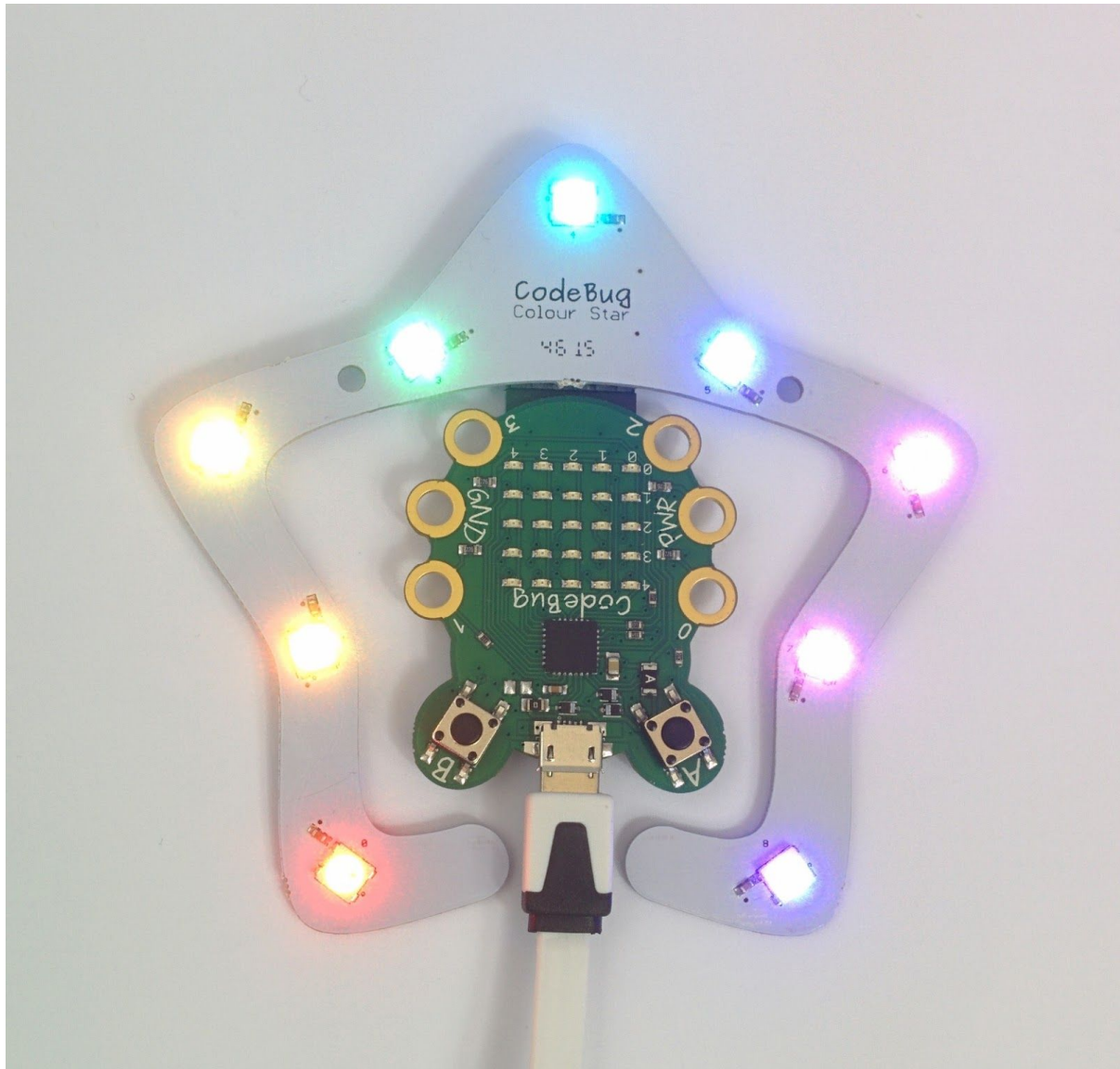# CodeBug ColourStar

Create your own personal pattern and sequence by creating simple programs online.
Learn the essentials of computer science while creating mesmerising light shows.
Ideal for bringing eye-catching colour to any CodeBug™ craft project.
Before using any CodeBug™ device always read the instructions and precautions carefully.

Product Highlights

Uses:

- Introductory platform for learning programming and electronics
- Wearables projects
- Decorations
- Eye catching
- Digital crafts – create interactive greetings cards, decorations, board games and more

Features:

- Simple and quick to get started – just plug in and program!
- 9 RGB (Red Green Blue) LEDs
- Each LED has 256 brightness levels for Red, Green and Blue allowing for 16777216 different colours
- 6 pin connector plugs into Expansion connector on CodeBug™
- Drag and drop programming from web browser
- Online support, community and educational tutorials
- Windows, Mac and Linux compatible
- Can be tethered with CodeBug™ to be controlled from a computer or tablet

Technical Specifications:

- Power: 5V from pin header (CodeBug™ powered by USB)
- 2 3mm mounting holes, 52mm apart
- Approx 39mm wide x 47mm high
- PCB thickness 1.7mm
- Expansion passthrough to solderable pads (I2C only)
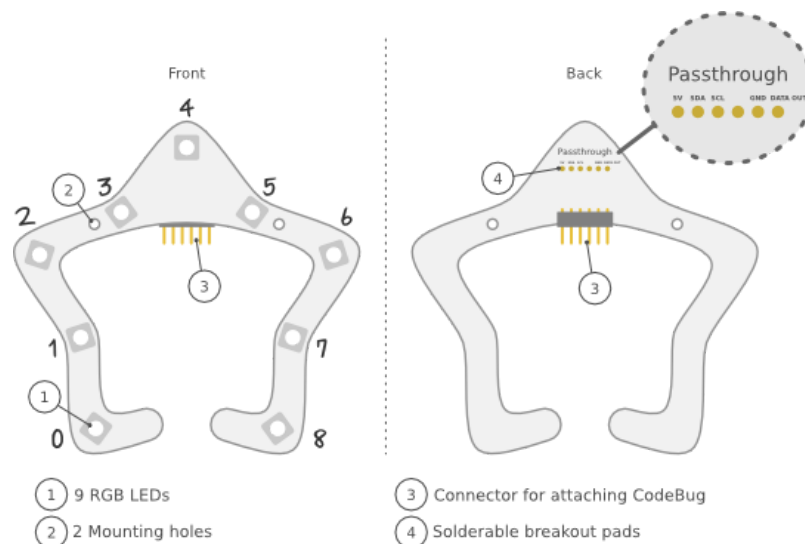
ColourStar technical diagram

Connecting ColourStar

*It is recommended that you connect ColourStar **after** plugging the Micro USB cable into CodeBug™. Disconnect ColourStar **before** unplugging the Micro USB from your CodeBug™. Always disconnect the power and take care when plugging in or unplugging devices from CodeBug™.*

To fit ColourStar to CodeBug™, place the ColourStar on a table with the LEDs facing you. With CodeBug™ LED side up, gently slide CodeBug™'s expansion socket onto the 6 pin connector on the ColourStar.
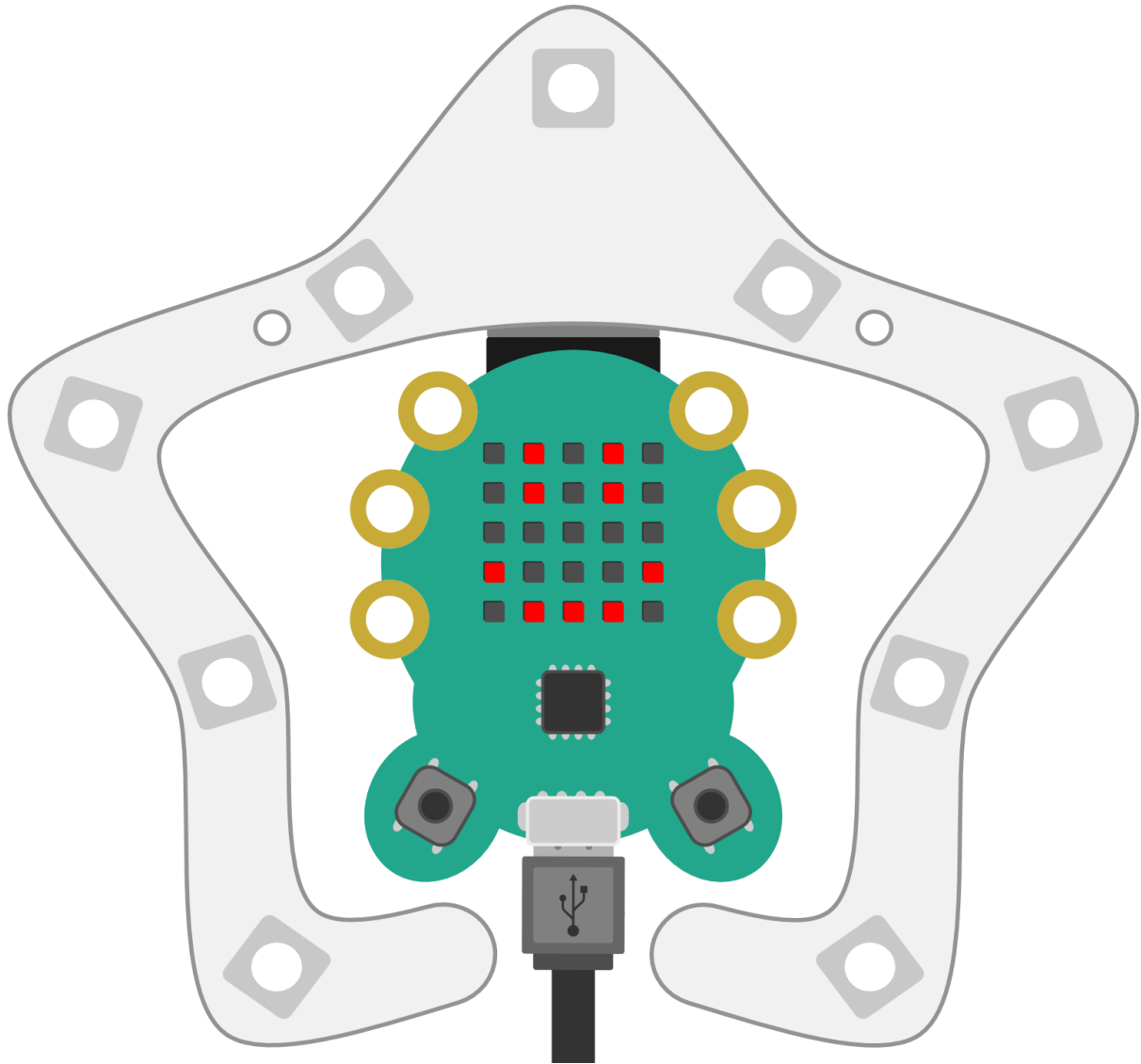
ColourStar connected to CodeBug™

Programming CodeBug™ ColourStar

ColourStar is controlled using CodeBug™, which means to turn a light on ColourStar, you need to create a program for CodeBug™. It's easy to program CodeBug™ through the website http://www.codebug.org.uk/create. If you've never programmed CodeBug™ before, visit the getting started tutorial on the website to learn more.

On the 'create page', you'll also find an emulator, which shows on screen what will happen before you run your program on the physical CodeBug™.

Show the ColourStar emulator

To show the emulated ColourStar:
- Create a new program http://www.codebug.org.uk/create/codebug/new/
- Click the Green cog in the top right corner of the CodeBug™ emulator box
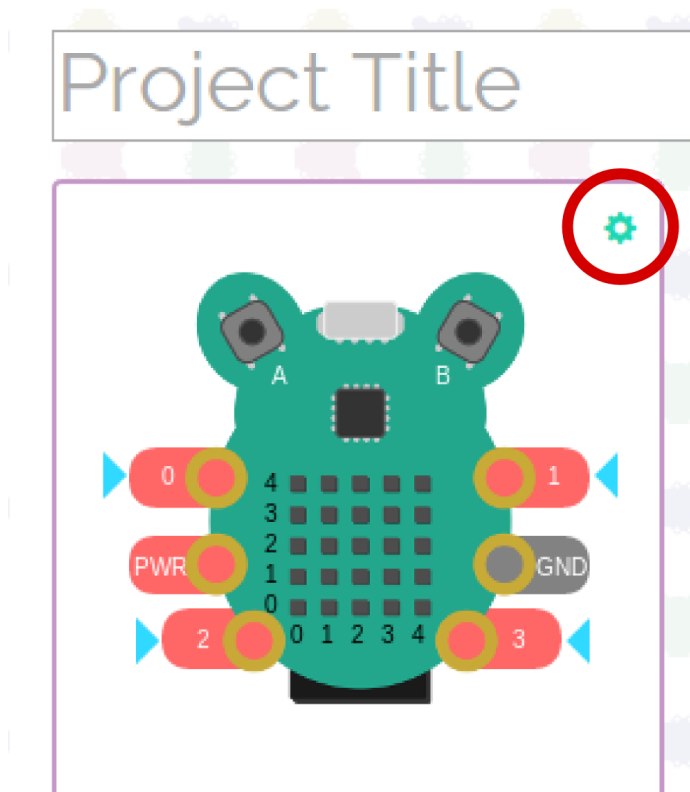
Show the CodeBug™ emulator setting by clicking the cog (circled in red)

- On the pop up that appears, tick the **Colour Tail** check box and then click the **Star** radio button
- Click the Apply button

Emulator Settings ✖

CONNECTED HARDWARE PER PROJECT

☐ Colour Tail   ⓘ Order Colour Star and GlowBugs here

   ○ Star   ⦿ GlowBugs × 5   ○ GlowBugs × 10
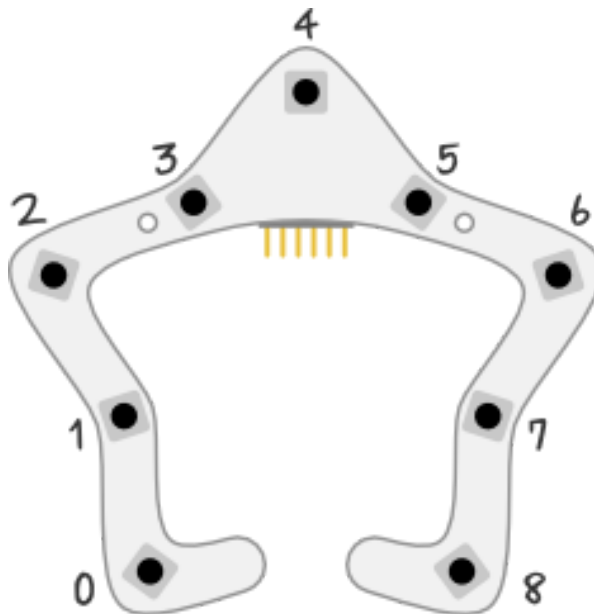
EMULATOR OPTIONS PER USER

☑ Show leg controls

CLOSE   APPLY

Enable ColourStar hardware

ColourStar emulator; shows the colour each of the 9 lights will shine

Creating your first program

Now you have an emulated ColourStar displayed you are ready to create your CodeBug™ program to control the lights.

To turn a light on you need to to add a block from the Colour Tail menu. These blocks need to know the number of the light (or pixel) you you want to control and the colour you want to set it. On the ColourStar, the pixels are numbered clockwise, starting from zero[1].
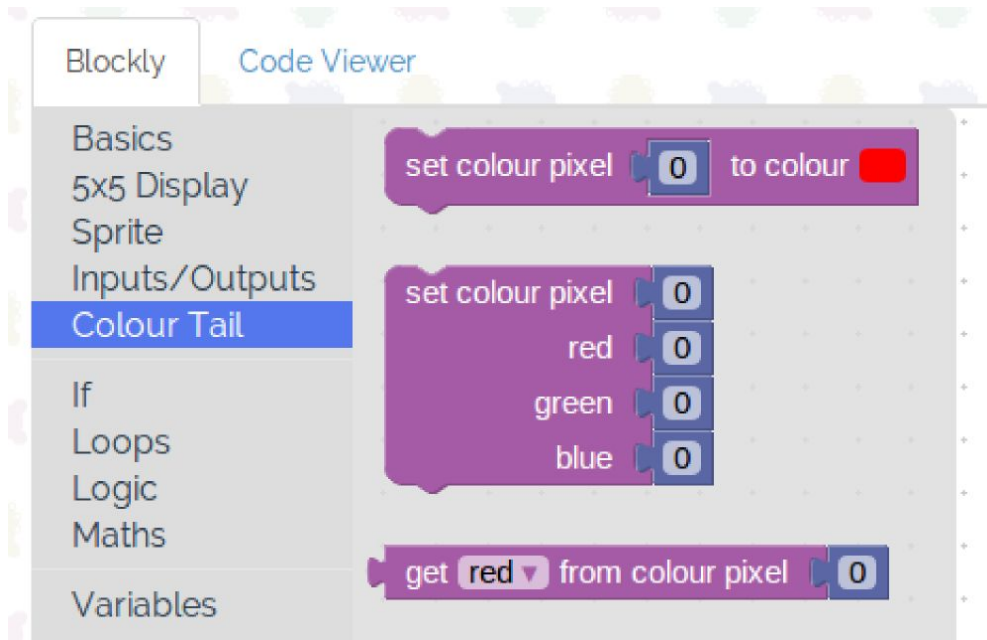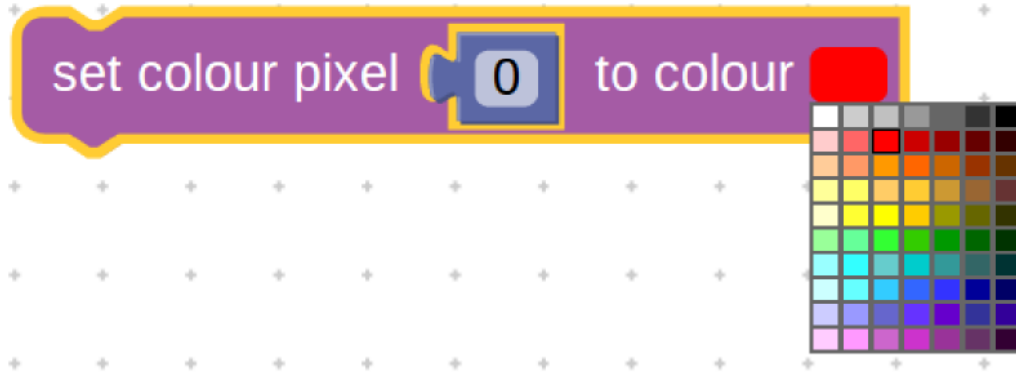

Colour Tail block menu opened

To set the colour of one of the ColourStar's pixels, you can use one of two blocks:

The **set colour pixel to colour** block allows you to specify the colour of a pixel on the star, from a palette of common colours.

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[1] http://www.howtogeek.com/149225/why-do-computers-count-from-zero/ or
https://en.wikipedia.org/wiki/Zero-based_numbering

**set colour pixel to colour** block with palette open

The **set colour pixel block** allows you to specify how red, green and blue are mixed together. You can get more colours than those shown in the palette and it also makes it easy for you to use **number** or **variable** blocks for each of the 3 component colours.
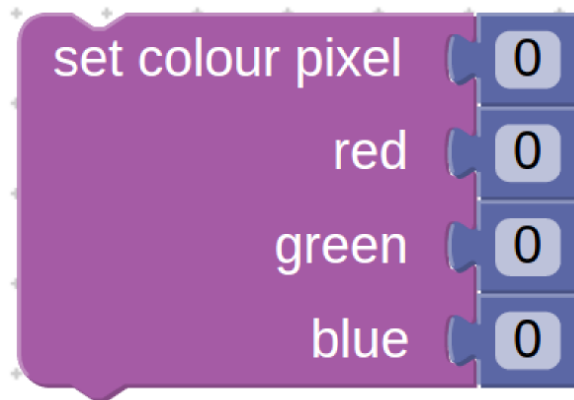
set colour pixel block

Sample Program

Here's a sample program that turns lights around the star red then lime green in sequence.
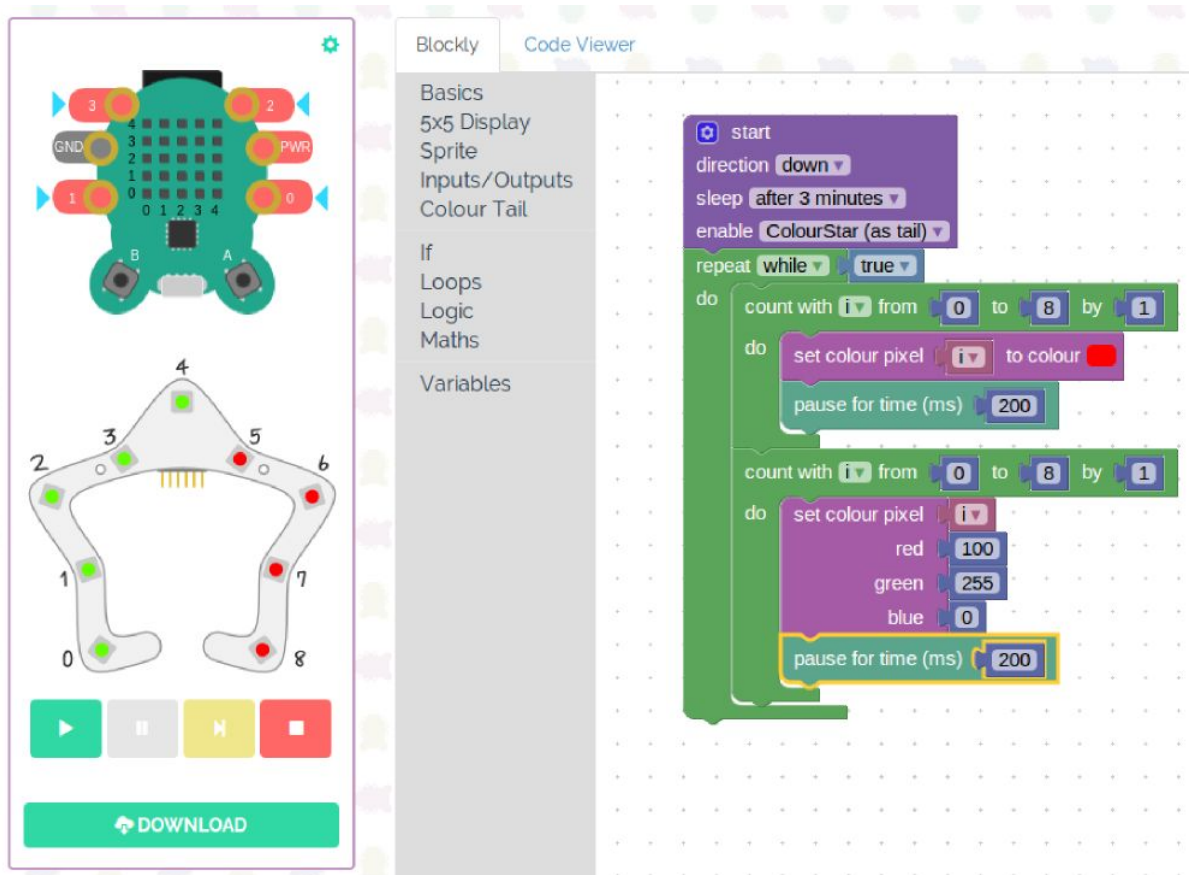
Sample ColourStar program running in the emulator

Transfer your program for controlling ColourStar onto your CodeBug™ just as you would any other onto your CodeBug™ program. Refer to the Download instructions.

When reloading programs, to avoid having to unplug the Micro USB from CodeBug™, unplug the end of the Micro USB cable that plugs into your computer.

Controlling CodeBug™ ColourStar in Tethered mode

CodeBug™ ColourStar can be controlled with CodeBug™ in USB Tethered mode from your computer.

Refer to the CodeBug™ Tethered mode documentation for more information.

Powering ColourStar by USB

CodeBug™ and ColourStar can be powered from most 5V USB power supplies, e.g. computer USB ports, phone chargers, USB battery packs etc.

The bright full-colour LEDs on ColourStar require more power than CodeBug™ (up to 540mA on full white brightness). Always make sure you are delivering enough power to CodeBug™ for the ColourStar. Coin batteries will not work with ColourStar; instead we recommend USB charger packs for portable use.
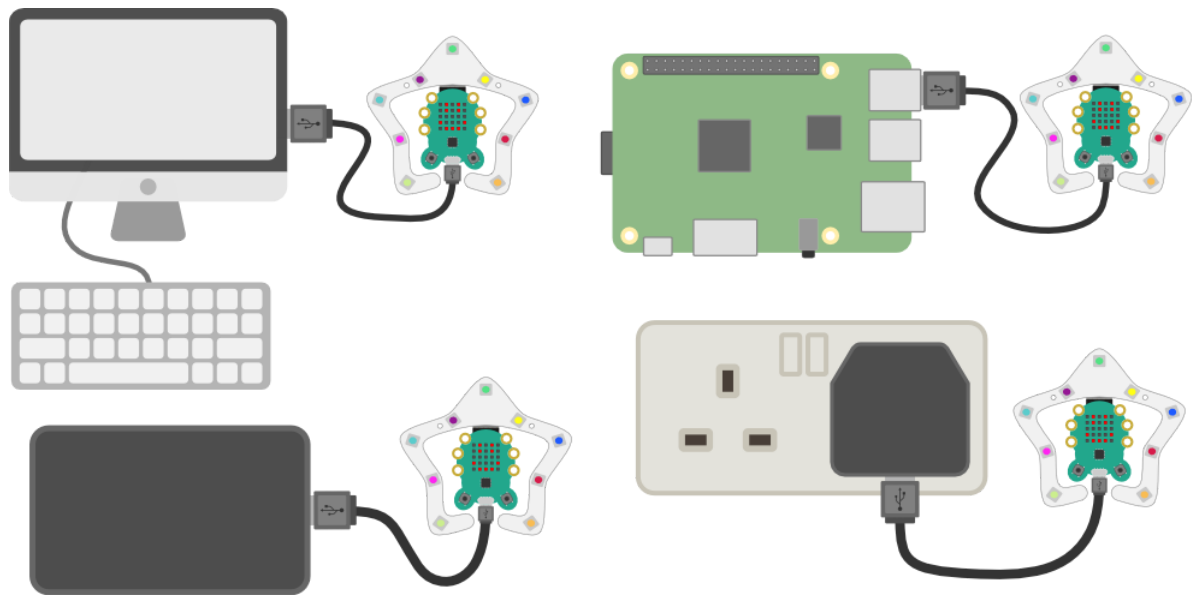
Different ways of powering CodeBug™ and ColourStar

Activities

For fun things to make and do for all skill levels, check out the vast number of engaging CodeBug™ ColourStar activities and walkthrough guides on the CodeBug™ website. Visit http://codebug.co.uk/learn/ for ideas and easy to follow step by step instructions.
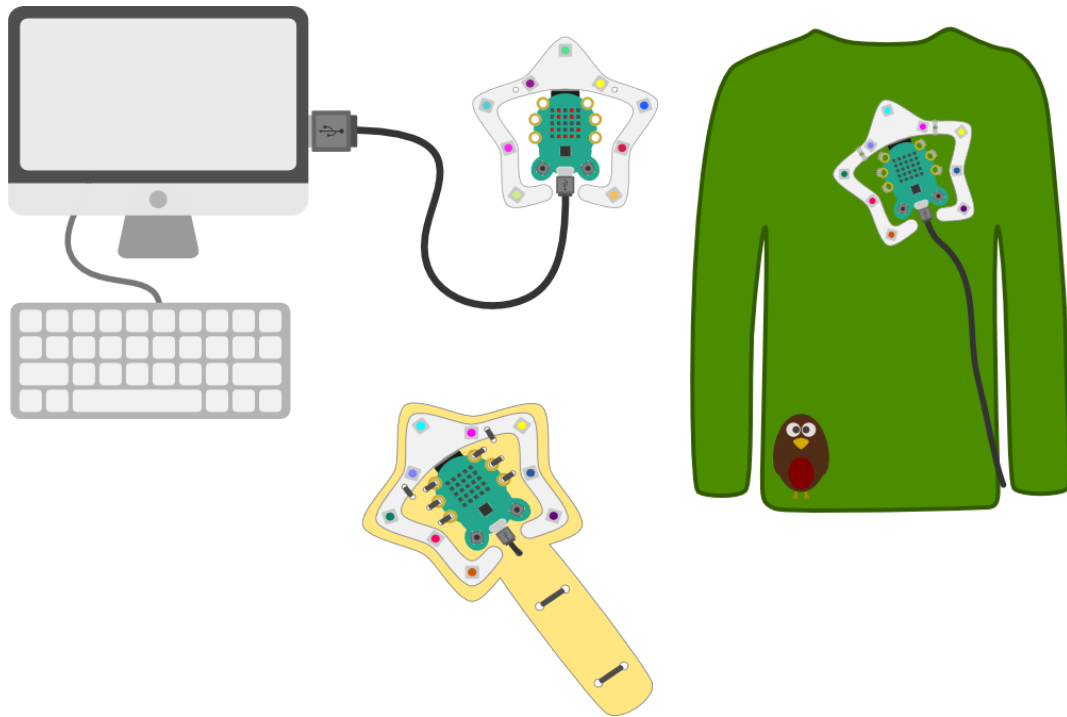
Examples of ColourStar activities available from http://www.codebug.org.uk

Warnings

- Choking hazard.
- Children should not use CodeBug™ ColourStar without adult supervision.
- Do not apply pressure to the expansion port connector on both CodeBug™ and CodeBug™ ColourStar.
- CodeBug™ ColourStar is not intended for use in life critical systems.
- Do not expose to water, moisture or extremes of temperature.
- Take care whilst handling to avoid mechanical and electrical damage to the device and connectors.
- Take suitable precautions to minimise risk of causing damage by electrostatic discharge.
- Connection to unapproved devices may affect compliance or result in damage to the device and invalidate any warranty.
- Connections to CodeBug™ tails should only be made with the power supply disconnected.
- Ensure that CodeBug™ devices are powered by a suitably rated power supply that complies with the relevant regulations and standards applicable to the country of intended use.
- It is the user's responsibility to ensure if the device is fitted in a suitable enclosure that it offers appropriate protection to ensure safe and proper operation.

Compliance Information

- This CodeBug™ ColourStar device complies with the relevant provision of the RoHS Directive for the European Union. In common with all Electronic and Electrical Equipment the CodeBug™ device should not be disposed of in household waste. Alternative arrangements may apply in other jurisdictions.
- CodeBug™ ColourStar is considered a passive device. LEDs used on CodeBug™ ColourStar meet relevant CE requirements.

http://www.codebug.co.uk

CodeBug™ ColourStar is designed in the UK by OpenLX SP Ltd. Registered Office Unit 7 Salmon Fields, Royton, Oldham OL2 6HT.

Manufactured in the UK.
Designed in the UK.

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