STEP 5

Run the program and check the nightlight works as you expect.

EXTENSION ACTIVITIES (optional):

1. Modify the program so that the lamp glows more or less brightly.

2. Try adjusting the program so that the lamp comes on at different levels of light / darkness.

3. Think of some different lighting effects you could try, for example if you have made a candle then try making it flicker. If you have made a lighthouse then you could program a flashing sequence. Draw a flowchart below, then create a program and run it to see whether the effects work as you hoped.

4. Does it matter which way round your LDR is connected?

STEP 6

Unclip the snap battery connector from the battery holder when not in use to avoid draining the battery.

CRUMBLE WORKBOOK 5
NIGHTLIGHT

NAMES:

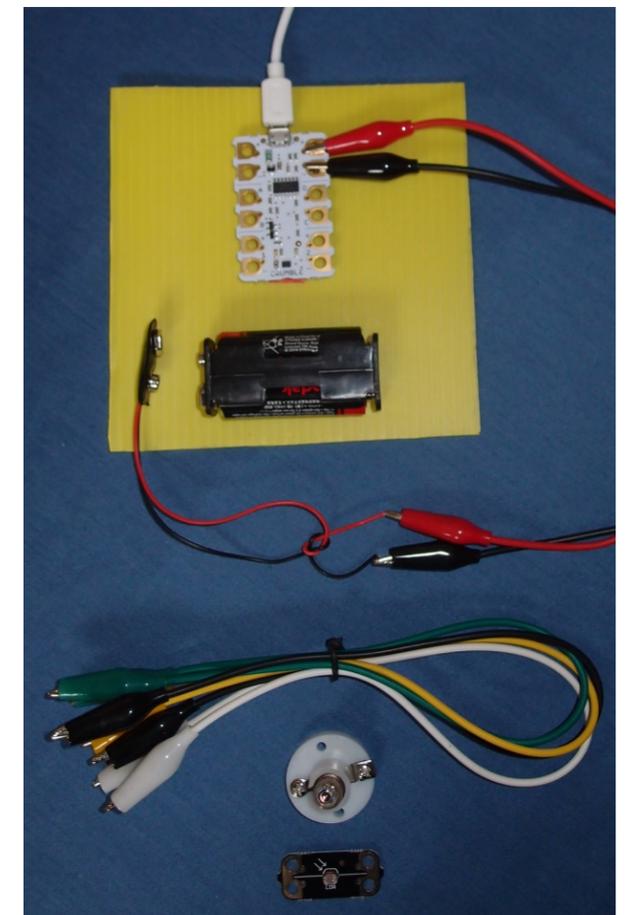⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯

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YOU WILL NEED:

Parts
1 Crumble controller unit
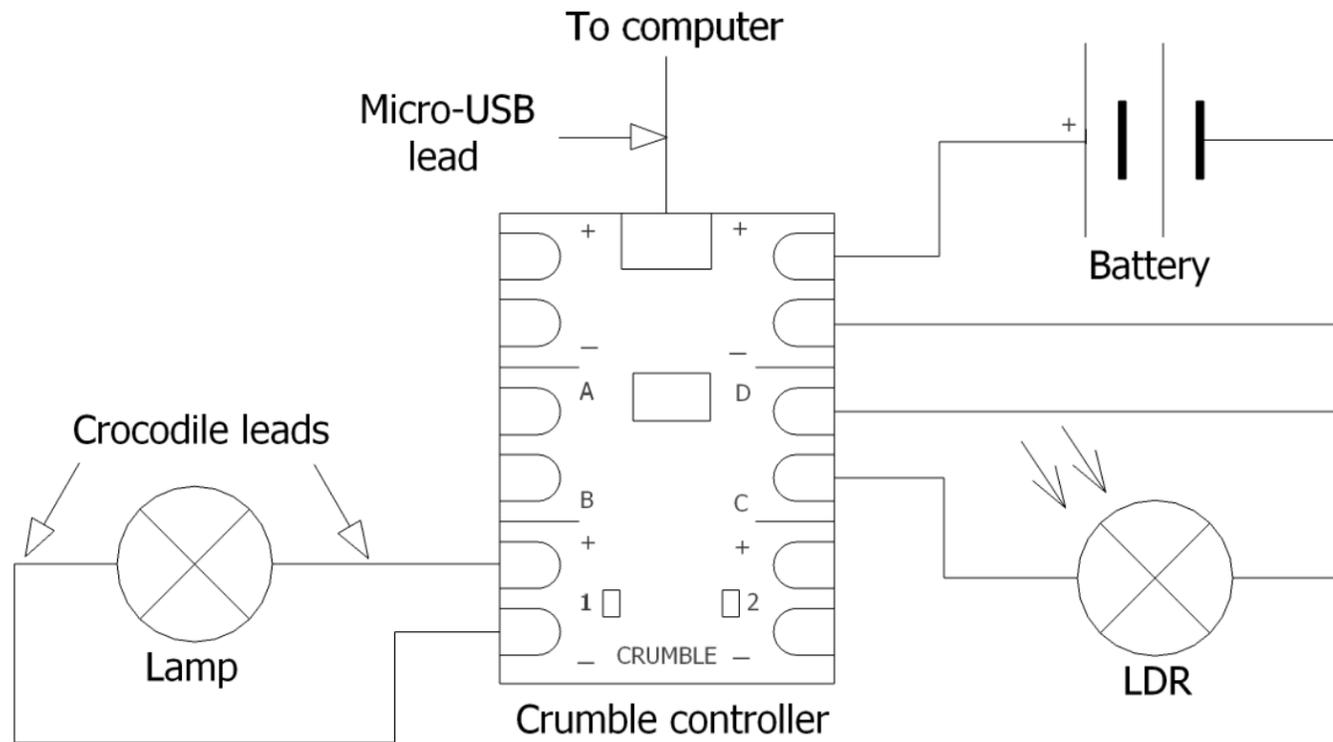4 crocodile leads
1 lamp and lamp holder
1 LDR (light dependent resistor)

Tools and consumables
Computer
Pencil
Ruler
Pair of large scissors
Pair of pointed nail scissors
Low melt glue gun
A selection of materials and decorations

STEP 1

Connect up the following circuit. Push the battery snap connector firmly onto the battery box.

To computer

Micro-USB lead

Battery

Crocodile leads

Lamp

Crumble controller

LDR

STEP 2

Create and run the following program.

Start

Set D high

Read C value

Is C value < 230 ?

Yes — Turn lamp on

No — Turn lamp off

```
program start
do forever
    set D HI
    let u = analogue C
    if u < 230 then
        motor 1 FORWARD at 75 %
    else
        motor 1 STOP
    end if
loop
```

STEP 3

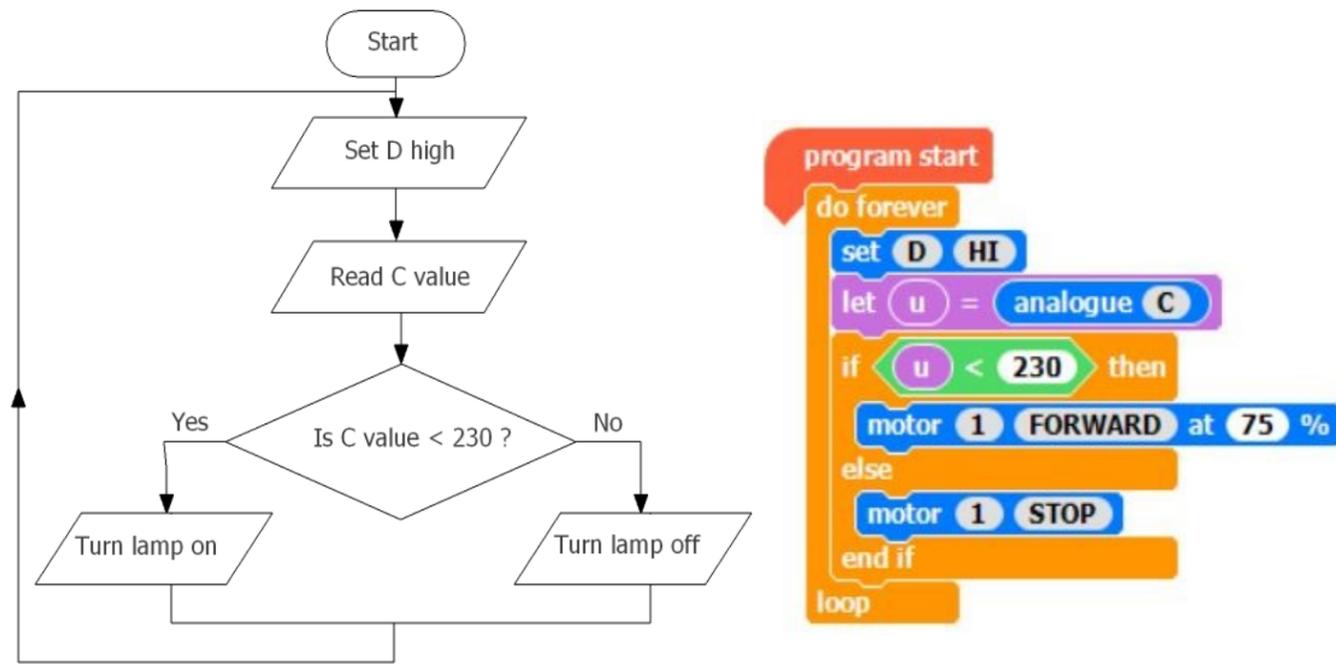Discuss how you will test whether the lamp comes on in the dark. Test your circuit and check it works as you expect.

STEP 4

Look at the materials and tools provided. Discuss different ideas for your own design of nightlight and work out how your lamp holder will be mounted and the crocodile leads connected to it. Make sure your LDR will be mounted so that daylight can fall on it. Work out where you wires will go. Sketch your design below and then construct it.