP 3 circuit diagram



STEP 4

Select the file 'Light LED' from the Crumble folder. Click on the green arrow to run your program, and check the red LED lights up for a few seconds and then goes off.



STEP 5

Create a program to switch the LEDs continuously on and off in turn. Examples of a flowchart and program to do this are shown on the right.

