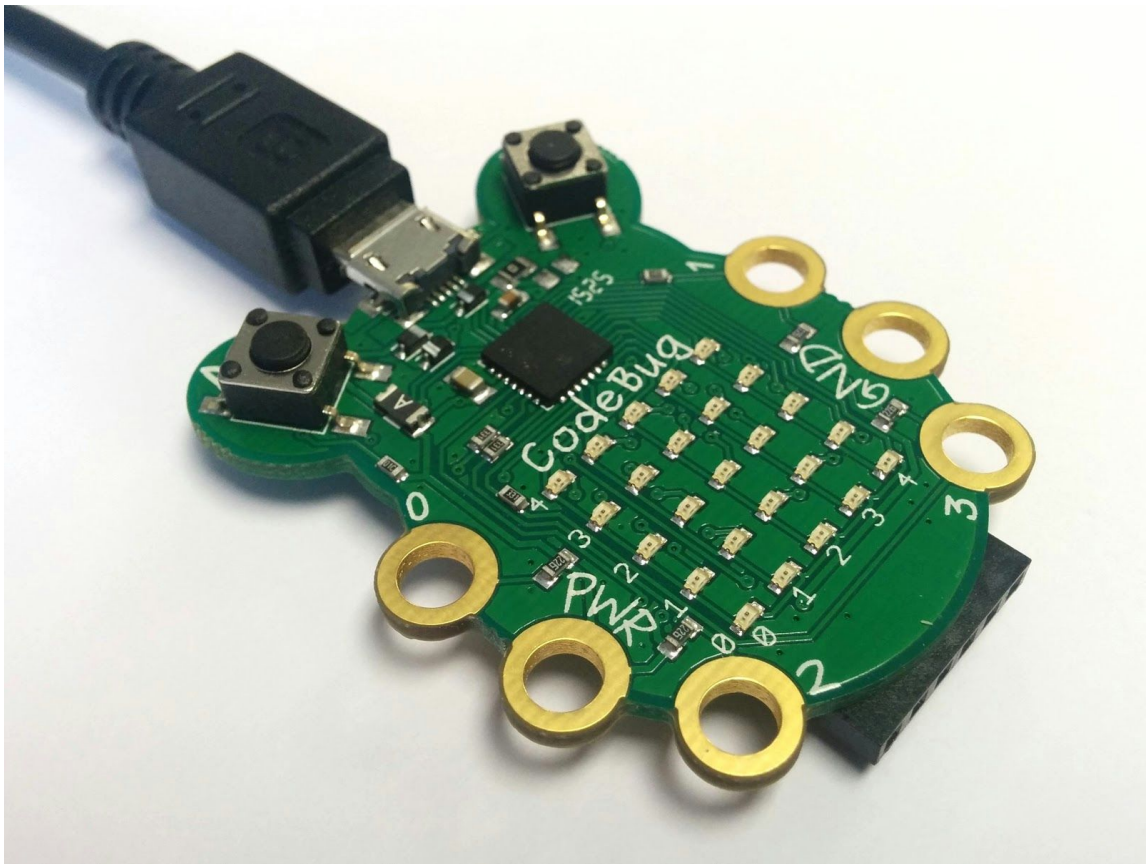
CodeBug™



CodeBug™ is a fun, engaging, entry-level introduction to coding, physical computing and electronics.
In just a few clicks you can program the versatile little CodeBug™ wearable computer to display your own message. And you'll be sure to get everyone's attention when you pin your customised, flashing CodeBug™ to your clothes!

Before using any CodeBug™ device always read the instructions and precautions carefully.

Product Highlights

Uses:

- Introductory platform for learning programming and electronics
- Wearable projects
- Scrolling message display
- Plugs on Raspberry Pi GPIO as add-on,
- Ideal for Twitter, Facebook and Minecraft etc. notifications

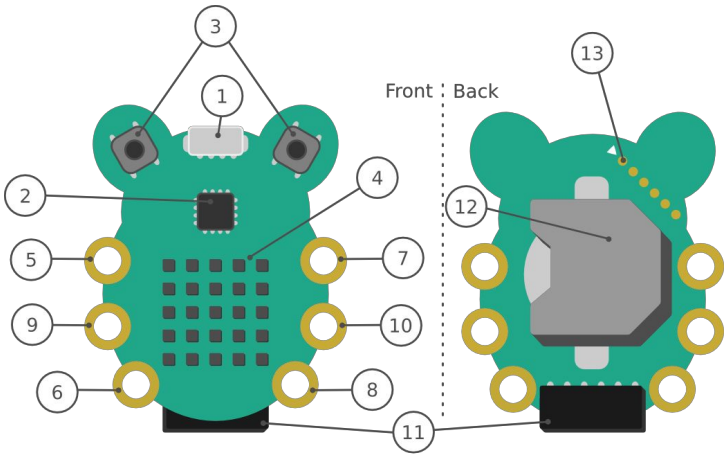
- Digital crafts – create interactive greetings cards, key rings, board games and more
- Create handheld digital games
- Starting point for Internet of Things devices
- Versatile Input/Output interface – connect lights, switches, sensors, motors and more
- Provides connectivity to desktop computers in tethered mode
- Add touch sensitive inputs to your computer (similar to MaKey MaKey™)

Features:

- Simple and quick to get started – just plug in and program!
- 25 Red LED grid
- 2 user buttons
- CR2032 Battery holder for power
- 6 croc-clippable/banana-pluggable leg terminals
- Touch sensitive inputs
- Drag and drop programming from web browser
- Online support, community and educational tutorials
- Appears as a USB drive – no drivers to install
- Windows, Mac and Linux compatible
- Can be used with CodeBug™ add on modules (Tails) for expansion
- Can be tethered to be controlled from a computer or tablet
- Micro USB connector

Technical Specifications:

- Power: 3V from battery or 5V from USB
- Micro USB for programming and power
- Optional CR2032 coin battery powered
- Approx 39mm wide x 47mm high
- PCB thickness 1.7mm
- Thickness including battery holder and buttons 9.8mm
- I/O Sink/Source 25mA
- Expansion header including I2C/SPI/UART
- By default, sleeps after 3 minutes to conserve energy



1. Micro USB socket for:
   -Programing
   -Tether mode
   -Power
2. Microchip Technology Inc PIC 18F
3. 2 Push buttons for:
   -Users' program control
   -Mode selection
4. 5 by 5 Red LED matrix, individually addressable

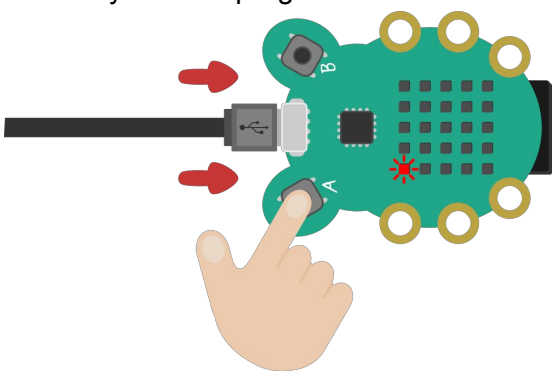
5-8. Touch sensitive inputs/outputs croc-clips connectors

9. Power croc-clip connector
10. Ground croc-clip connector
11. Extension connector
12. Coin cell battery holder (CR2032)
13. PIC firmware programming connector

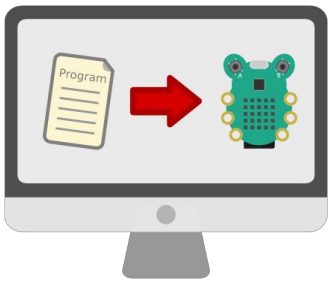
Programming CodeBug™

1. Visit codebug.co.uk/gettingstarted and follow the instructions to create your first CodeBug™ program, then click the Download button.

2. Hold down button A while plugging CodeBug™ into your computer via the Micro USB cable. Hold the button until the light in the corner of CodeBug™'s display flashes to show it's ready to receive your new program.

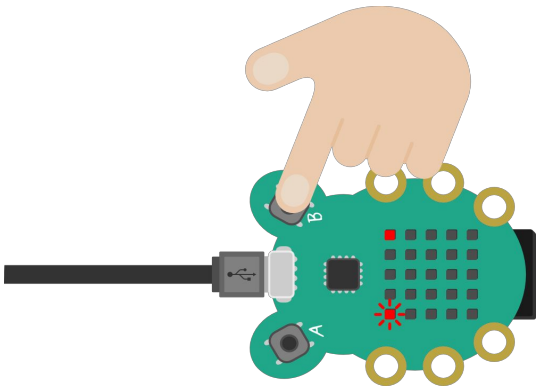


3. CodeBug™will appear as a USB drive. Release button A. Copy the program file you downloaded in step 1 onto the CodeBug™ drive by dragging and dropping it.



When your program has downloaded to CodeBug™, the light nearest button B will turn on.

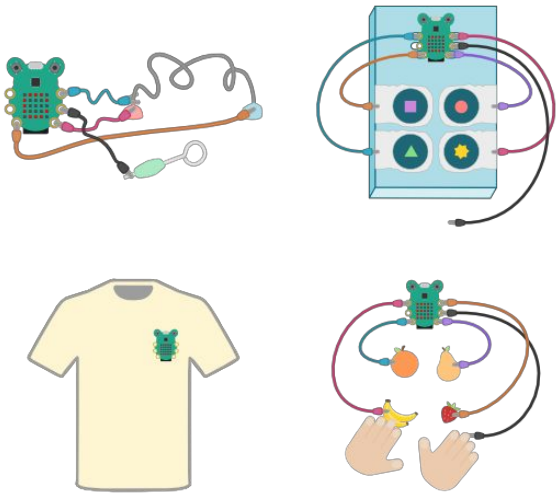
4. Press button B to reset CodeBug™ and start running your program.



You can reprogram your CodeBug™ with other programs by repeating the steps above.

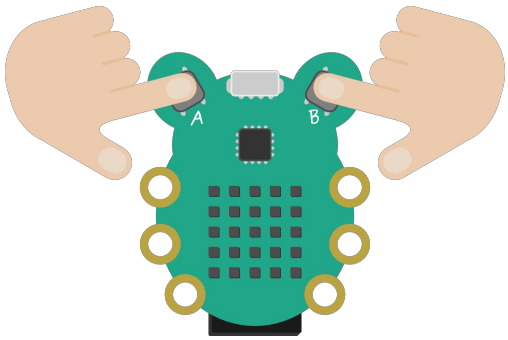
Activities

There are a huge number of engaging CodeBug™ activities and walkthrough guides for all skill levels on the CodeBug™ website. Visit http://codebug.co.uk/learn/ for ideas and step by step instructions.



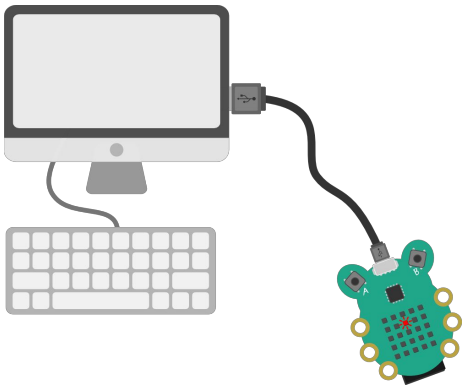
Puttin CodeBug™to sleep

CodeBug™has a sleep mode which uses very little energy.
To put CodeBug™ to sleep, hold down buttons A and B together for 5 seconds. Press either button again to wake CodeBug™. Programs also sleep after 3 minutes of inactivity by default.



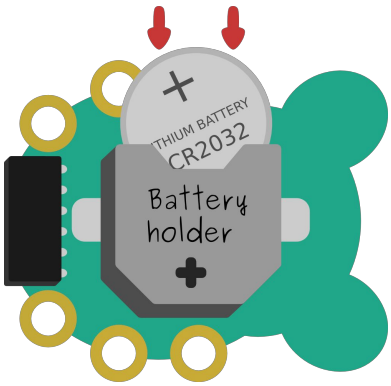
Powering by USB

To power CodeBug™ over USB, connect it to a computer or USB power supply via the Micro USB cable.



Optionally fitting a battery

CodeBug™ can optionally be fitted with a CR2032 battery to power it. Gently slide the battery fully in, making sure the positive side of the battery is facing outwards.

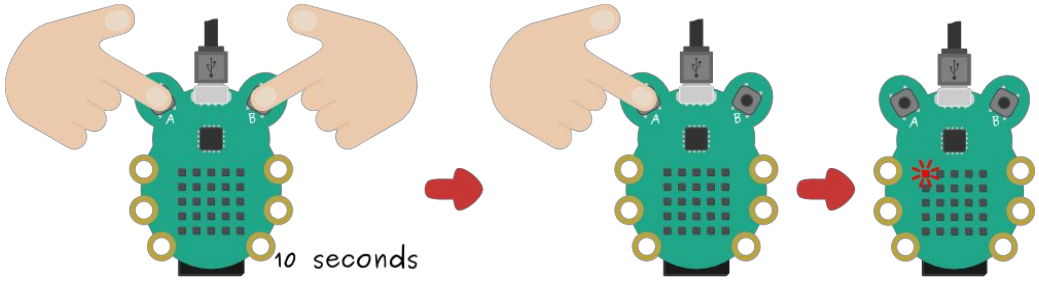


Loading a program with battery inserted

When a battery is in CodeBug™, CodeBug™ will always be powered and running. To enter programming mode when CodeBug™ is being powered by a battery:

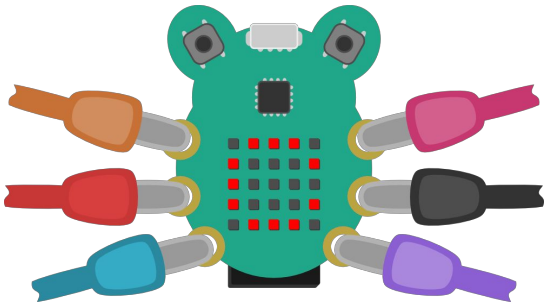
1. Plug CodeBug™ into your computer via Micro USB
2. Press and hold both buttons together, for at least 10 seconds
3. Let go of button B, making sure you keep A pressed
4. The programming indicator LED will begin to flash
5. Let go of button A

You can then load your programs as normal by dragging them onto the CodeBug™ device.



Connecting to the legs

CodeBug™ has six electrical legs that can be used with external electronic components such as LEDs and switches. You can connect to the legs with croc-clips, banana-plugs or conductive thread. The centre two legs provide power and the other four legs are selected as input or outputs in your code. The state of the inputs can be read, and the outputs turned on or off from statements in your code.

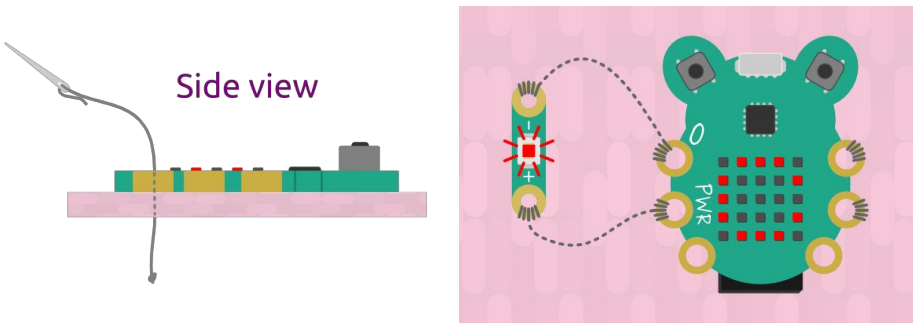


Touch Sensitive Inputs

The inputs are touch sensitive – an input leg will detect when it is being touched or held by a human hand (or most objects containing water, like fruit) if the ground leg is also being held.

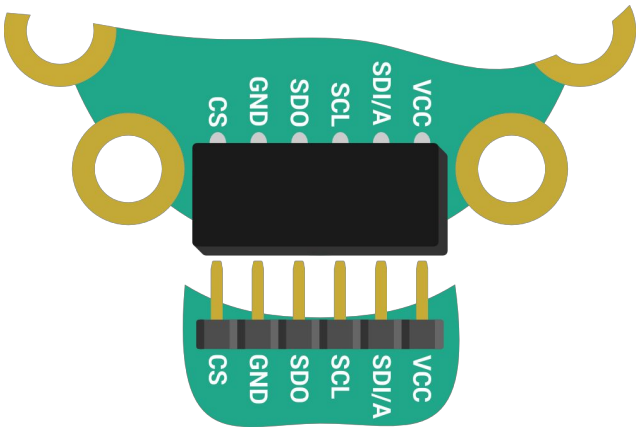
Sewing CodeBug™

When sewing CodeBug™ to fabrics with conductive thread, to ensure a good electrical connection and to keep CodeBug™ secure, make sure you loop around the leg a number of times.



Fitting expansions

The expansion port provides I2C, SPI and UART connectivity to possible add-ons. Add-on modules (called Tails) are available to extend CodeBug™'s capabilities. To fit an optional add on module (available separately), gently slide the expansion pins into the expansion port, making sure the pin labels match up.

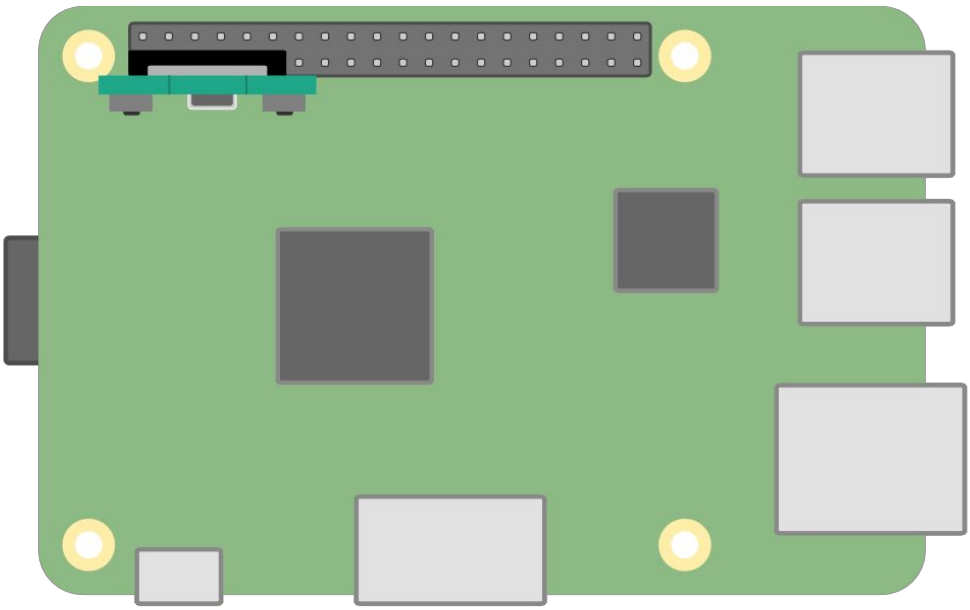


Fitting on a Raspberry Pi

WHEN FITTING ON THE RASPBERRY PI GPIO PINS, NEVER CONNECT THE MICRO USB TO CodeBug™ OR USE WITH A BATTERY.

CodeBug™ can plug straight onto the GPIO pins on any Raspberry Pi version 1 or 2 and can be controlled using Python3.

Follow http://codebug.co.uk/l/raspberry-pi for detailed instructions.



CodeBug connected to GPIO on Raspberry Pi v2

Warnings

- Choking hazard.
- Children should not use CodeBug™ without adult supervision.
- Do not power CodeBug™ using its legs, USB and/or battery at the same time.
- Do not apply pressure to the expansion port connector.
- CodeBug™ 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™ 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.
- The CodeBug™ device module is CE marked. It is a class B product. EMC emission tests were performed with CodeBug™ powered by battery, and USB. ESD handling precautions should be observed. CodeBug™ may be considered a component if integrated into another product. Any person designing or developing a product that uses one or more CodeBug™ devices is responsible for ensuring compliance and that any modification to the CodeBug™ device or inter-connection of other elements and devices does not change compliance.
- This Class B digital apparatus complies with CAN ICES-3 (B). Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

http://www.codebug.co.uk

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

CodeBug™ is distributed by Premier Farnell UK, 150 Armley Road, Leeds LS12 2QQ, UK

Manufactured in the UK and PRC.
Designed in the UK.

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