

CODE CLUB

WHY TEACHING DIGITAL SKILLS IS ESSENTIAL

JONATHAN RELF

DIGITAL SKILLS GAP

August 2020

“Employers struggled to fill one-third of vacancies last year due to lack of digital competency, highlighting a significant discrepancy between skill supply and demand in the UK.”

HAYS Recruiting experts worldwide



Free training

Premium training

Benefits

3 in 20 UK Employers Face a Digital Skills Gap



<https://hayslearning.co.uk/2020/08/18/3-in-20-uk-employers-face-a-digital-skills-gap/>

PARLIAMENT

June 2016

DIGITAL SKILLS ARE BECOMING INCREASINGLY ESSENTIAL FOR GETTING ACCESS TO A RANGE OF PRODUCTS AND SERVICES. HOWEVER, THERE IS A DIGITAL DIVIDE WHERE UP TO 12.6 MILLION OF THE ADULT UK POPULATION LACK BASIC DIGITAL SKILLS.

THIS DIGITAL SKILLS GAP IS COSTING THE UK ECONOMY AN ESTIMATED £63 BILLION A YEAR IN LOST ADDITIONAL GDP.

Science & Technology Commons Select Committee



DIGITAL SKILLS.

PROGRAMMING.

August 2011



MacTaggart Lecture
Eric Schmidt, Google Chairman
Edinburgh International TV Festival

August 2011

**THE COUNTRY THAT INVENTED THE COMPUTER IS
"THROWING AWAY YOUR GREAT COMPUTER HERITAGE"
BY FAILING TO TEACH PROGRAMMING IN SCHOOLS.**

**Eric Schmidt, Google Chairman
Edinburgh International TV Festival**

<https://www.theguardian.com/technology/2011/aug/26/eric-schmidt-chairman-google-education>

August 2011

"I WAS FLABBERGASTED TO LEARN THAT TODAY, COMPUTER SCIENCE ISN'T EVEN TAUGHT AS STANDARD IN UK SCHOOLS,"

"YOUR IT CURRICULUM FOCUSES ON TEACHING HOW TO USE SOFTWARE, BUT GIVES NO INSIGHT INTO HOW IT'S MADE."

**Eric Schmidt, Google Chairman
Edinburgh International TV Festival**

<https://www.theguardian.com/technology/2011/aug/26/eric-schmidt-chairman-google-education>

November 2011

Computer lessons are out of date, admits government

ICT teaching in English schools needs reform, says minister in response to review of video gaming and visual effects industries



▲ Google's chairman, Eric Schmidt, said in August he was 'flabbergasted' that computer science was not taught as standard in UK schools. Photograph: Murdo Macleod

“David Cameron later said Schmidt was right and admitted that Britain was not doing enough to teach the next generation of programmers.”





sinclair

ZX81







THE GAMESMEN

Video Games are our Game

The Gamesmen Begins...

Notable Release



PONG

1972



1977

ATARI 2600™

Notable Release



Asteroids

1979



INTELLIVISION
Intelligent Television

COLECO
VISION

Notable Releases



Galaga
Donkey Kong
Frogger

1981



Founding of Electronic Arts



ELECTRONIC ARTS™



1983

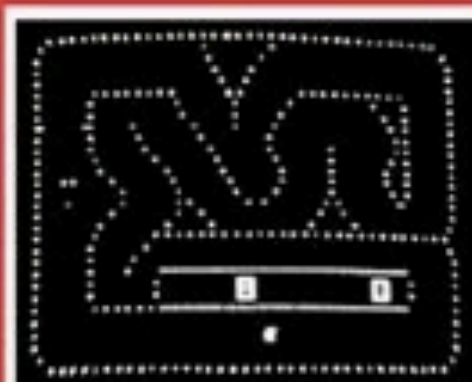
GAME
&
WATCH

Generation One

ODYSSEY

1974

Notable Releases



Grand Track 10
(First Racing Game)
Maze Wars
(First FPS)

1978

ACTIVISION®

ACTIVISION formed by
disgruntled ATARI Employees

Notable Release



Space Invaders

GAME
&
WATCH™

1980

Notable Releases



Pac-Man
Missile
Command
Defender
Centipede

Commodore

1982

Notable Releases



Dig-Dug
Joust
Pole
Position

GAME
&
WATCH



Generation Two



Penrith Store Opens



Notable Releases



Guitar Hero
God of War
F.E.A.R.



PlayStation Portable

2006

PS3
PlayStation 3

2008

Notable Releases



Super Smash Bros. Brawl
Mass Effect
GTA IV



Notable Releases

Street Fighter IV
New Super Mario Bros. Wii

Notable Releases



Playstation Move
Kinect
The Sims 3
Gran Turismo 5

NINTENDO 3DS



Wii U

2012

Generation Seven

Generation Eight



Notable Releases

GTA: San Andreas
Far Cry
Doom 3
Fable
World of Warcraft

2005

XBOX 360



Wii



2007



Notable Releases

Gears of War
Saints Row
Rainbow Six: Vegas

Notable Releases



Assassins Creed
Bioshock
Motorstorm
Rock Band

2009

PSP go

PlayStation Portable



2011



Notable Releases

Call of Duty: Modern Warfare 3
LA Noire
Batman: Arkham City

PS VITA

PlayStation Vita



ions Completed

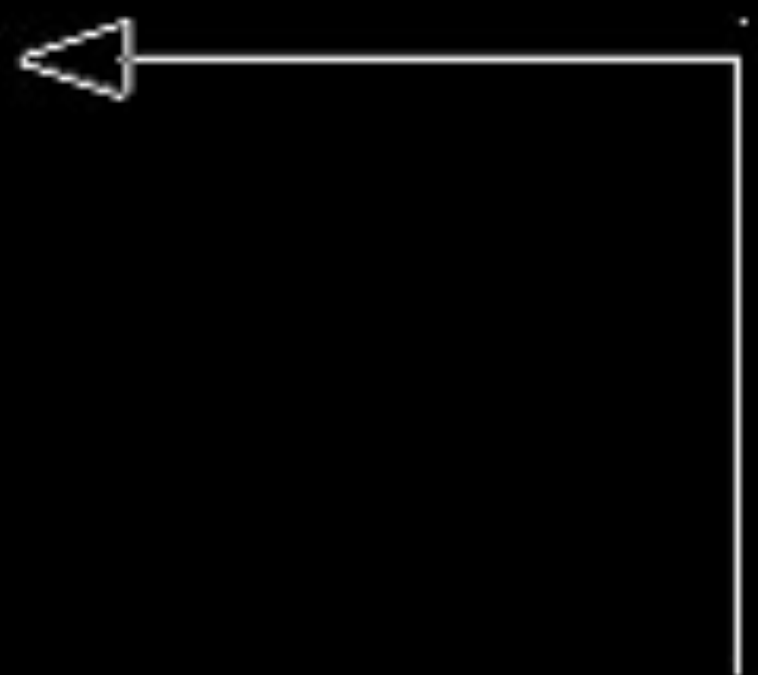


THE GAMESMEN

Computer Games is our Game







Welcome to Berkeley Logo version 6.0(exported)

? fd 100

? lt 90

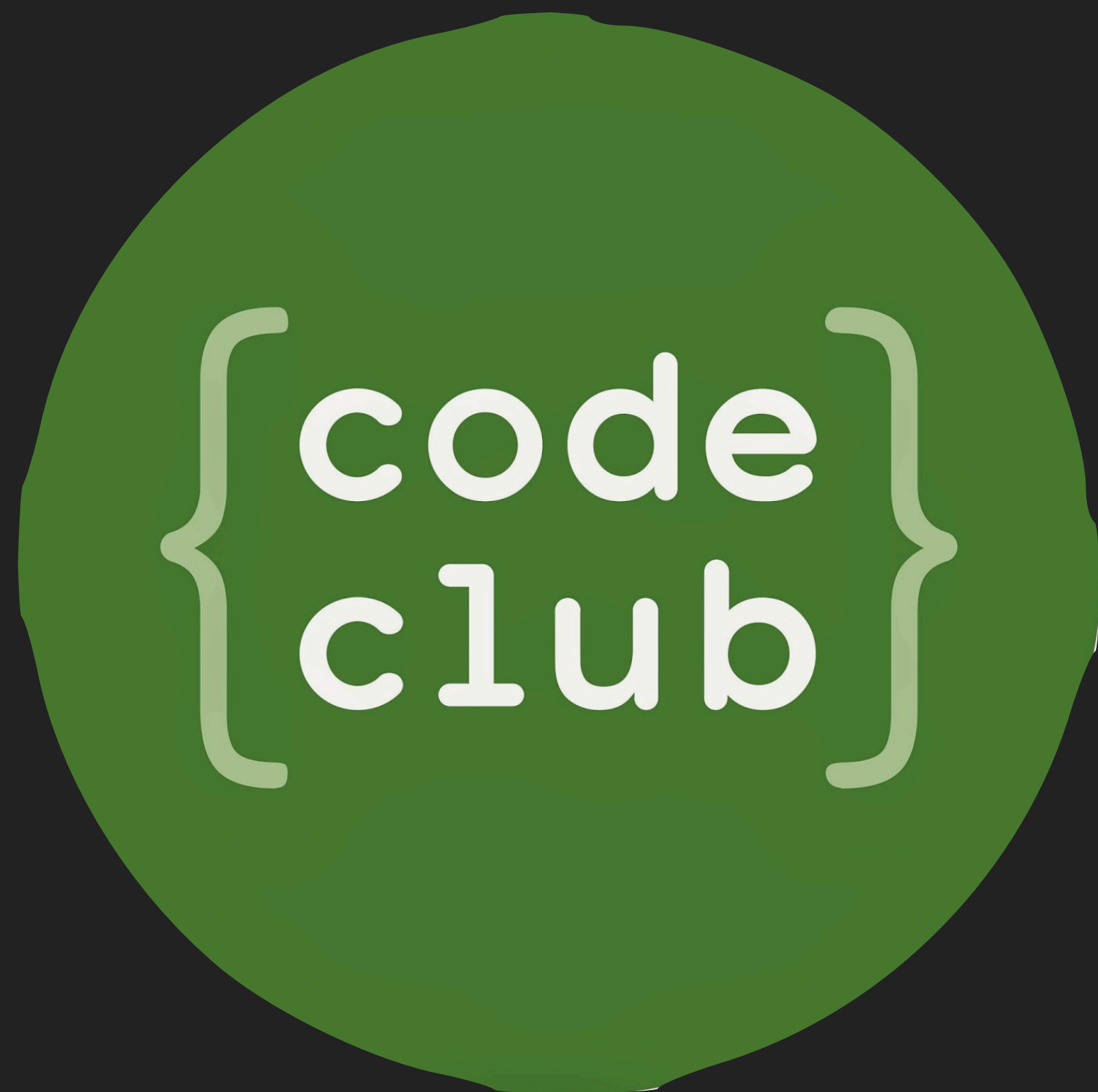
? fd 100

? 

```
>10 oswrch=&FFEE
>20 DIM memory% 100
>30 FOR Z=0 TO 3 STEP 3
>35 P%=memory%
>40 [OPTZ
>50 .start LDA#ASC"!
>60 LDX #40
>70 .loop jsr oswrch
>80 dex:BNE loop
>90 rts:] NEXT Z
>100 CALL start
>110 END
```




2012



CLARE SUTCLIFFE

LINDA SANDVIK

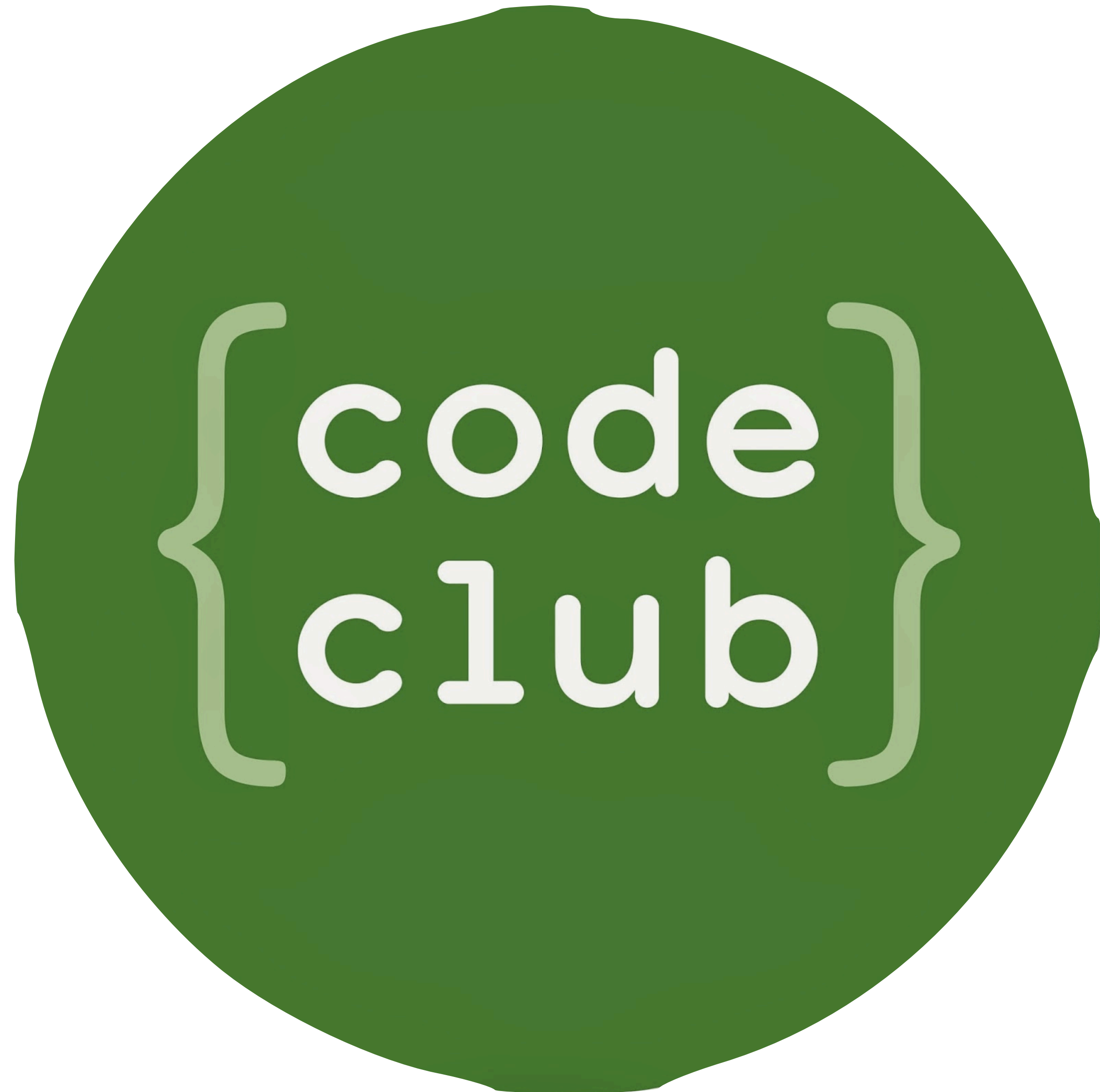
"WE'RE TAUGHT PHYSICS AT SCHOOL BECAUSE OUR WORLD IS RULED BY THE LAWS OF PHYSICS. NOW WE ARE IN A DIGITAL AGE IT WOULD BE STRANGE NOT TO TEACH CHILDREN HOW WE PROGRAM COMPUTERS TO CREATE THE APPLICATIONS AND TOOLS WE USE EVERYDAY."

Clare Sutcliffe MBE, Co-Founder Code Club

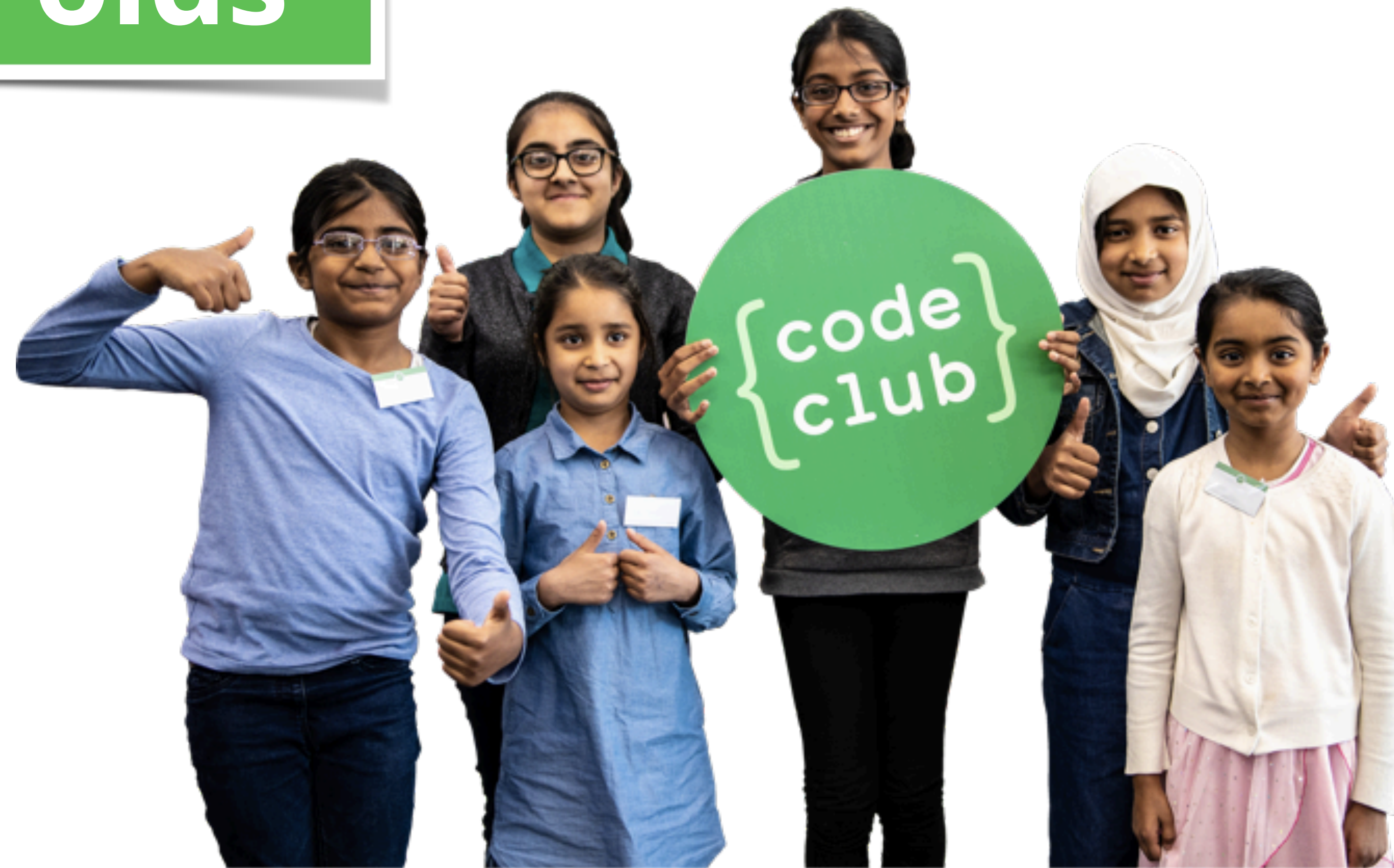
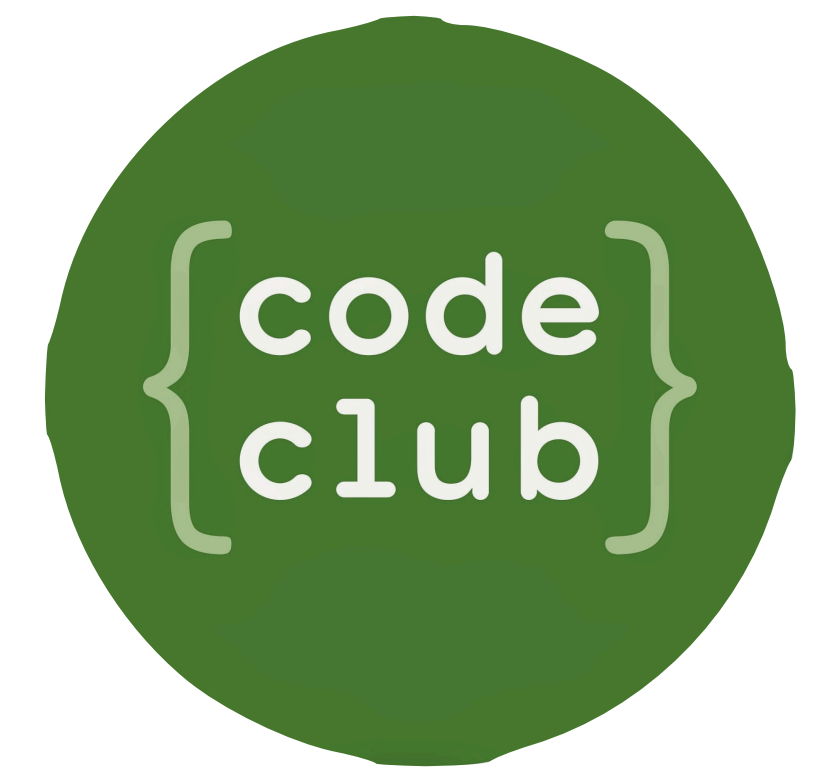
2013

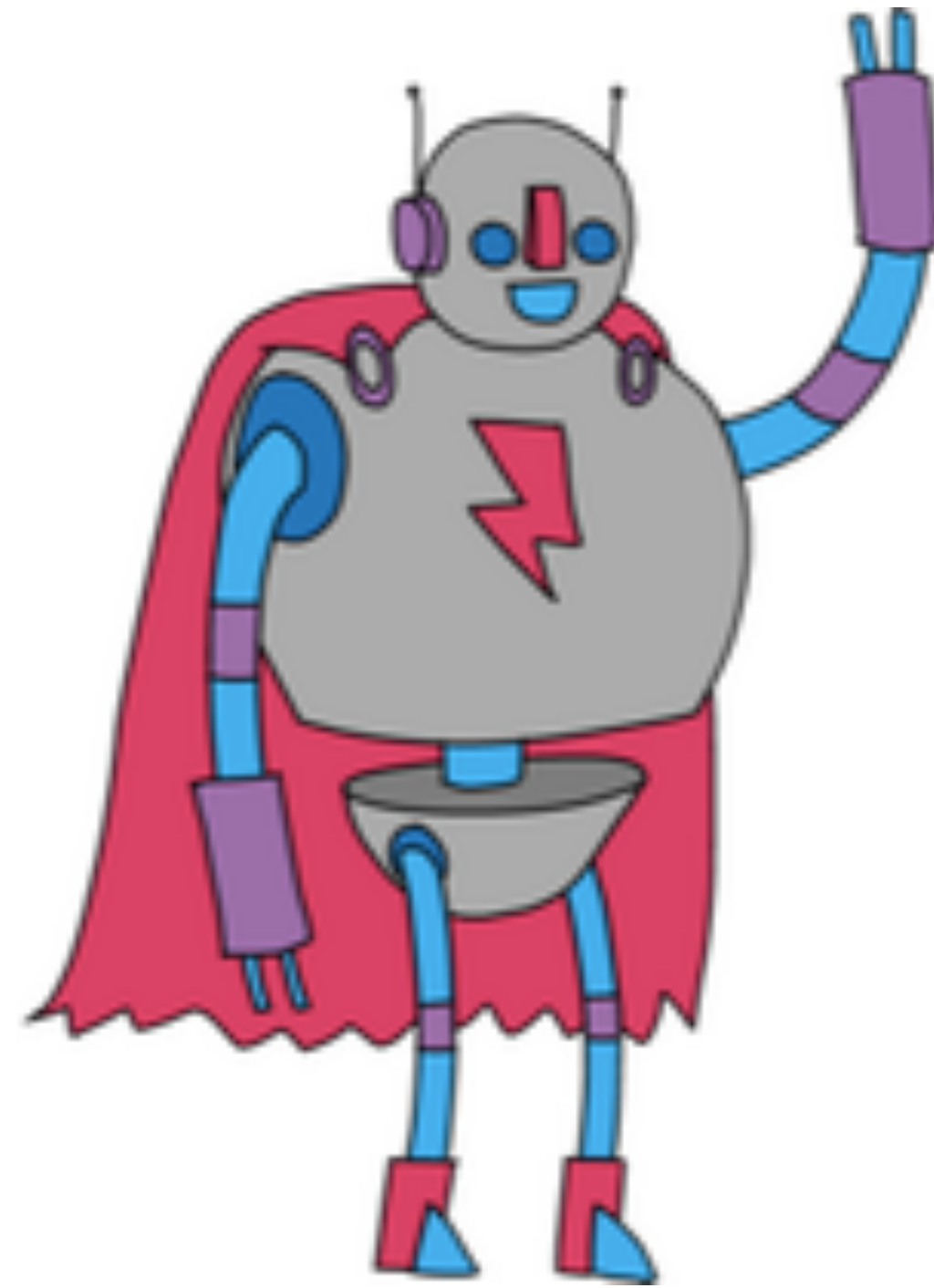
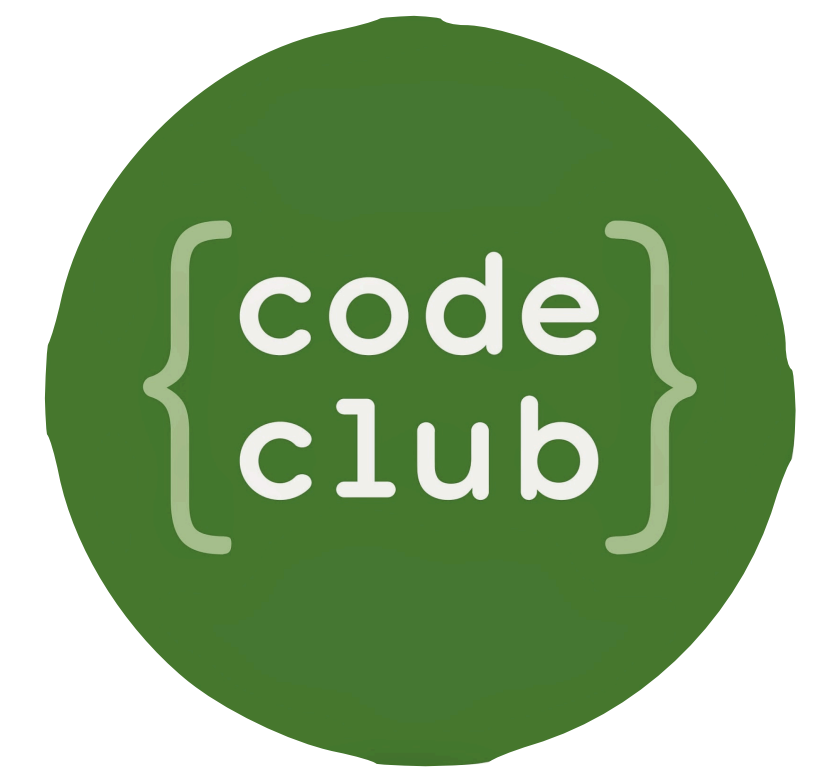
“WE CALL THE YOUTH OF TODAY ‘DIGITAL NATIVES’. WE SEE HOW EASILY THEY TAKE TO TECHNOLOGY. YOU CAN GIVE A KID A TABLET AND WITHIN MINUTES THEY’LL BE PLAYING GAMES, DOWNLOADING APPS. BUT THESE TABLETS ARE TOUCH-INTERFACES WITH ONE BUTTON. IF WE ARE AMAZED THAT KIDS KNOW HOW TO USE THEM, THEN WE ARE NOT EXPECTING MUCH OF OUR KIDS.”

Linda Sandvik, Co-Founder Code Club



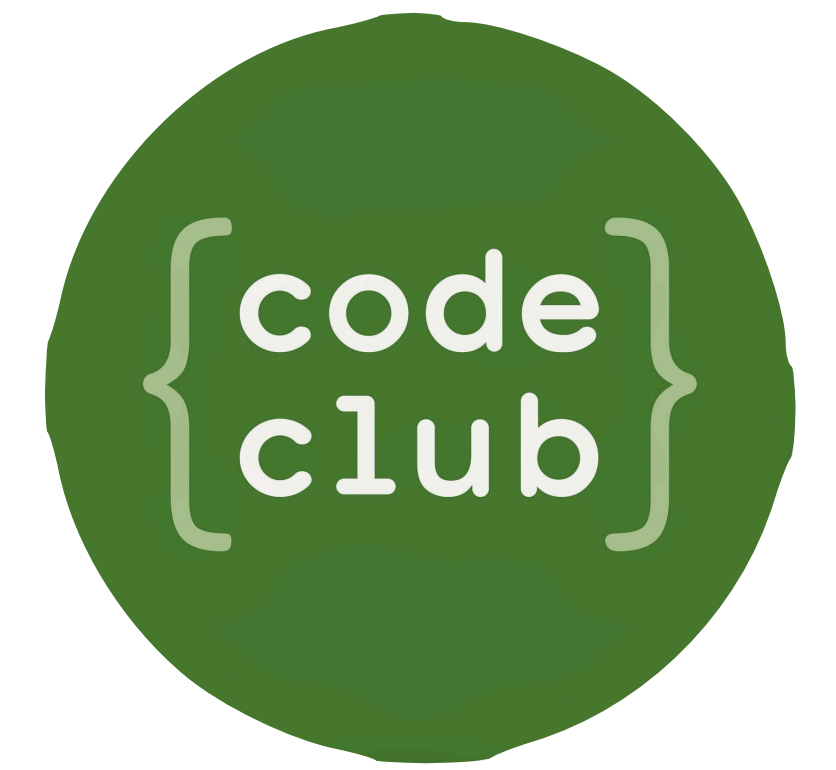
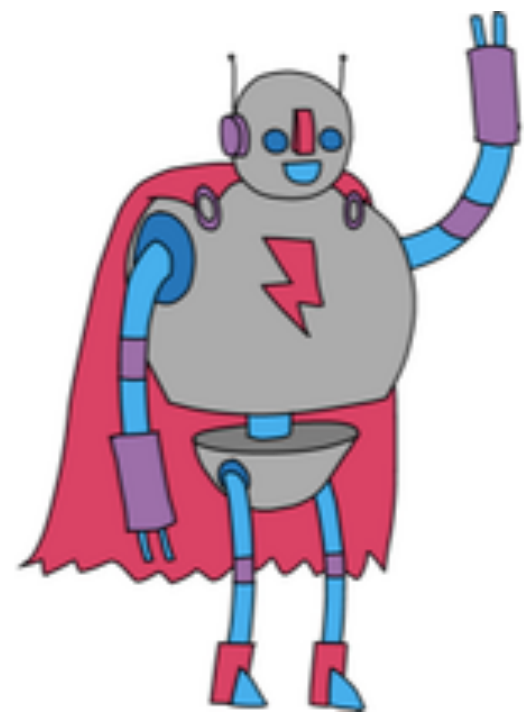
A global network of
free coding clubs
for 9–13 year olds





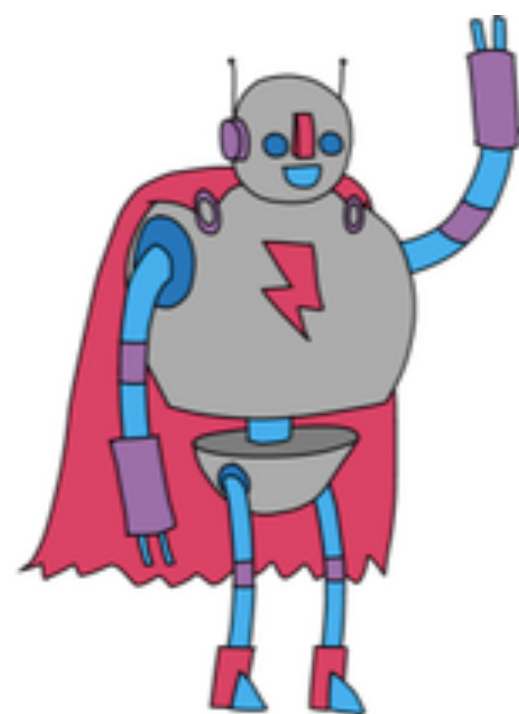
Enthusiastic people

Give one hour a week



Local school

Offers space and equipment

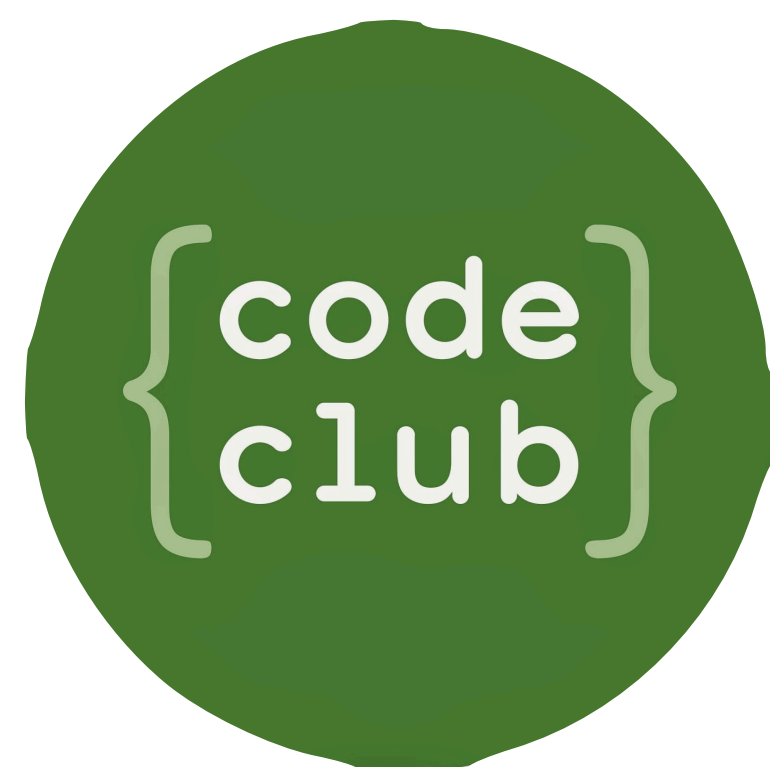
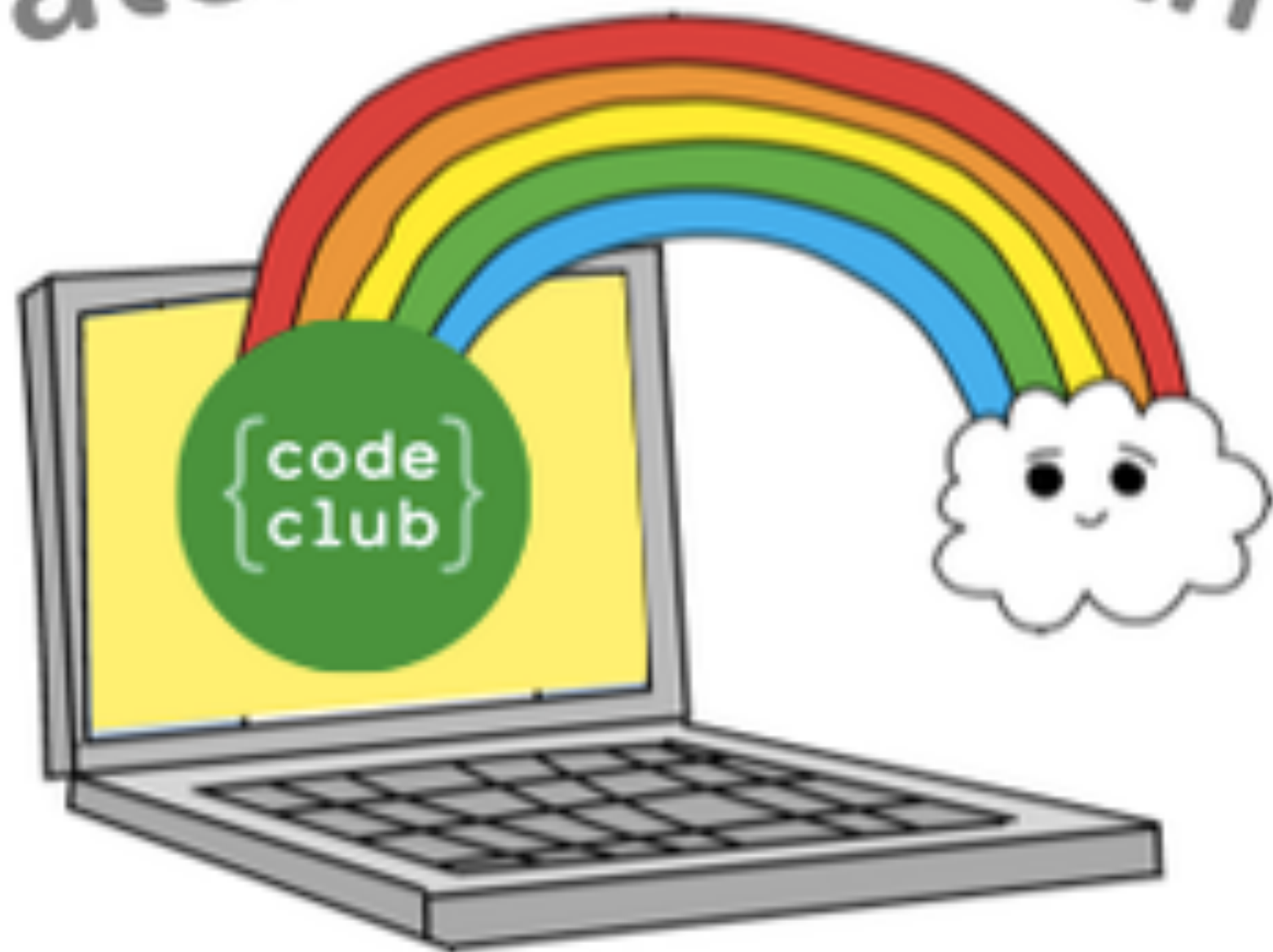


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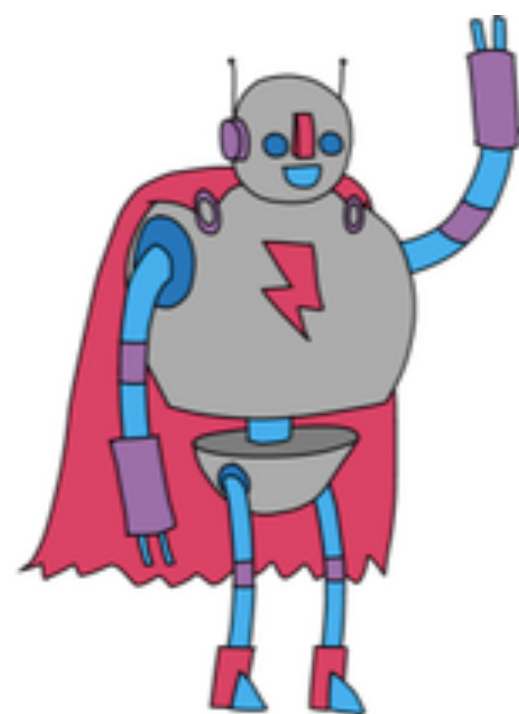
Scratch

<html>



Free resources

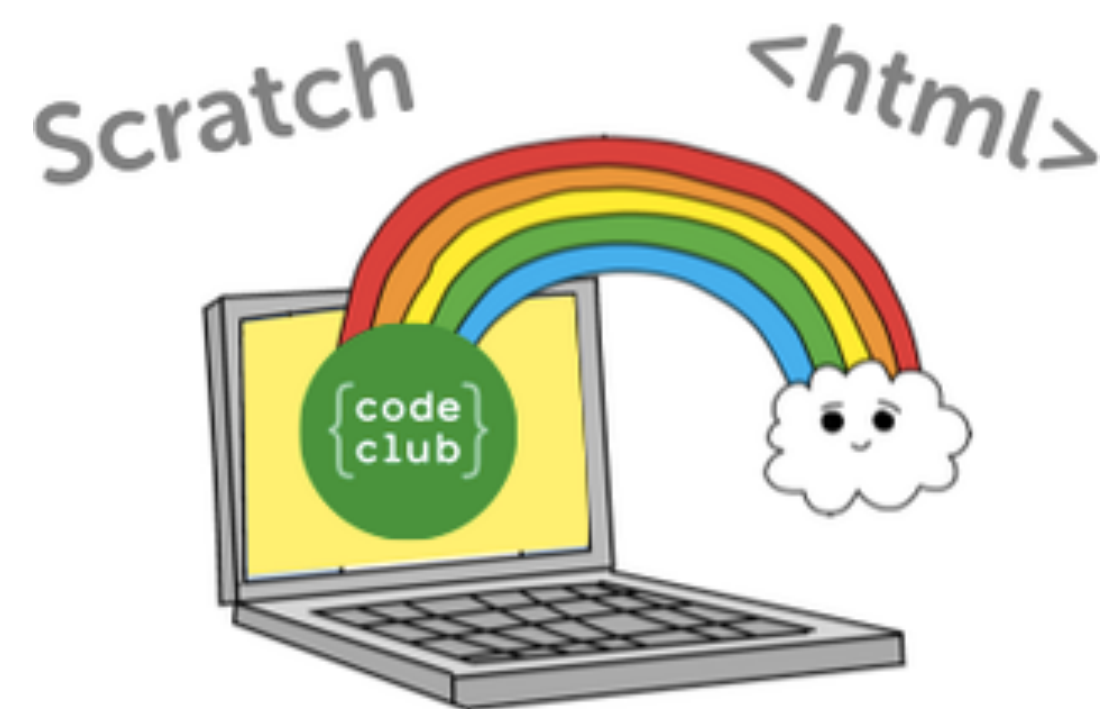
Projects and support
from Code Club



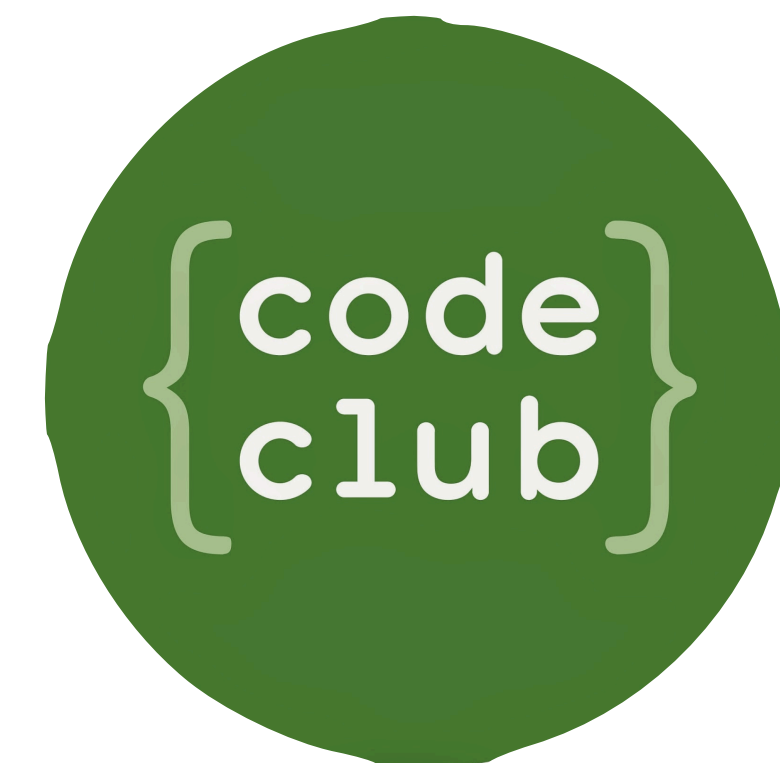
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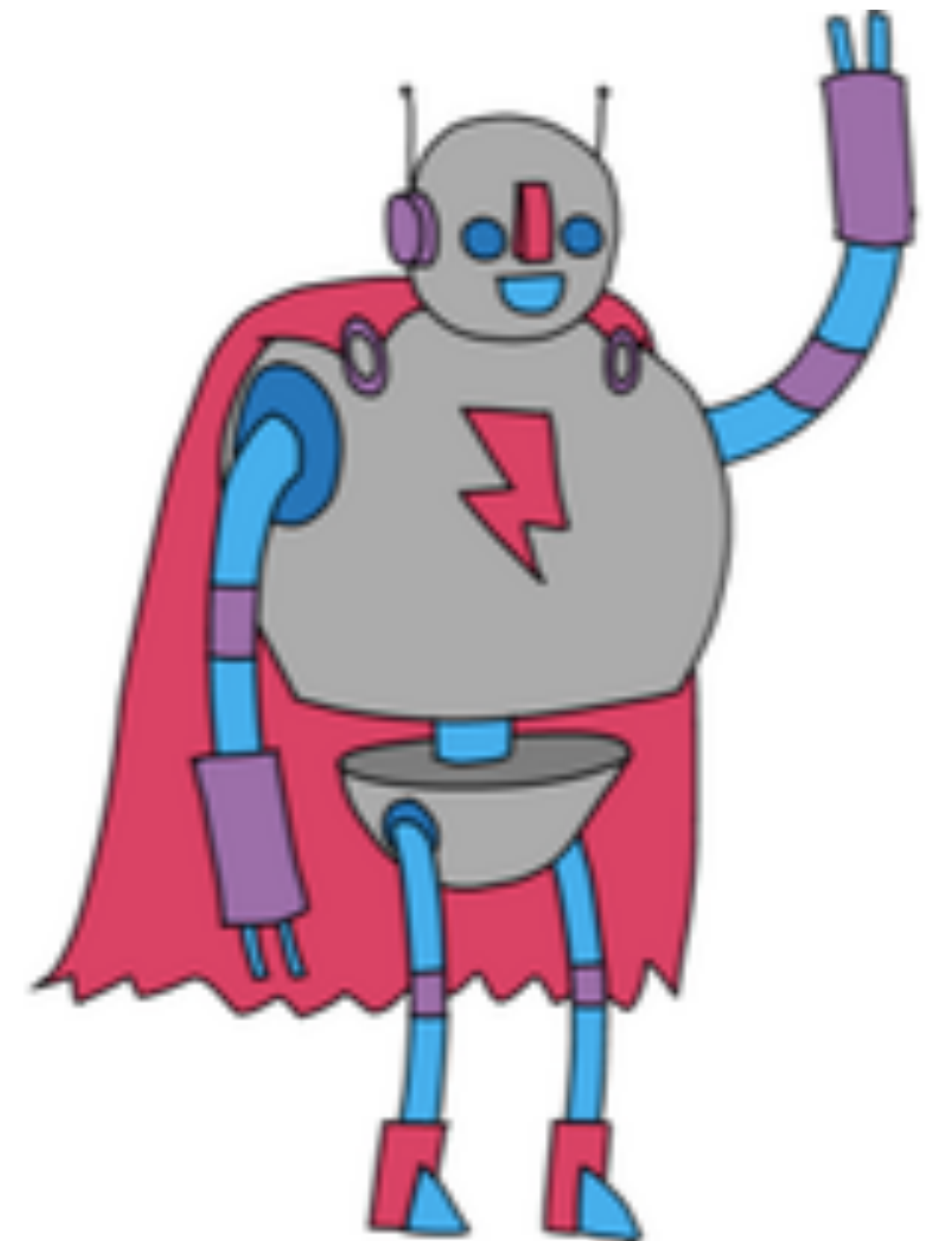
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**Kids in your community
learn to code**

VOLUNTEERS

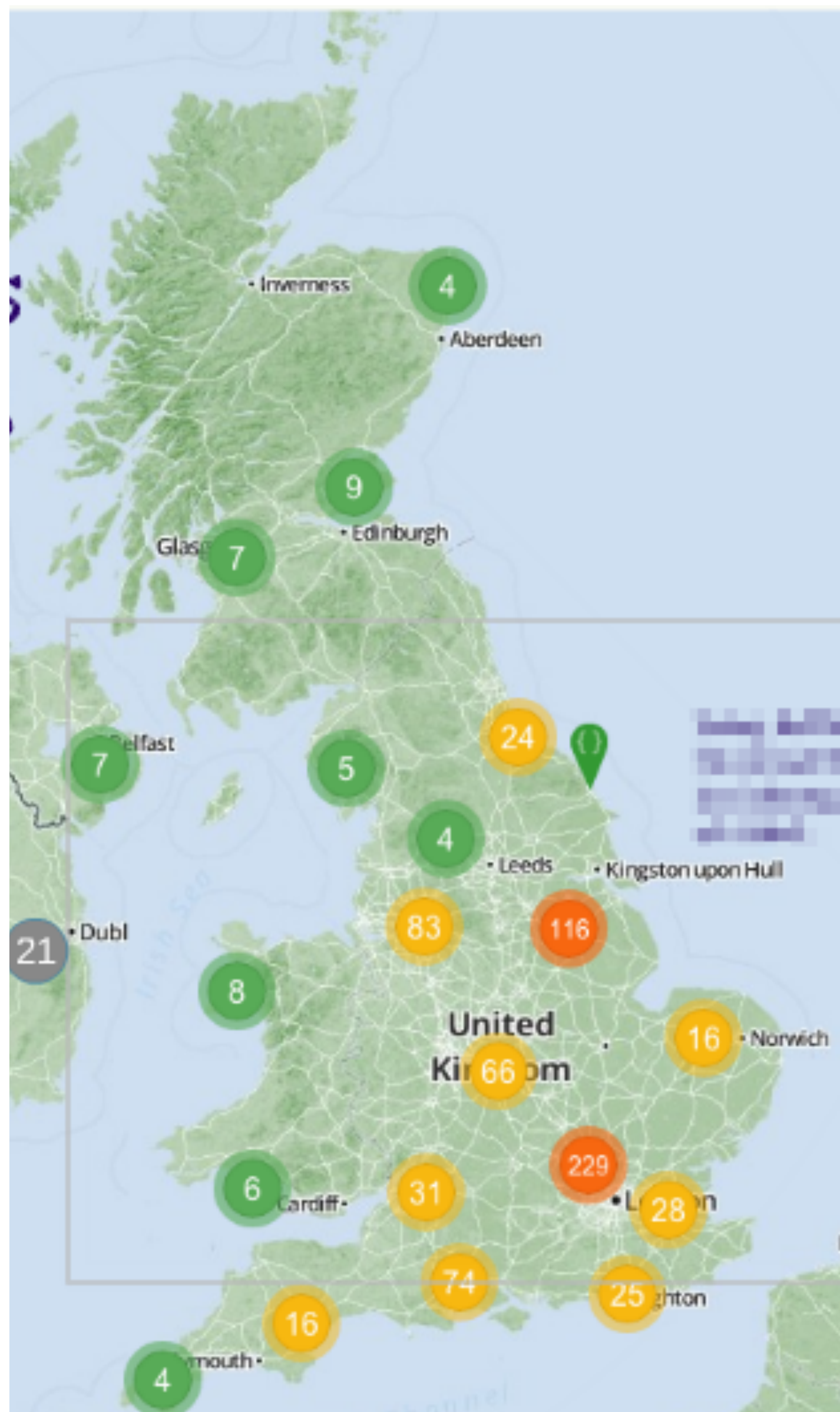
- ▶ Bring their experience, enthusiasm, and time to help make the club happen.
- ▶ You don't need to be a 'coding genius' - just willing to learn.
- ▶ Code Club provide the training, materials, and can support volunteers getting background checks etc.



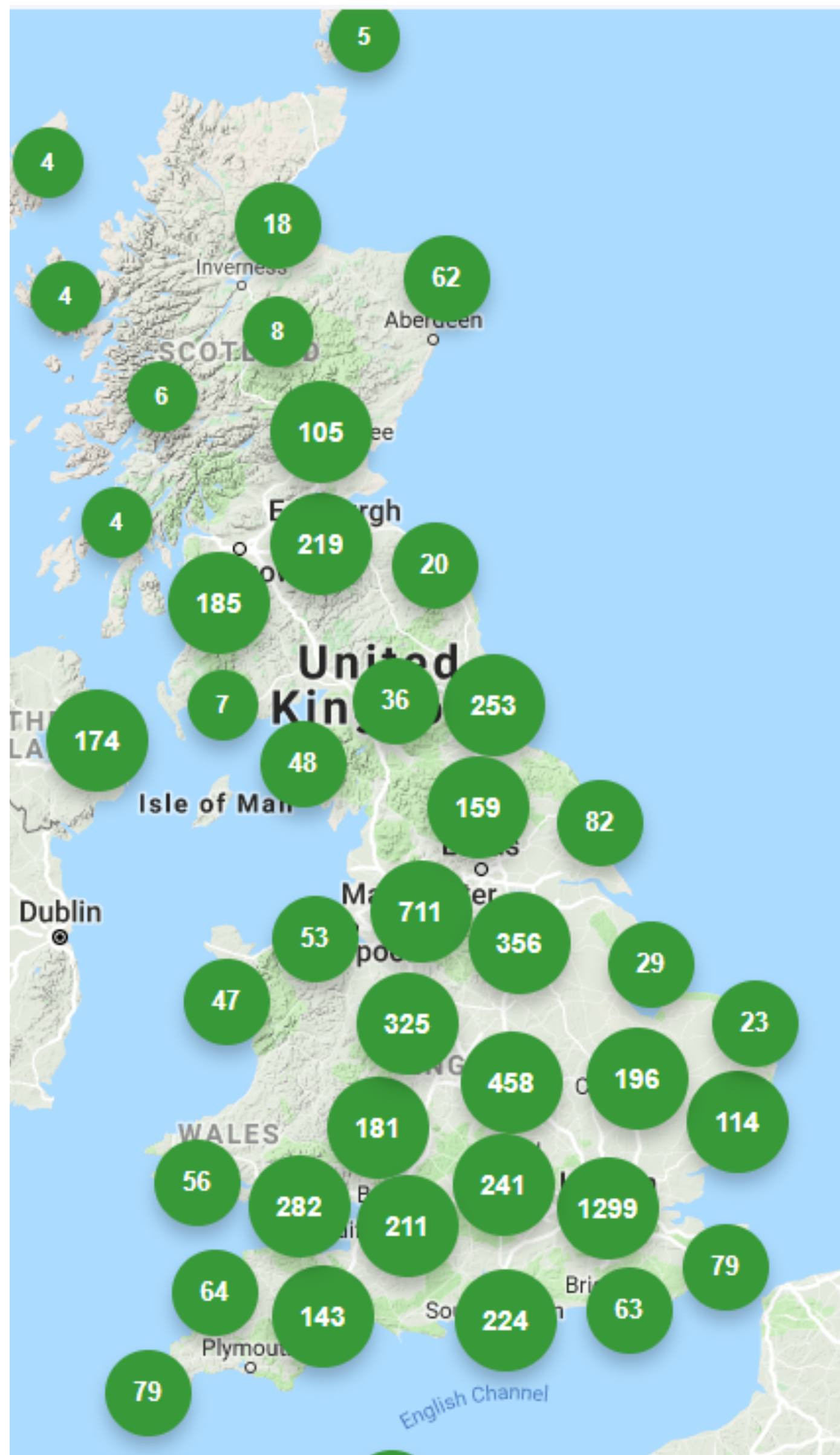
LOCAL SCHOOL

- ▶ Teacher-led after-school clubs.
Typically weekly for an hour.
- ▶ Provide the equipment and venue to run the Code Club
- ▶ Also in community spaces like libraries





768 UK & NI Clubs in March 2013



6,769 UK & NI Clubs in July 2018

13,000

active Code Clubs around
the world

160

countries, from Brazil
to Bangladesh

180,000

young people learning to
code each week



Yo

About

Discover Clubs

Get Involved

{code
club}

Explore Proj




Walter Halls Primary & Early Years School

Created October 2012



Walter Halls Primary & Early Years School
Querneby Road
Mapperley

Information

-  Club for pupils only
-  Not looking for volunteers
-  This club runs weekly on a Thursday at 12:00

Description

This club haven't added a description yet



Walter Halls

Primary and Early Years School

Log in

ABOUT US

KEY
INFORMATION

NEWS & EVENTS

PARENTS

CHILDREN

COVID
INFORMATION

Welcome

Check out our Children's pages for lots of ideas for supporting your child's education at home.

ATTENDANCE AWARD
Take care and stay safe

Select Language ▼

Find out about your new teacher in the 2020 Transition



LATEST NEWS

Walter Halls Joint Winners in Nottingham Schools U11s Football League

9th July 2020

[Read more](#)

CALENDAR DATES

There are no events for the next 10 weeks.

[Read more](#)



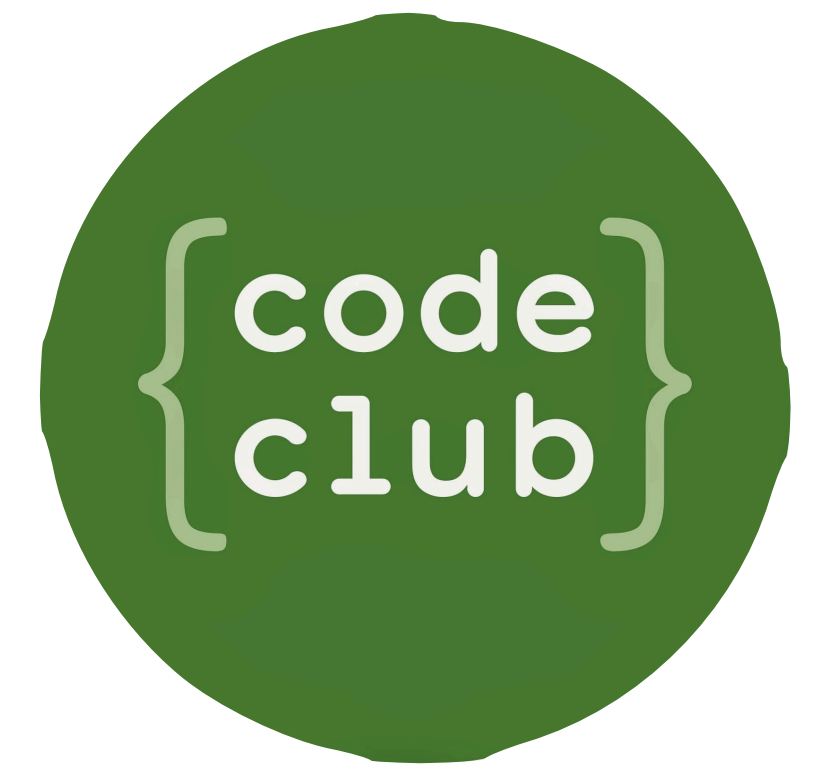
BRATING



.CO



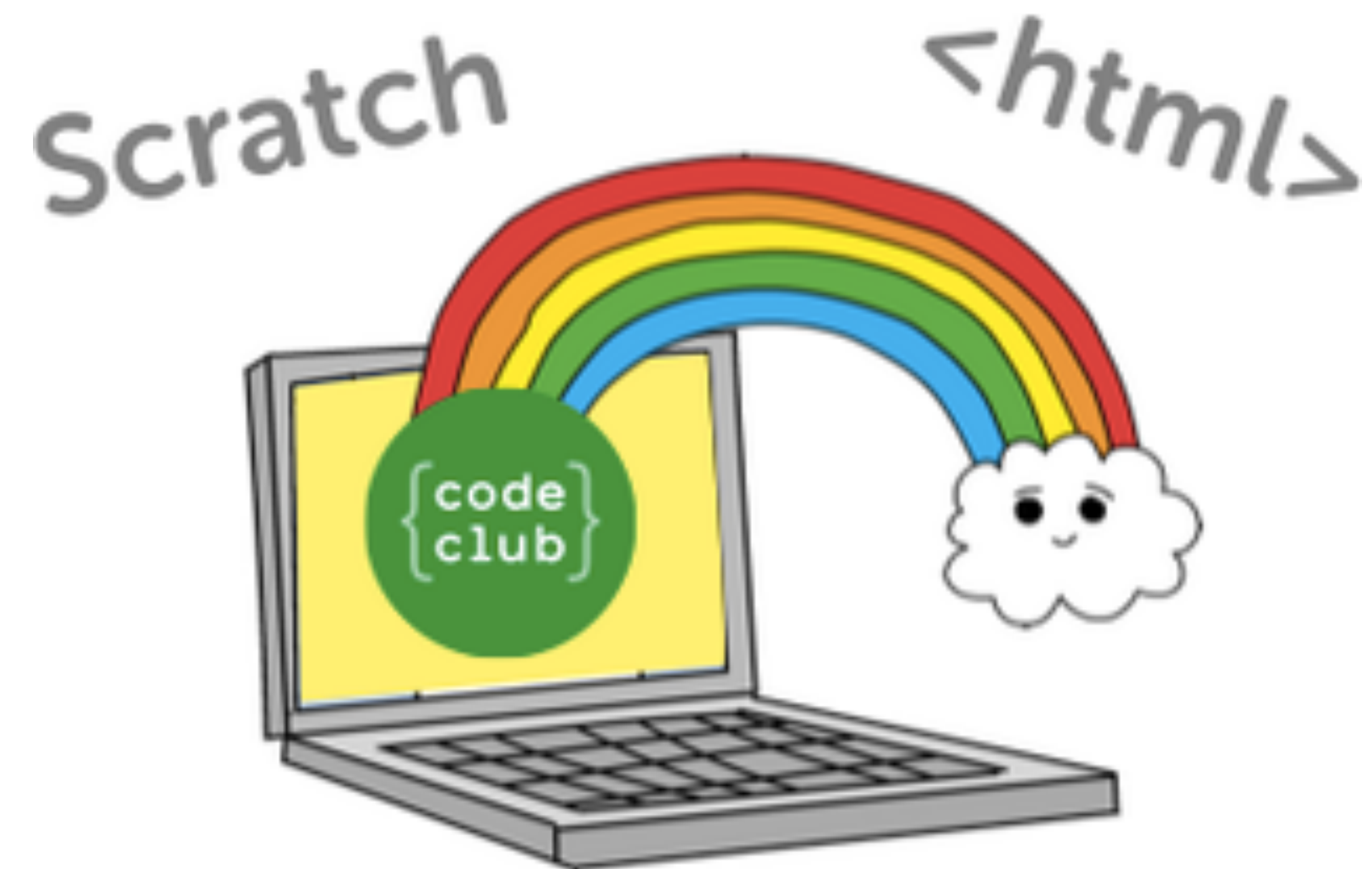
A global network of free coding clubs for 9–13 year olds



- ▶ Started as a lunchtime club
Moved to 1st lesson after lunch
- ▶ Years 3 - 6
Primary 4 - Primary 7
- ▶ Children from 7 - 11

FREE RESOURCES

- ▶ Three main subject areas
 - ▶ Scratch
 - ▶ HTML & CSS
 - ▶ Python
- ▶ Children work through Modules at their own pace
- ▶ The worksheets offer hints to help complete the task & additional challenges





Rock band

Web Browser

Scratch



+ Add to Favourites



○ Introduction

○ Sprites

○ The Stage

● Making a drum

○ Challenge: improve your drum

○ Making a singer

○ Costumes

○ Challenge: improve your band

○ Reflection

○ What next?

Making a drum

Now you will add code to your drum so that the drum makes a sound when it's clicked.

You can find the code blocks in the Scripts tab, and they are all colour-coded!

First add the **Music** extension so you can play instruments.



Click on the **Add extension** button in the bottom left-hand corner.

Variables
My Blocks

glide 1 secs to x: 0 y: 0

- Introduction
- Sprites
- The Stage
- **Making a drum**
- Challenge: improve your drum
- Making a singer
- Costumes
- Challenge: improve your band
- Reflection
- What next?

Making a drum

Now you will add code to your drum so that

You can find the code blocks in the Scripts

First add the **Music** extension so you can

Click on the **Add extension** button in the

Variables

My Blocks

glide

1

s

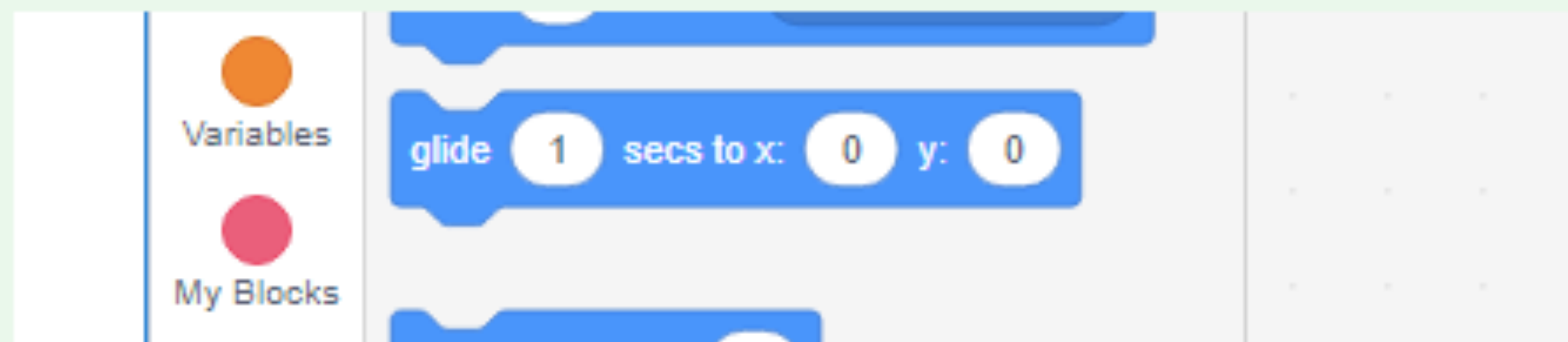
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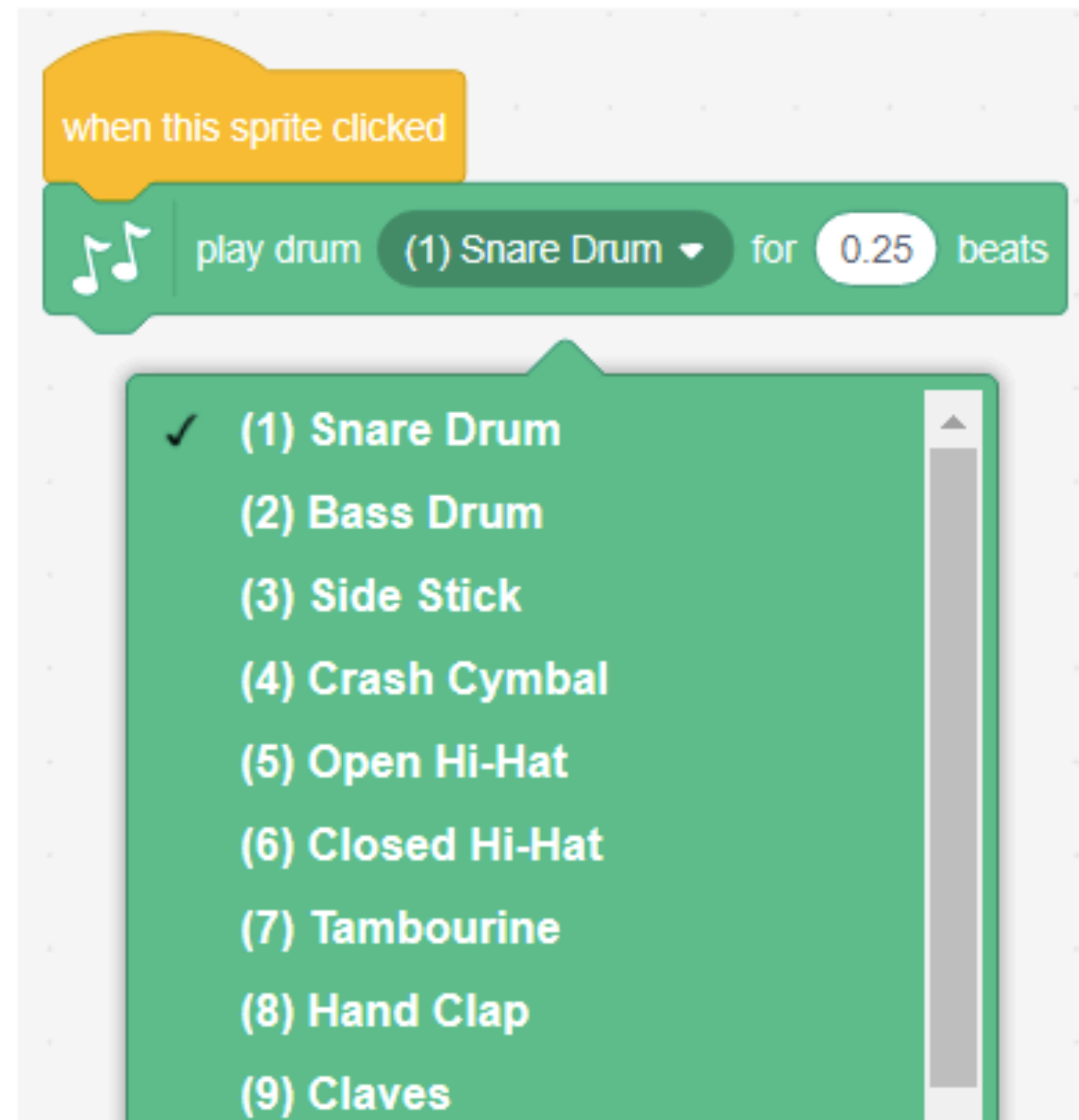
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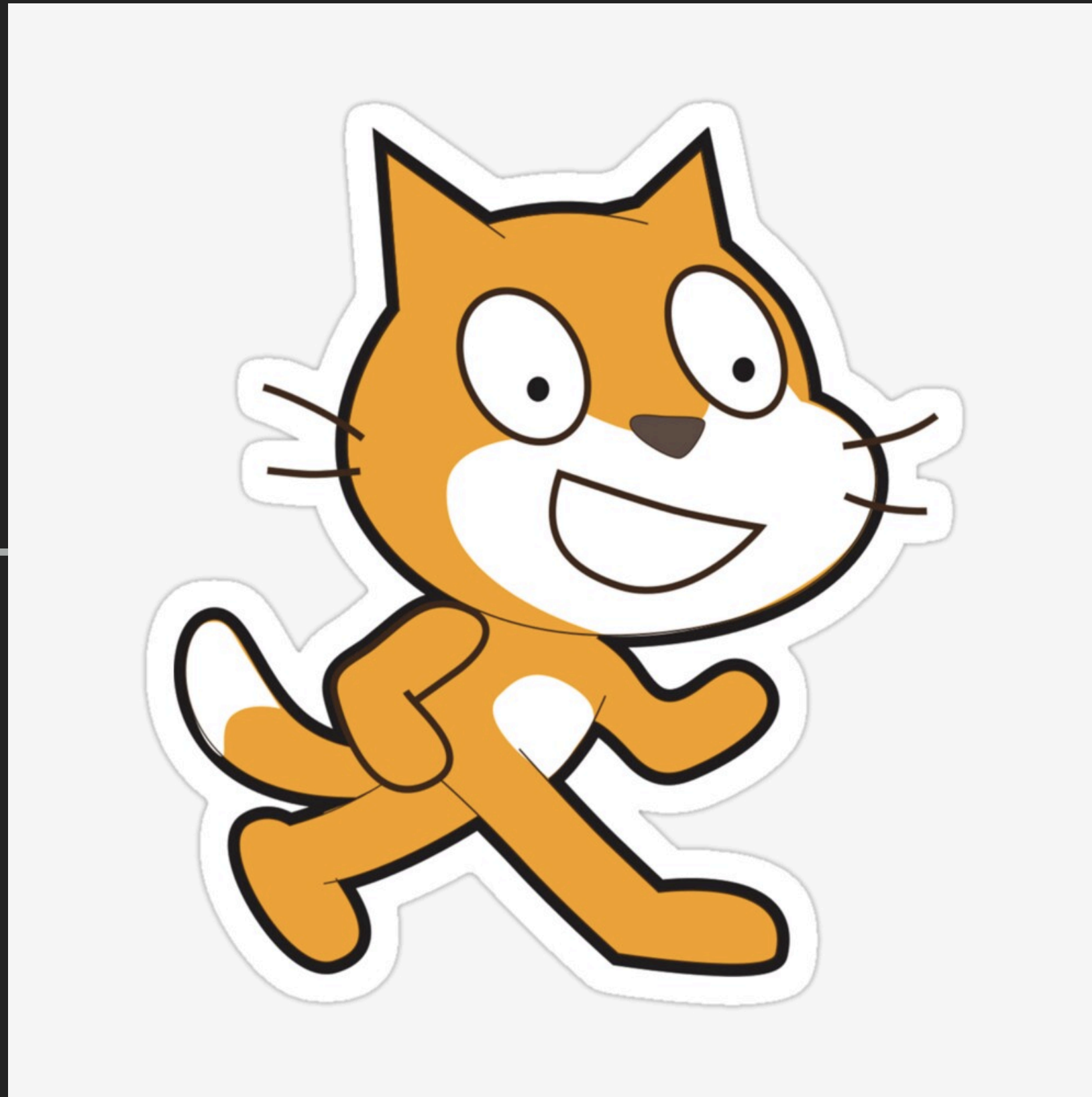
Challenge: improving your drum

Can you change the sound that the drum makes when it's clicked?

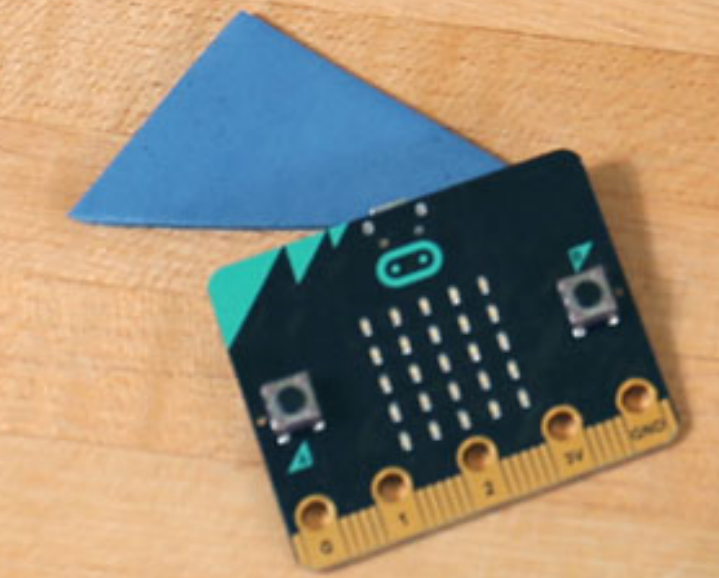


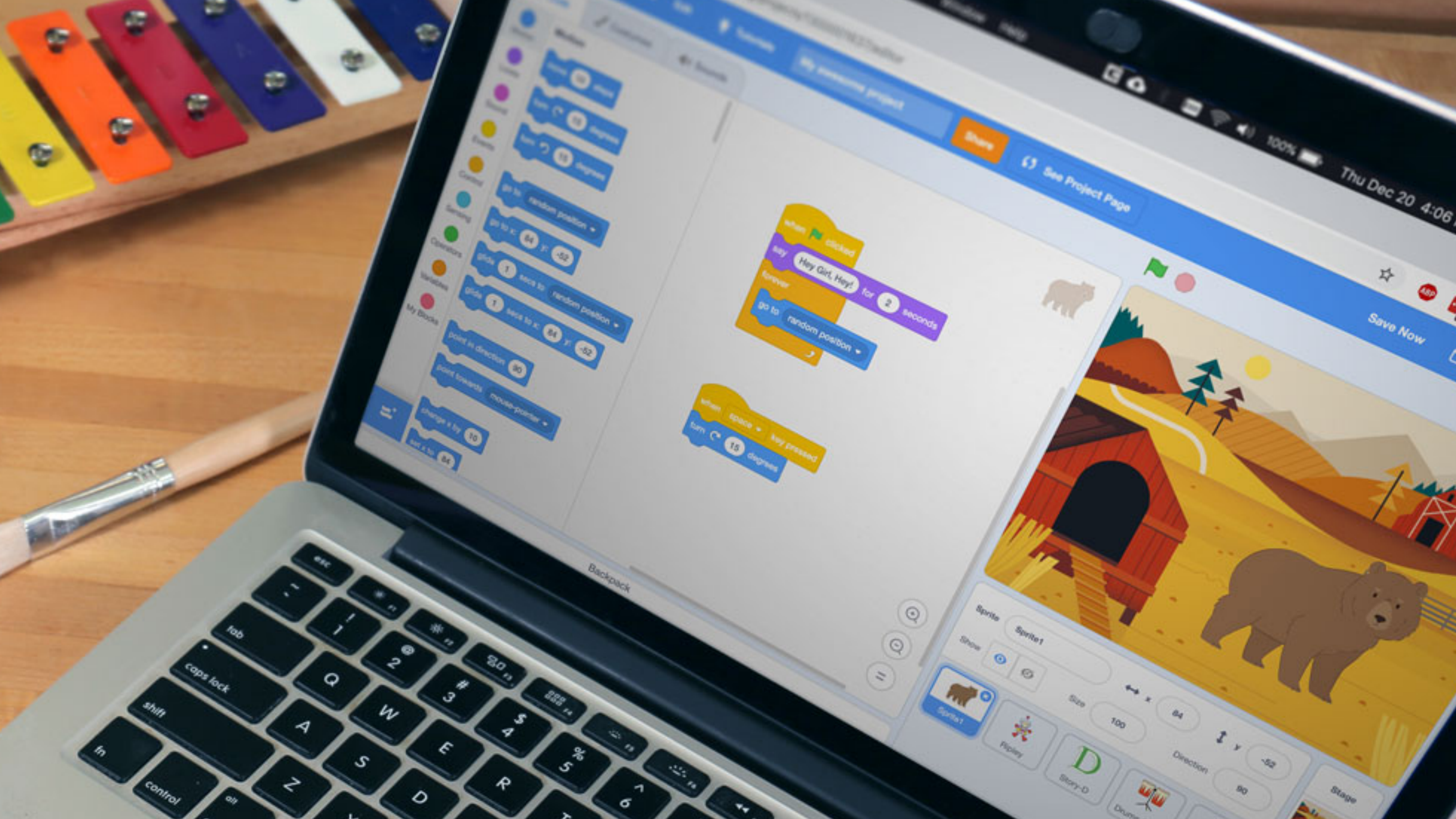
Can you also get the drum to make a sound when the space bar is pressed? You'll need to use this **event** block:

WHAT IS SCRATCH?



[SCRATCH.MIT.EDU](https://scratch.mit.edu)







File

Edit



Tutorials

Untitled-2

Share



Code



Costumes



Sounds



Motion



Looks



Sound



Events



Control



Sensing



Operators

Motion

move 10 steps

turn 15 degrees

turn 15 degrees

go to random position

go to x: 0 y: 0

glide 1 secs to random position



when  clicked

move 10 steps

turn  15 degrees

say Hello! for 2 seconds



Sprite

Sprite1

 x

0

 y

0

Show



Size

100

Direction

90

Stage

Backdrops





HTML & CSS

Module 1

Module 2

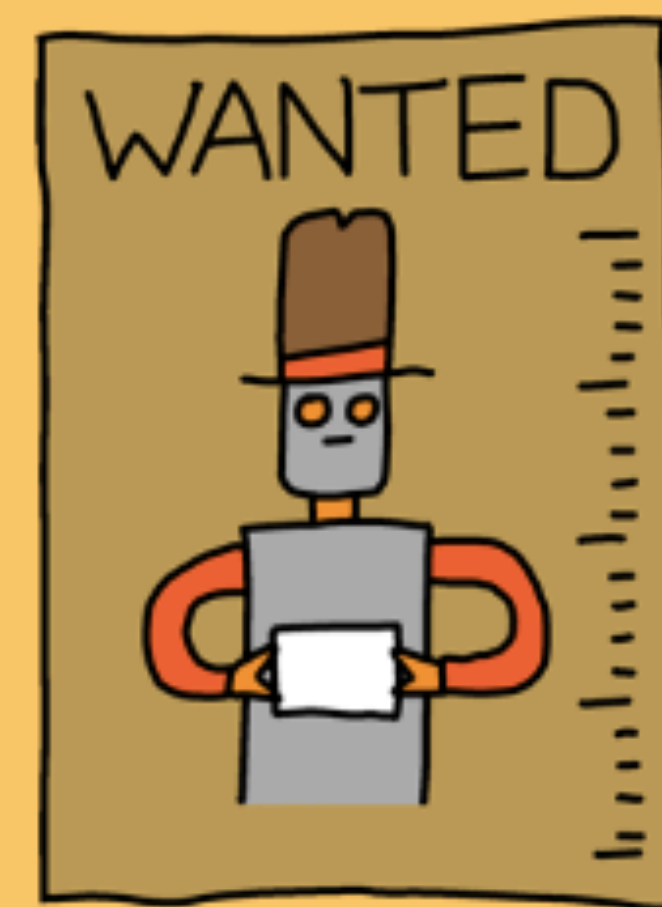
BUILDING WEBSITES WITH

HTML & CSS



Wanted!

HTML / CSS



Introduction

- Styling your poster
- Challenge: Improving your poster
- Styling images
- Challenge: Improving your image
- Styling headings
- Challenge: Make your poster awesome!
- Challenge: Advertise an event!

Introduction

In this project, you'll learn how to make your own poster.





index.html

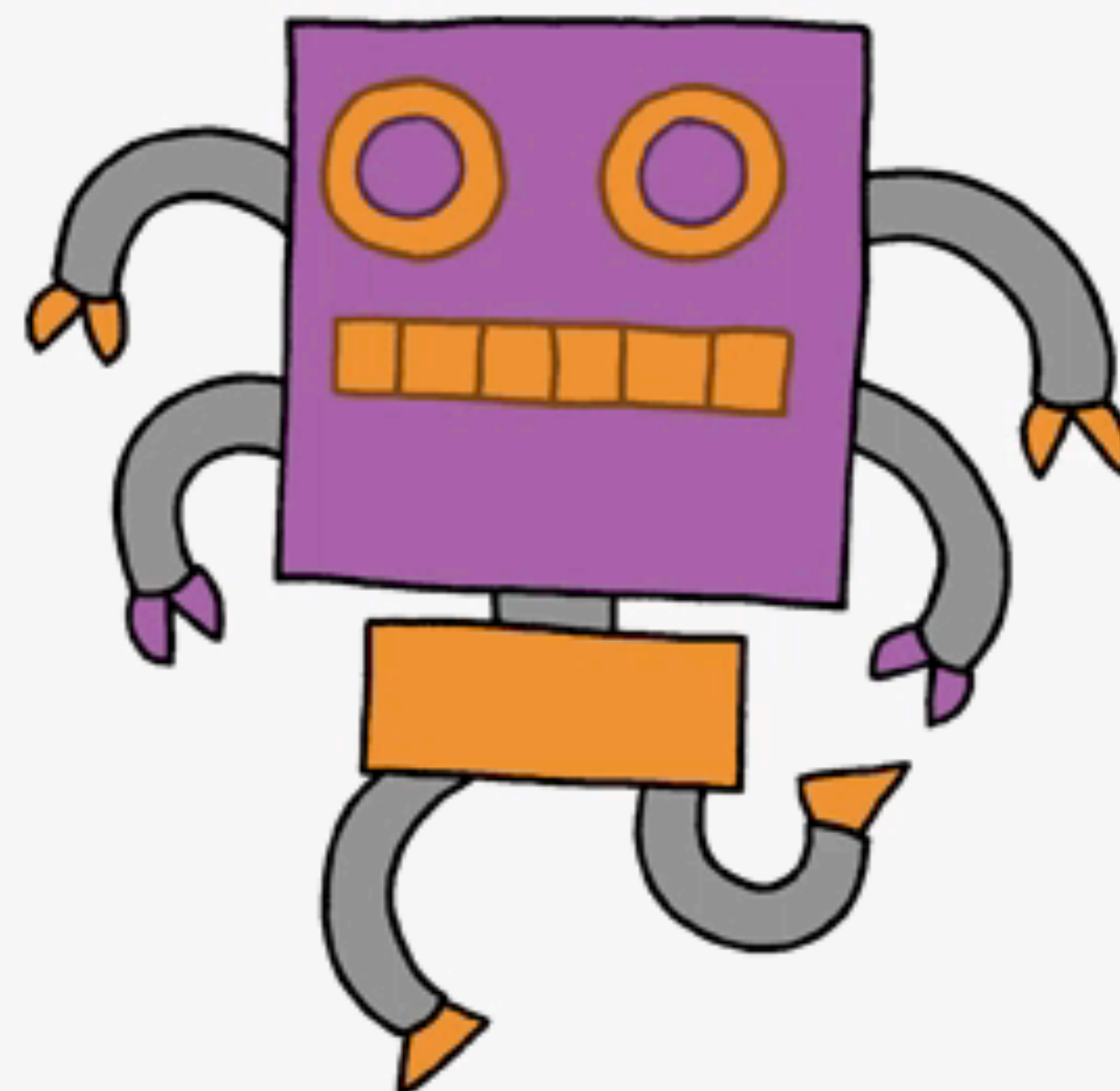
style.css



```
i 1 <html>
  2
  3 <head>
  4   <link rel="stylesheet" href="style.css">
  5 </head>
  6
  7 <body>
  8
  9   <div>
10     <h1>Wanted!</h1>
11     <h3>Have you seen this robot?</h3>
12     
13     <p>Description: Height: 30cm, Colour: purple and orange, Arms: 4</p>
14     <p>If you have any information, please contact 6207 332 2310</p>
15   </div>
16
17 </body>
18
19 </html>
```

Wanted!

Have you seen this robot?



Description: Height: 30cm, Colour: purple and orange, Arms: 4

If you have any information, please contact
6207 332 2310



Python

Module 1

Module 2

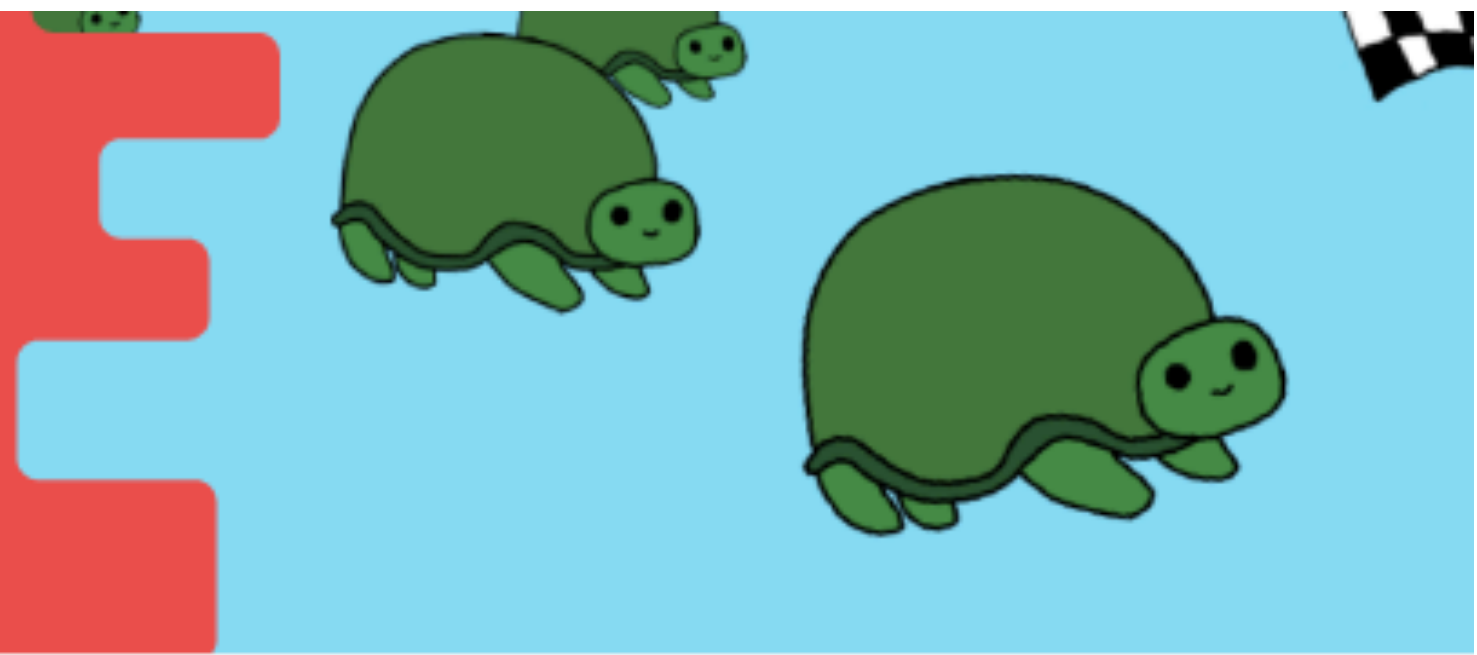
Additional Projects

TEXT-BASED PROGRAMMING

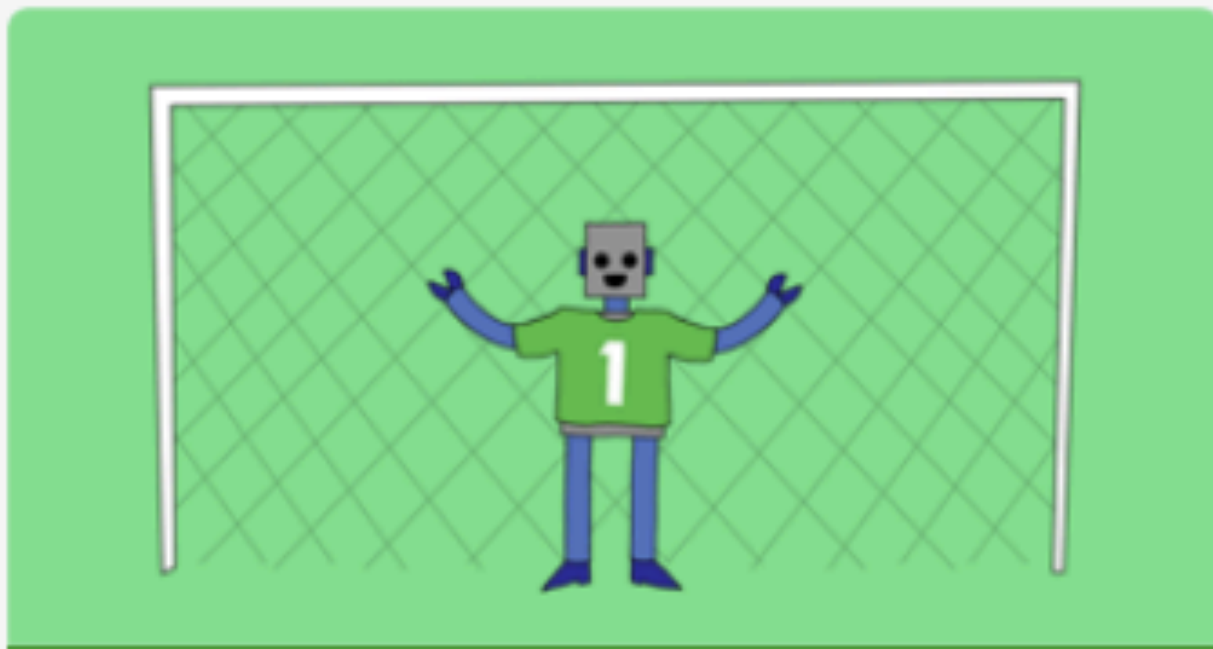
PYTHON

Turtle Race!

Python



- Introduction
- What you will need
- **Race track**
- Challenge: More lines
- Racing turtles
- Challenge: Race time!
- Challenge: Do a twirl
- Challenge: Dashed lines

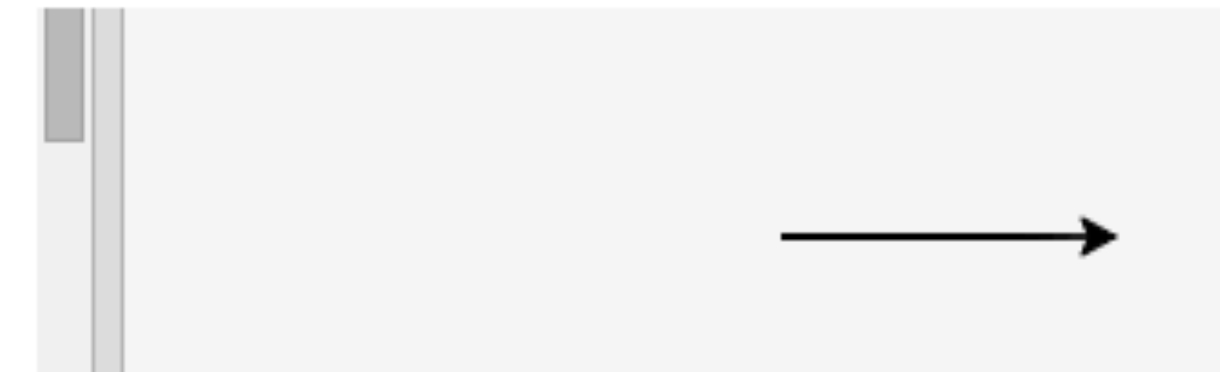


Race track

You're going to create a game with racing turtles. First they'll need a race track.

- Open the blank Python template Trinket: jump.to/cc/python-new.
- Add the following code to draw a line using the 'turtle':

```
from turtle import *  
forward(100)
```



- Now let's use the turtle to draw some track markings for the race.

The turtle `write` function writes text to the screen.

Try it:

⋮ back to classroom

run ▶

```
1 import turtle
2
3 t = turtle.Turtle()
4 t.forward(100)
```



result

console

center



Set due date ⓘ

student preview

next

M+

Heading

Blockquote

Code Block

Inline Code

Bold

Italic

Underline

⋮

⋮



Step 1: Race track

The following code is already provided for you and it draws a line using the 'turtle'.

```
import turtle

t = turtle.Turtle()
t.forward(100)
```

Try pressing 'Run' to see it draw a line.

Now let's use the turtle to draw some track markings for the race. The turtle write function writes text to the screen. Try it:

```
import turtle

t = turtle.Turtle()
t.write(0)
t.forward(100)
t.write(5)
```

Now you need to fill in the numbers in between to create markings: Make your code look like this:

```
import turtle

t = turtle.Turtle()
t.write(0)
t.forward(20)
t.write(1)
t.forward(20)
t.write(2)
t.forward(20)
t.write(3)
t.forward(20)
```


OTHER PROJECTS



Sonic Pi

Welcome to the *future of music*.

Sonic Pi is a code-based music creation and performance tool.

Simple enough for computing and music lessons

Powerful enough for professional musicians

Free to download with a friend

Diverse community of over 1 million users

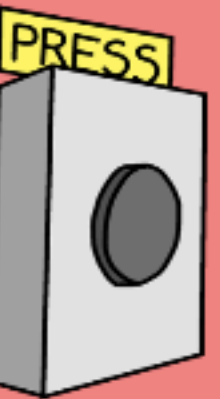
Learn to code creatively by creating music
in an incredible range of styles from classical to hip-hop

Brought to you by [Sam Aaron](#) and the Sonic Pi team

Compose your own tune

Use Sonic Pi to create a cool doorbell chime

Sonic Pi



Drum Loop

Learn how to use samples to create your own drum loop.

Sonic Pi



Special Effects

Create special effects for a film or computer game.

Sonic Pi



Run ▶

Stop ■

Rec ●

Save ♥

Load 📁

Size ▬

Size +

Scope 📡

Info ★

Help 💬

Prefs ⚙

```
1 # Chord Inversions
2 # Coded by Adrian Cheater
3 [1, 3, 6, 4].each do |d|
4   (range -3, 3).each do |i|
5     play_chord (chord_degree d, :c, :major, 3, invert: i)
6     sleep 0.20
7   end
8 end
```

Log

=> Completed run 1

=> All runs completed

=> Pausing SuperCollider Audio Server

Cues

Buffer 0

Buffer 1

Buffer 2

Buffer 3

Buffer 4

Buffer 5

Buffer 6

Buffer 7

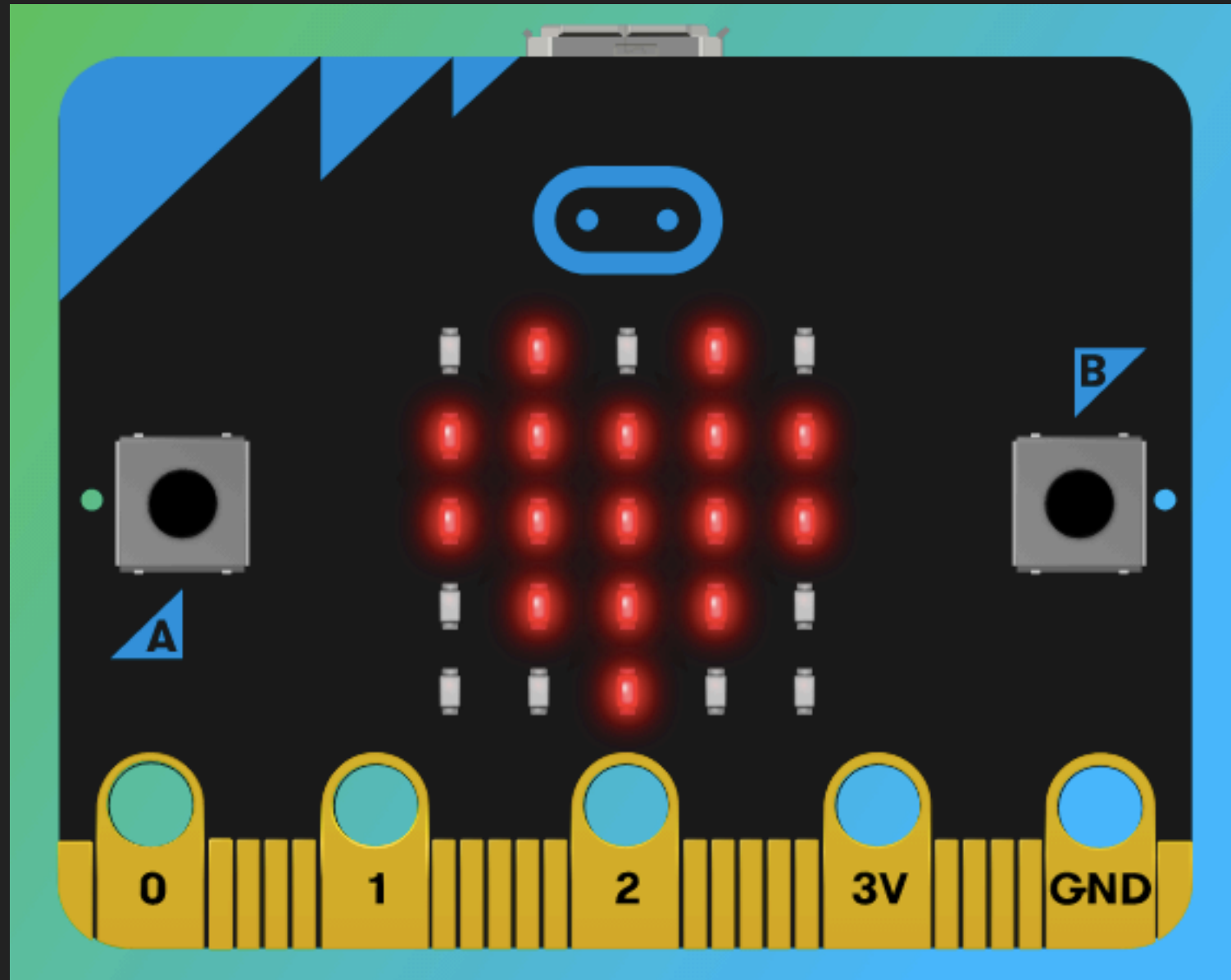
Buffer 8

Buffer 9

HARDWARE

micro:bit

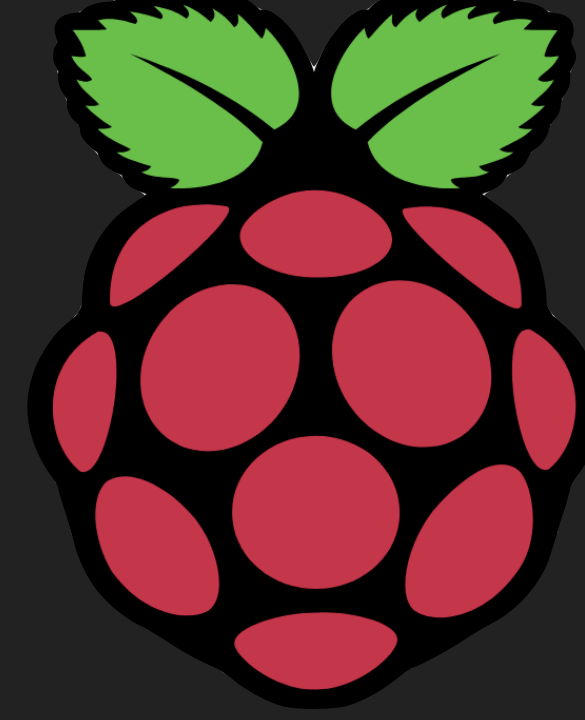
From £13.50



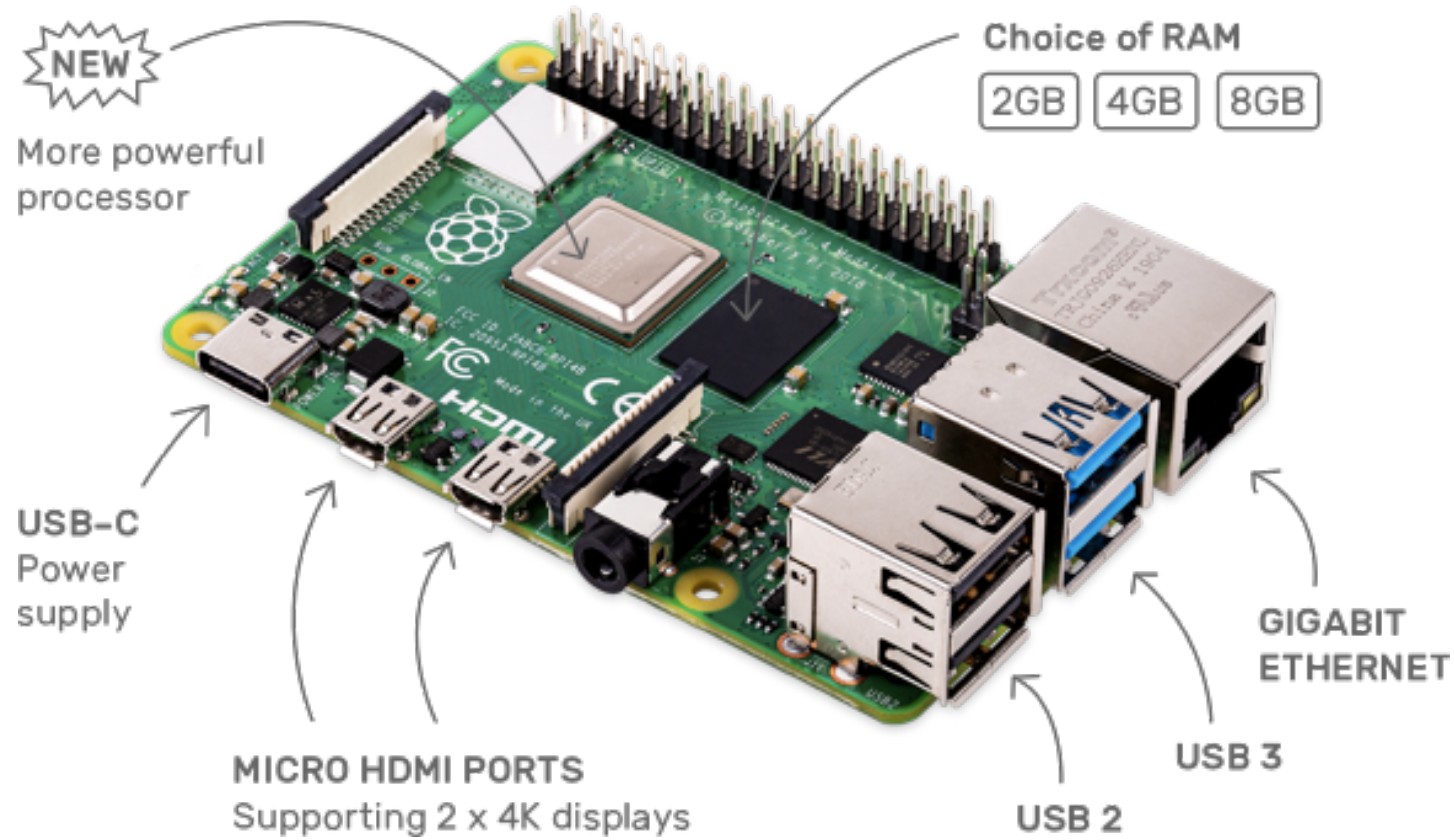
WWW.MICROBIT.ORG

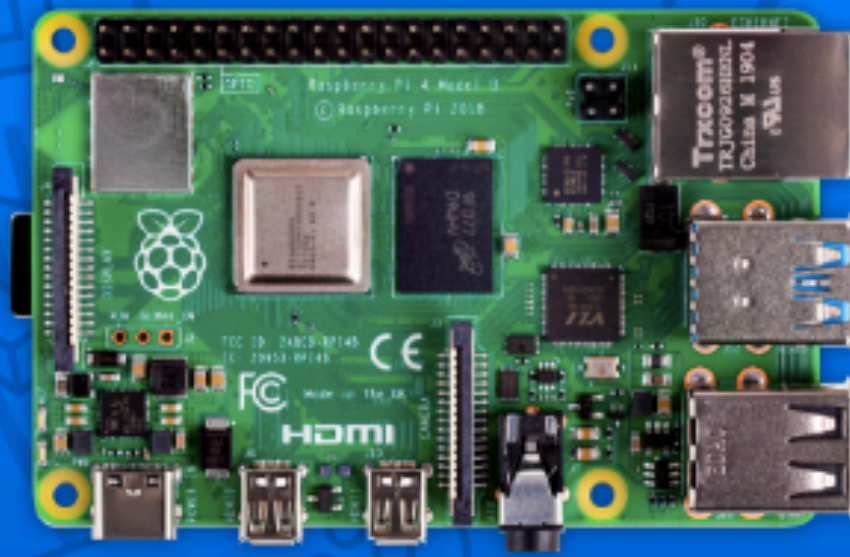
a pocket-sized codeable
computer with motion
detection, a built-in
compass, LED display, and
Bluetooth technology built
in

RASPBERRY PI 4



From £33.90



[Products](#)[Blog](#)[Downloads](#)[Community](#)[Help](#)[Forums](#)[Education](#)[Projects](#)

Raspberry Pi 4

Your tiny, dual-display, desktop computer

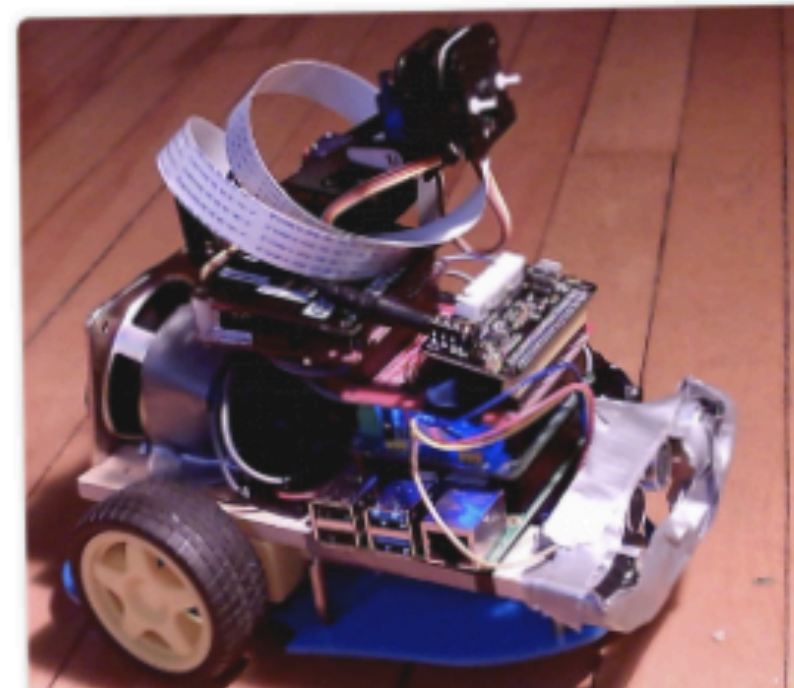
[Find out more](#)

Coronavirus update

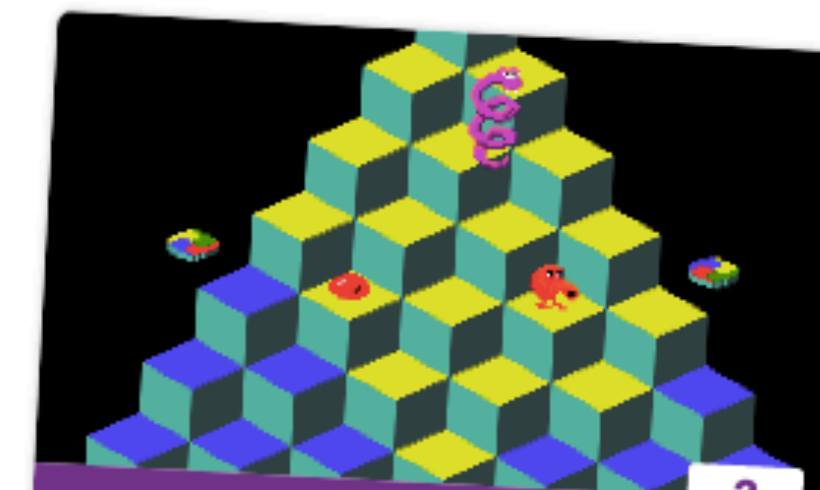
Our educational mission has never been more vital. We are supporting teachers, learners and, parents during the lockdown with [Learn at home](#).

[Donate](#)

Give your voice assistant a



Explore well-being in



Recreate Q*bert's cube-

WWW.RASPBERRYPI.ORG

HELLO WORLD MAGAZINE

- ▶ Free quarterly print magazine for teachers, Code Club volunteers, and other educators.
- ▶ Full of interviews, advice, lesson suggestions.
- ▶ Visit helloworld.raspberrypi.org for more information or a free PDF copy



TEACHER TRAINING

- ▶ Teachers understand the need to learn programming
- ▶ Some don't feel they have the time or resources to learn themselves
- ▶ Code Club has helped them gain confidence learning with the kids



SUMMARY

A group of people are working together at a wooden table. A laptop is open on the left. In the center, a tablet is being used, with one person holding a white stylus. To the left of the tablet is a spiral-bound notebook. In the foreground, there are several yellow sticky notes and a set of colored markers. The scene suggests a collaborative work or learning environment.

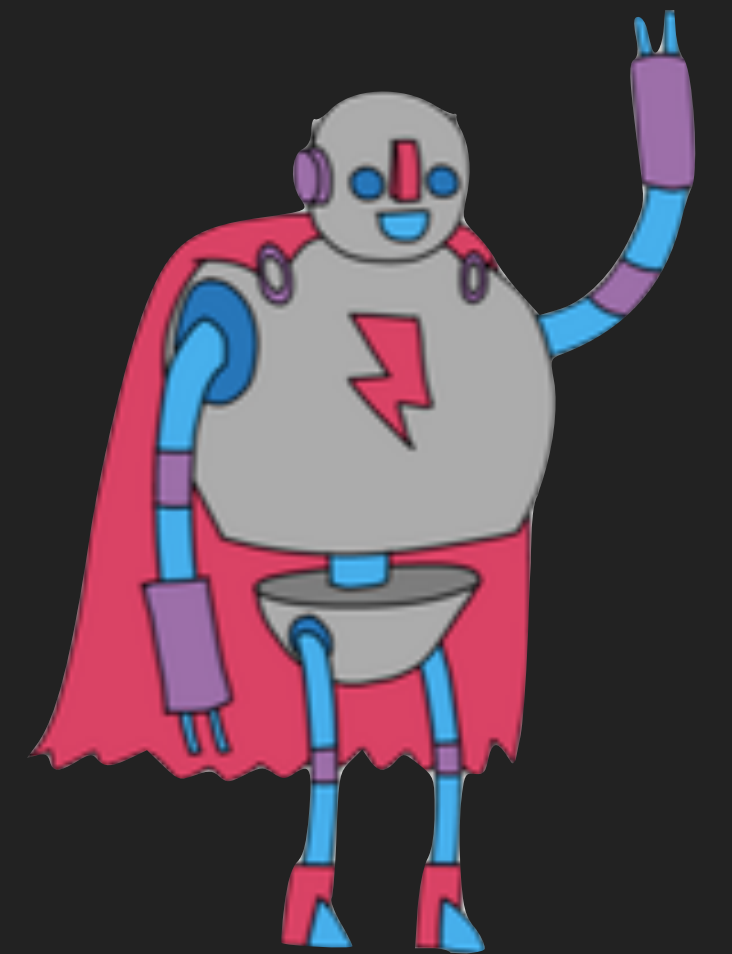
DIGITAL SKILLS.

PROGRAMMING.

SUMMARY



{code
club}

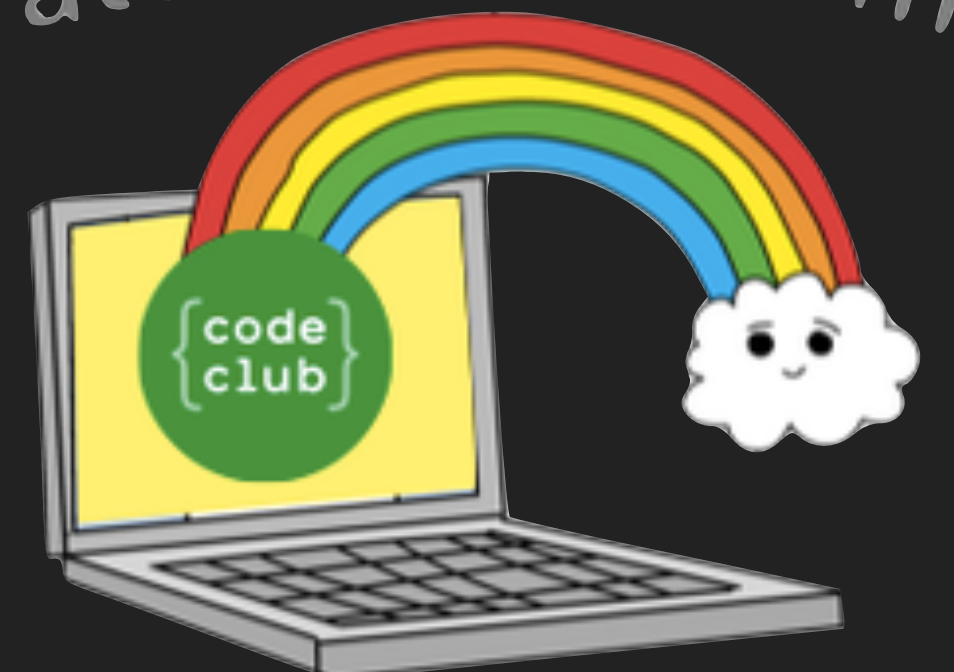


Schools Community
spaces

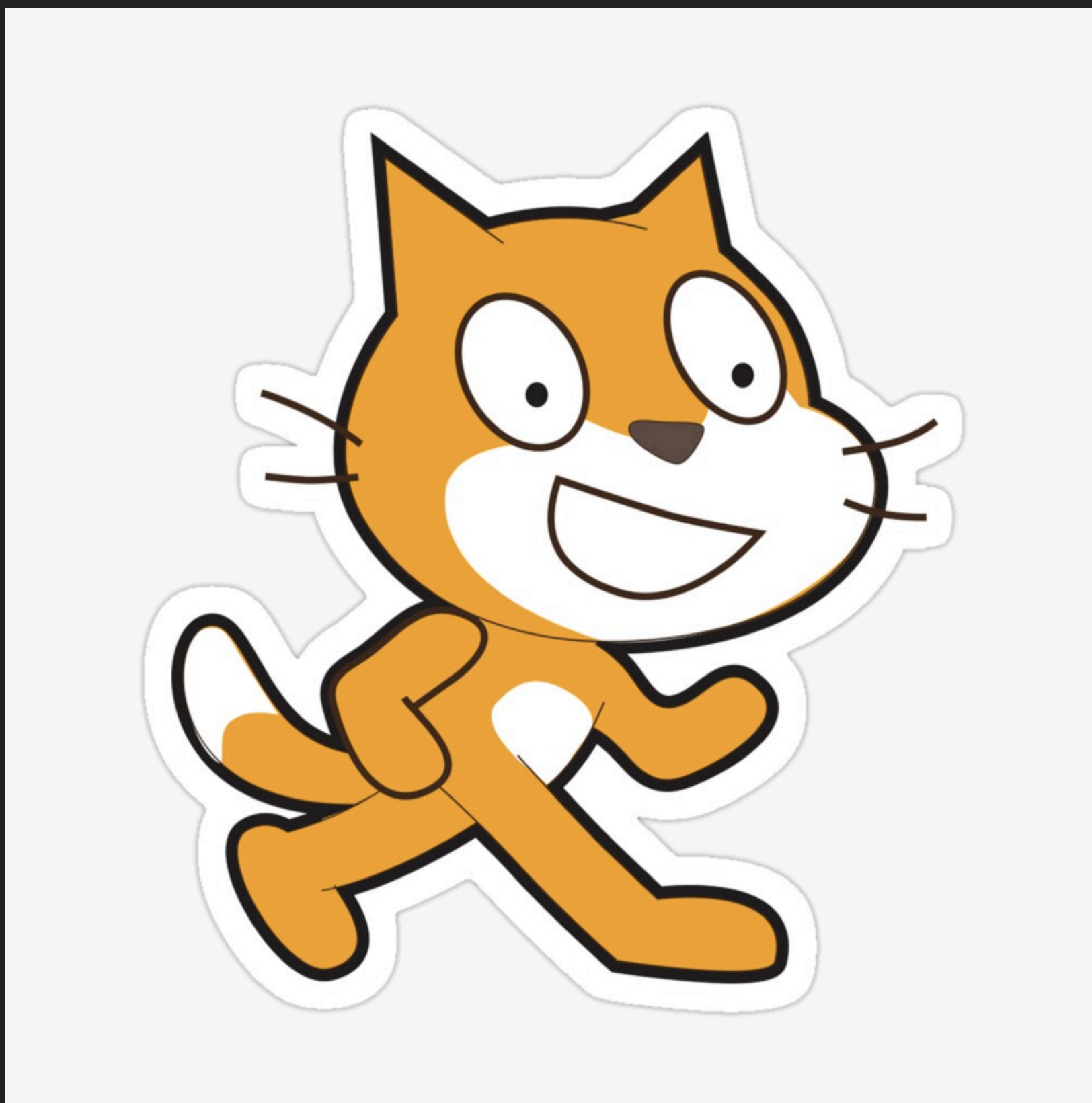
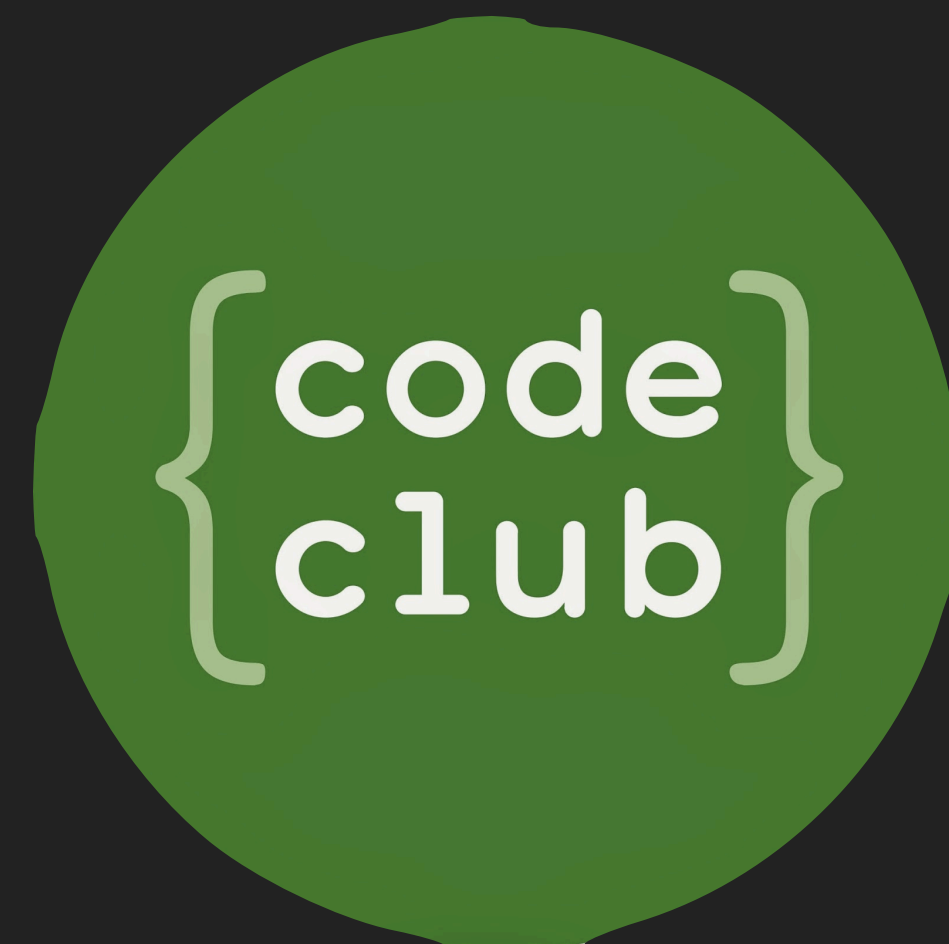


Scratch

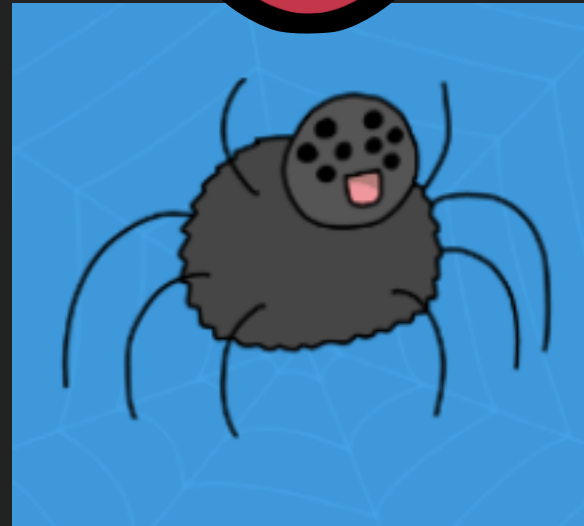
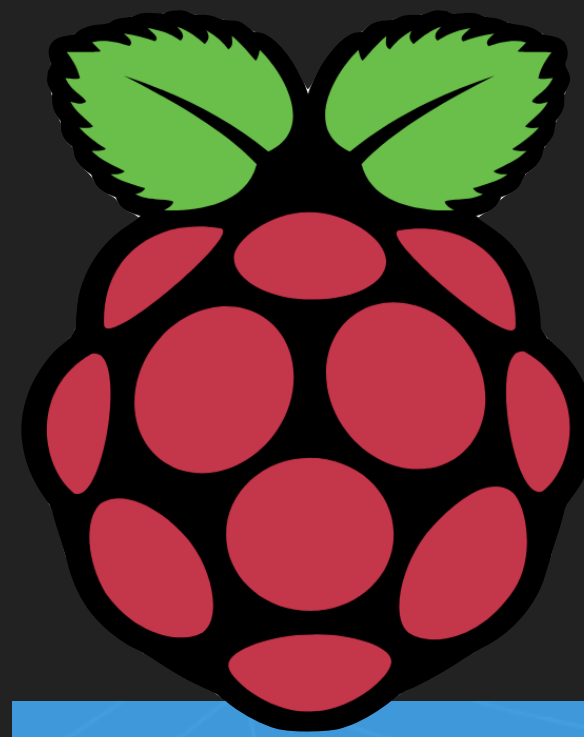
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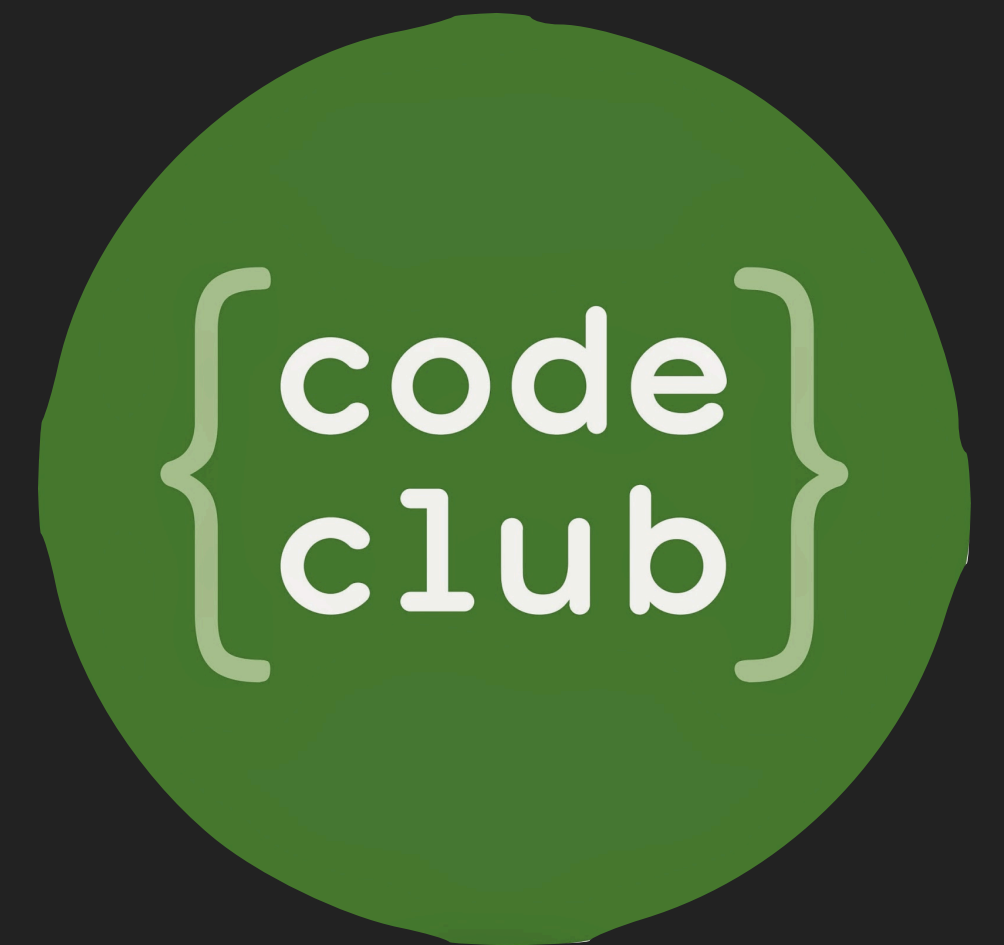
SUMMARY



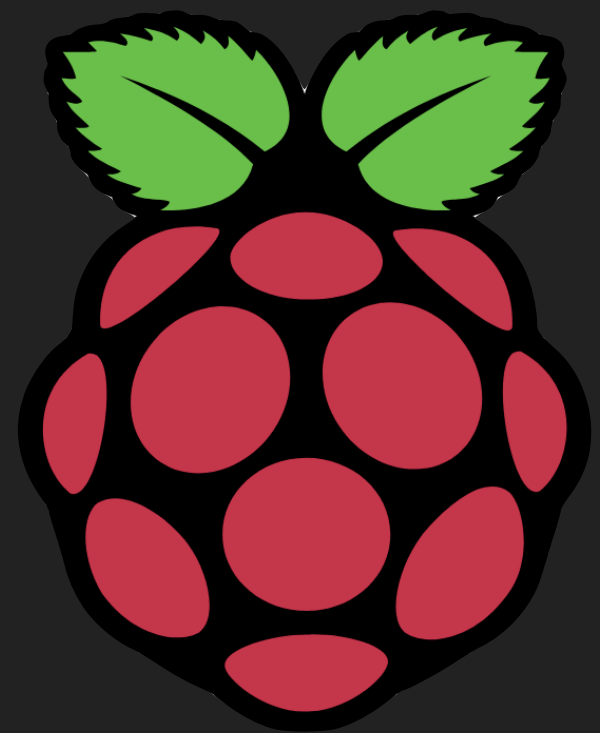
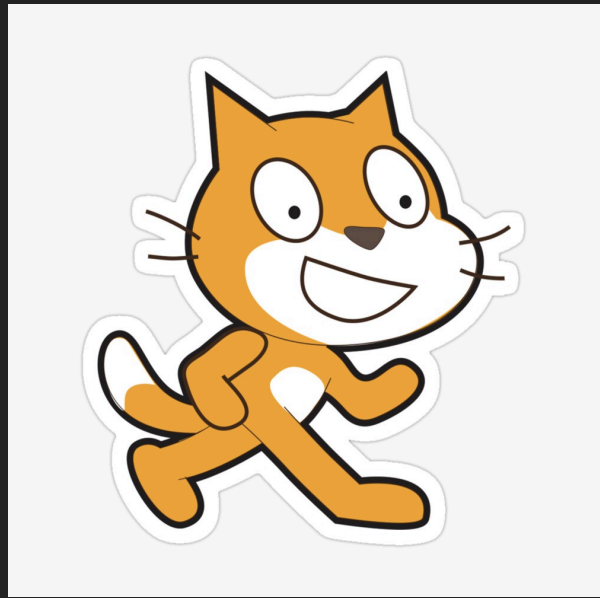
SUMMARY



 micro:bit



SUMMARY



[CODECLUB.ORG](https://codeclub.org)



Walter Halls Primary @walter_halls · Jul 9, 2018

Feeling very proud of our Code Club teacher [@jbjon](#) for speaking at [@CodeClubEMids](#). He has been coming to our school for 5 years and responds to Miss, Mister or Jonathan! He is a positive role model & supports our children to be children who are ready for the world ahead! [#thanks](#)



4



11

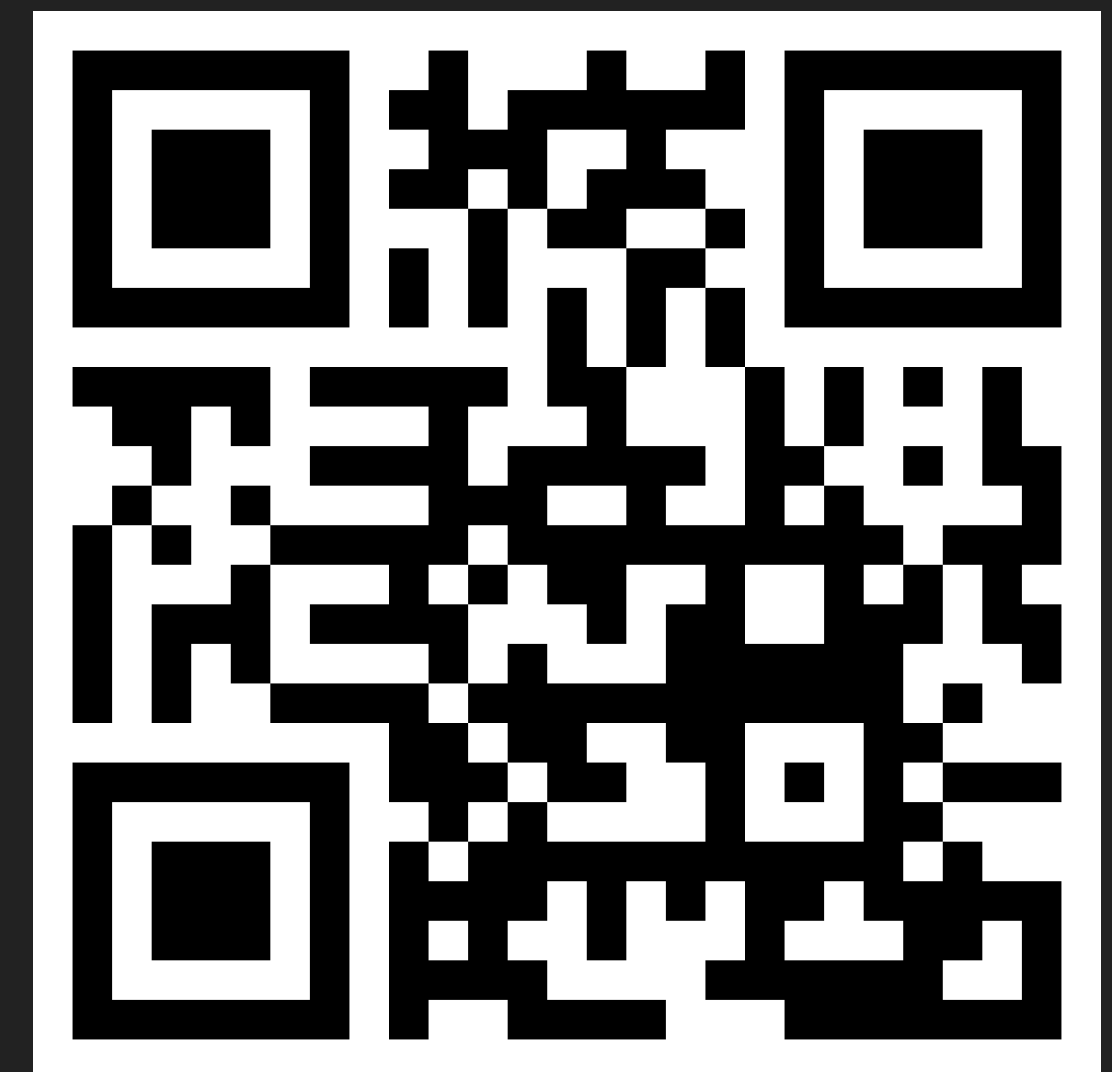


ABOUT ME

- ▶ **Jonathan Relf**
- ▶ Solutions Architect @ Commify
- ▶ Podcasting @AgileEngPodcast,
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- ▶ <https://about.me/jbjon>



@jbjon





QUESTIONS?