openuk zine

The OpenUK open source how to guide

THIS EP

KEEP UP
GLOVE

Dia duit!

&

Amanda, Editor
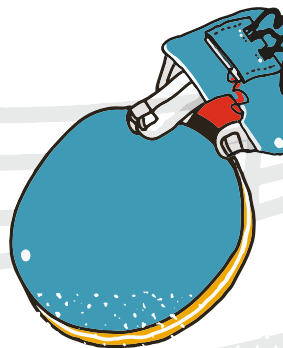
For today's Lesson, you need a ping pong ball, or something similar... maybe a bouncy ball? I am sure you can find something suitable. I used a bouncy ball, which worked well!

I have a big box of them – and my kitten, Dundee, loves to chase them around my house.

I got him on 3rd March right before lockdown kicked in. He's a ginger, although he prefers "strawberry blond". Can you guess why he's called Dundee? And no, I am Scottish but I'm not from Dundee…
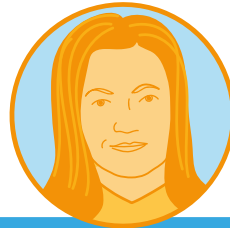
Back to the lesson which is all about a steady hand – and of course, you learn some new Computer Science terms, like Nested If! The drawing is one of Matt the Animator's jokes.

We have an interesting guest in this Ezine, Jacqueline Russell, our Our Open Source Hero. Jacqueline is the Program Manager for MakeCode, and you can learn more about the MakeCode community in her column.

She also talks about Codes of Conduct. Volunteer communities around Open Source Software almost always have a Code of Conduct or Code of Respect to make sure that people behave appropriately towards each other and to encourage diversity and inclusion. We have ours at OpenUK on every page of our website, at the bottom and you should check it out when you have 10 minutes.

Diversity is important, as Femi says, to make sure that code is designed for the diversity of users it will have – but it's also important as it creates better ideas and outcomes when you have a diverse group of people in your team.

Amanda Brock is CEO at OpenUK

KEEP IT UP!

Community Engagement Challenge
20
20 **PHASE ONE WINNER** 20
Presented by GNOME and Endless

KEEP IN TOUCH

openuk.uk

TEEN ZINE

Your step-by-step guide to coding genius

Femi

#04 DOCUMENT IT!

Documenting your journey is really important to your learning and development.

Write a journal or a blog, even if it's just for yourself and you never publish it.

Keep a record of events you've attended, courses you have completed and projects you've been part of.

I've had a blog online for over 5 years now and it's awesome to be able to look back at my journey, from my very first steps into coding, to where I am now.

If you feel brave enough to put yours online and share it with the world, I'd recommend using Wordpress, but there are other website builders, like Wix or Weebly, that you can use too. My main piece of advice for writing your blogs is to keep them short, regular and include lots of pictures.

Femi Owolade-Coombes, age 14

PHEW!

micro:bit WIZARD

Your micro:bit questions answered by micro:bit expert **David Whale!**

David

Q *How is the micro:bit produced?*
StillLearning, Essex

A Firstly, a large bare panel is etched in a tank of chemicals to put the pattern of conductive tracks on the board. A machine then drills all of the holes. The black, white, and coloured coverings are then added to the panel. After that, a roller pastes solder over the right places on the board, and a pick-and-place robot places all components in the right places. Finally, the panel is "baked" in an oven to melt the solder, the boards are snapped off the panel and tested by an automated machine, then boxed and sent out.

Q *What other devices can the micro:bit communicate with?*
Murat, Perthshire

A The micro:bit can communicate with a very wide range of sensors and devices. This is because it has at least 7 ways to communicate: digital pins, analog pins, UART, I2C, SPI, USB, Bluetooth. Some combination of these tools can always be relied on to connect to anything you want, so the answer is 'probably anything you can magine!'.

SCORE!

David Whale is a Software Engineer

PLEASE MISS BOAL

Pamela

GET ATTRIBUTION!

One of my personal inspirations is female computer pioneer Grace Hopper – "To me, programming is more than an important practical art. It is also a gigantic undertaking in the foundations of knowledge".

What programing knowledge have we gained this Lesson?

We have already learned about *variables* but there are different *variable* types including *text* and *integer*. An *integer* is a whole number. In some programming languages, you have to set the *variable* type. However, Make Code decides the type based on the initial value.

The Keep Up Glove uses a concept called *logic operator*s. The concept of logical operators is simple. They allow a program to make a decision based on multiple *conditions*. There are three *logic operators*: *AND, OR* and *NOT*. The *NOT operator* is used to reverse value. If a *condition* is true, then *logical NOT operator* will make it false and vice versa.

In the last episode, you were encouraged to consider sharing your game and make it Open Source.

Some designers worry that this will lead to other people claiming credit for their design. You can use copyright to protect your program by adding a copyright notice, 'Copyright Name and Date' to the code. This is called *attribution* and ensure that credit is given to you, the original author of the program. They are often placed in the *header* of the code.

Everyone who uses your code can then be asked to "attribute you".

Pamela Boal is an Educationalist

openuk.uk

INDUSTRY INSIDER

Mihail

ALL ABOUT THE DEVELOPER

Just as with human languages, computers also use different languages. Developers write their source code in a specific computer language. Therefore, it is not uncommon to ask a developer what computer language he knows.

However, the names of the computer languages are quite different. Instead of 'English' or 'Spanish', they are called 'C', 'C++', or 'Python'. By the way, you are already familiar with a computer language: MakeCode, used on the micro:bit!

There are no good or bad computer languages, there are just different opinions and preferences.

To express advanced ideas in human languages, we use complex vocabulary. This is also the case for computer languages but instead of words, we use *coding patterns*.

Developers chose a language for a project based on the complexity of their idea. In our lesson, it was convenient to write MakeCode because it provides a nice graphical interface.

However, this may not allow us to write more advanced programs in the future. We do not know yet what future languages will look like.

Back in the 1960s, languages were just sequences of binary numbers (10001010… how hard is that to read?!).

Nowadays, we mostly just write textual code, and not binary, but this may change again with more graphical representations like you just used in MakeCode or even automatic generation!

Mihail Popov is a Software Researcher

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OPEN SOURCE HERO

Jacqueline

Microsoft has long been involved in Computer Science Education since the days of the Basic programming language which was the first software product that Microsoft shipped, and was part of Paul Allen and Bill Gates's vision to bring computing to every household.

One of Microsoft's current areas of research is around *programing languages*, and better understanding how to design languages that are easy to learn and can empower anyone to code.

The Microsoft MakeCode product began life as a research project based on the hypothesis that physical computing and both *blocks* and *text* coding options were important ways to make Computer Science more accessible and engaging for any and all students.

MakeCode is an Open Source project, and we are committed to the principles of Open Source development. Open Source development: transparency, collaboration, and participation across the MakeCode community.

We follow the Microsoft Open Source Code of Conduct to make sure everyone feels welcome to contribute, and to encourage diversity! Most projects have a Code of Conduct or Code of Respect and you can find OpenUK's at the bottom of every page of the website.

JACQUELINE RUSSELL EMPOWER & ENGAGE

To get started with MakeCode and Open Source Software development, try using MakeCode with GitHub. You'll hear more about GitHub and sharing code in Lessons to come.

PROJECT MANAGEMENT
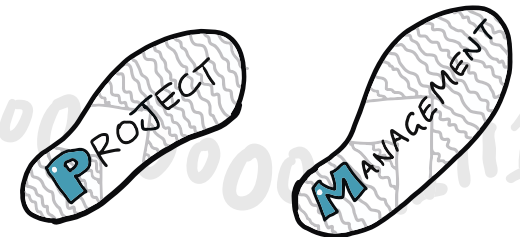
Jacqueline Russell is Program Manager at Microsoft MakeCode

(From Ed: please check the GitHub site to make sure that you are old enough to sign up for an account and if not, ask an adult to help you)

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WELL BEING

HOW TO STAY FOCUSED IN A DISTRACTING

Matthew

Do you think about homework, what's for dinner, or anything else whilst playing keep ups?

I didn't think so, as keeping control of the ball requires absolute focus… like being a Zen master!

Developing this type of focus (i.e. the ability to concentrate and let absolutely nothing distract you) is possibly one of the most important skills in life.

Focus is directly linked to the enhancement of your memory, problem-solving, decision-making, learning, and perception. Therefore, it is ultimately linked to your happiness and success. Essentially, the more you can focus, the better everything will be.

However, have you ever found it hard to focus on a project or task? You are not alone.

The vast majority of people struggle to concentrate. The world has never been more distracting than it is today, with so many apps and screens vying for our attention.

So how can you increase your focus?

1. Practising mindfulness is one of the best techniques.

2. Consuming less sugar. Sugar leads to hyperactivity and a brain haze which directly impacts your memory. Two things you certainly don't want if you struggle with attention.

3. Creating a space that is perfect for you to get in the zone. Make sure to keep it clean and without any clutter. Ideally, do not bring your phone into this space.

We encourage you to try these 3 tips and do your research on more techniques as there are plenty. Good luck!

Matthew Springer is a Founder

micro:bit REUSE

Wise words from the bit brain

micro:bit

SOUND

Your BBC micro:bit can be programed to make a wide variety of sounds - from single notes, tones and beats to your own musical compositions.

Click here to view the film

BRAIN GAMES

COMPETITION

Crossword
courtesy of crosswordlabs.com

SCORE!
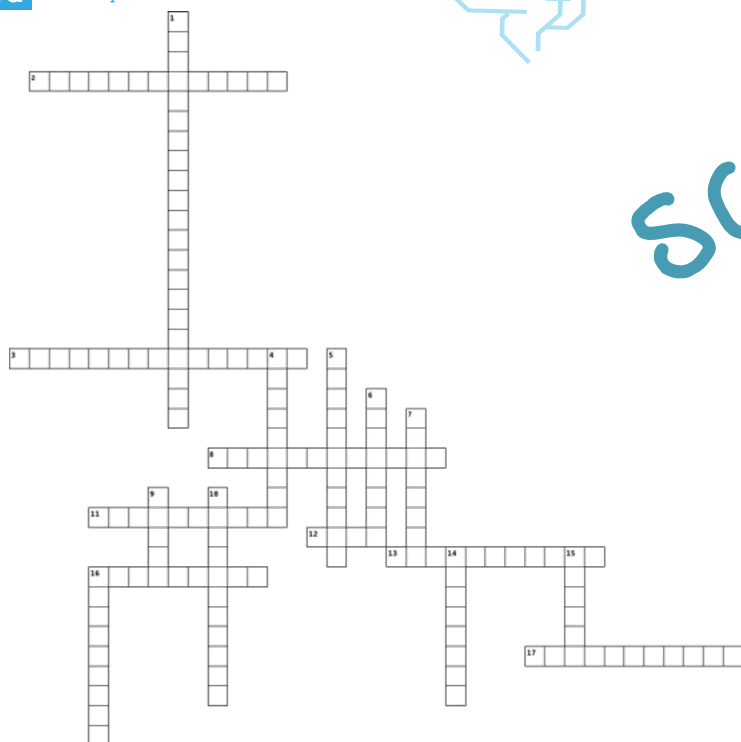
Across

2. What is the name of a programming statement that is executed if the result of a previous test condition evaluates to false? (Two words, 4 and 9 letters)

3. What notification of ownership of code do you put in code?

8. Where can you find the 'play note' block? (Two words, 5 and 7 letters)

Down

1. What is the name for written text that accompanies computer software or is embedded in the source code? (Two words, 8 and 13 letters)

4. What is a legal right of the creator of an intellectual property work called?

5. What is a pattern of blocks otherwise known as?

Word search
courtesy of puzzlemaker.discoveryeducation.com

```
L T W V D N N D D Q M S A O S
E O F U A O A I E I Y C T U E
C R V O H R S E C K F O T S M
O F A T S P I R L E I R R E A
D P Y H L O O A K O D E I L N
I P E A S P R A B E O B B B M
N S Y T Y J H C T L M B U A P
G P W T S S S N I J E L T I A
S C H A N G E M O M R B I R L
N O T P I R C S A V A J O A E
N U E J E X P L O R E R N V T
F E M F R E G E T N I A I E T
K Z F B O R O T I D E R S K E
U I F Q E B L O C K X T W E B
D H U Y J R H C A E K R D M Z
```

ATTRIBUTION	BLOCK	BOOLEAN
CHANGE	CODING	DIFFERENT
DISPLAY	EACH	EDITOR
EXPLORER	INTEGER	JAVASCRIPT
KEEP	MICROPYTHON	MICROSOFT
MODIFY	NAMES	NUMBER
PALETTE	PYTHON	SCORE
SHAKE	SHARE	STEP
TEST	VARIABLE	VARIABLES
WEB		

PRIZE

Win a Huawei MatePad T8

HUAWEI MatePad T 8
Everything You Need, On The Go

OpenUK MiniMU INSTRUCTIONS
LESSON FOUR
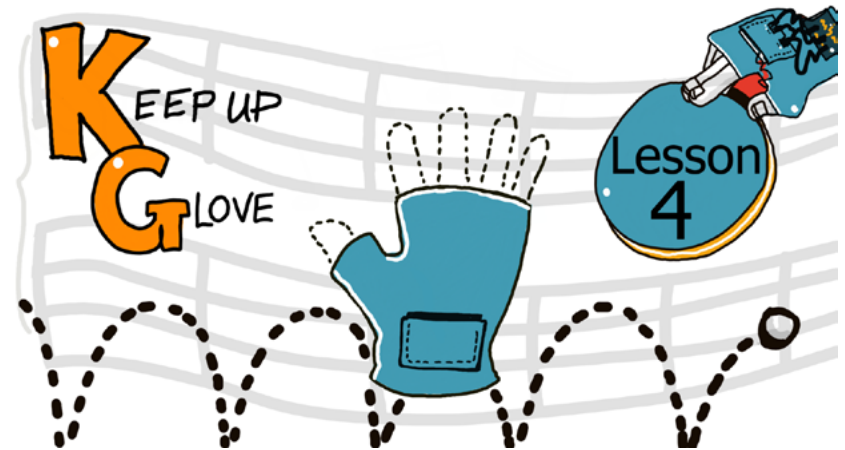
Paul saw a great game with a table tennis bat on the micro:bit website, and wondered if a similar game could be written and used with the MiniMU glove. The game challenges the player to bounce a ping pong ball repeatedly in the air without dropping it, and it counts the number of times the ball bounces, to give a score.

But Paul thinks that the gestures used to start and stop the game with the glove could be made a bit more natural to someone wearing a glove. In today's lesson you will help Paul to design a program for the 'Keep-up' game.

By doing this you will learn about:
❑   events;
❑   boolean variables;
❑   using integer variables for counting;
❑   if/else statements;
❑   you will also learn what 'copyright' is and why it is important when writing open source.

You will need:
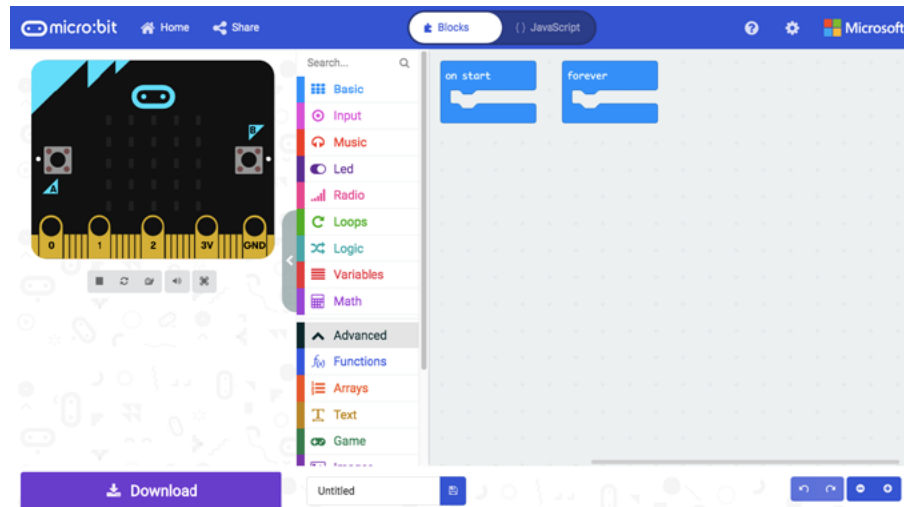❑   your assembled MiniMU glove;
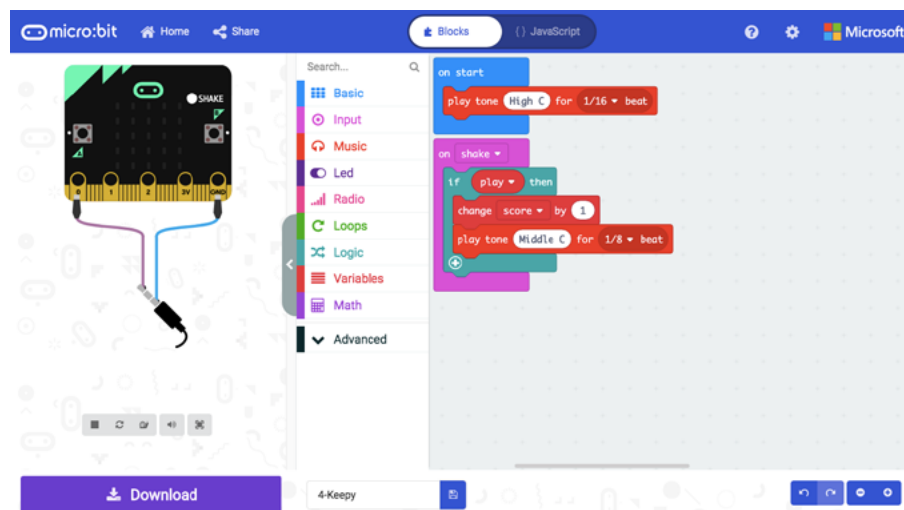❑   the MakeCode web coding editor;
❑   a ping pong ball.

Figure 1: The MakeCode web coding editor.

Figure 2: The OnShake event handler senses a ball bounce.
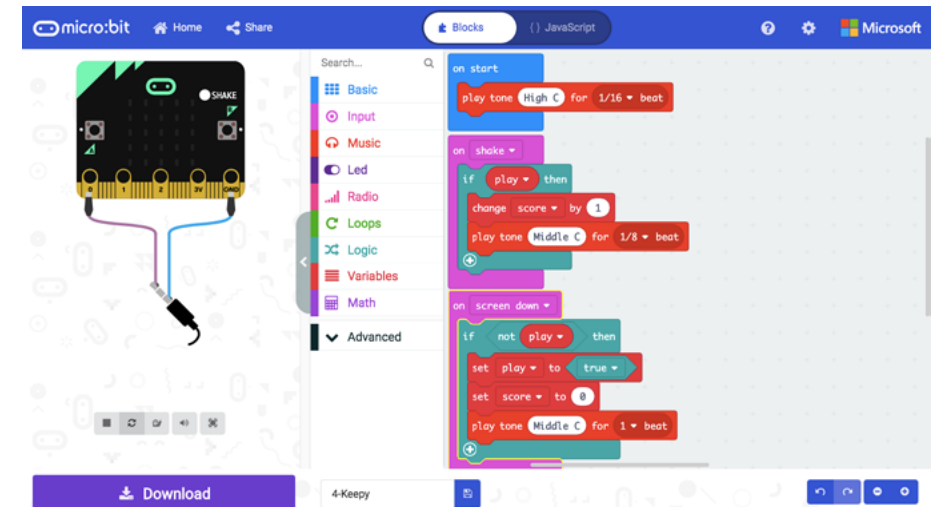
Figure 3: The OnScreenDown event handler starts the game.

Figure 4: The OnScreenUp event handler stops the game.

Figure 5: Copyright and Attribution.
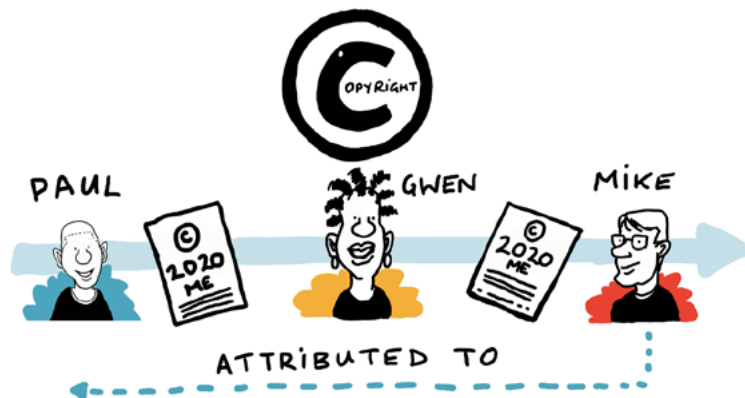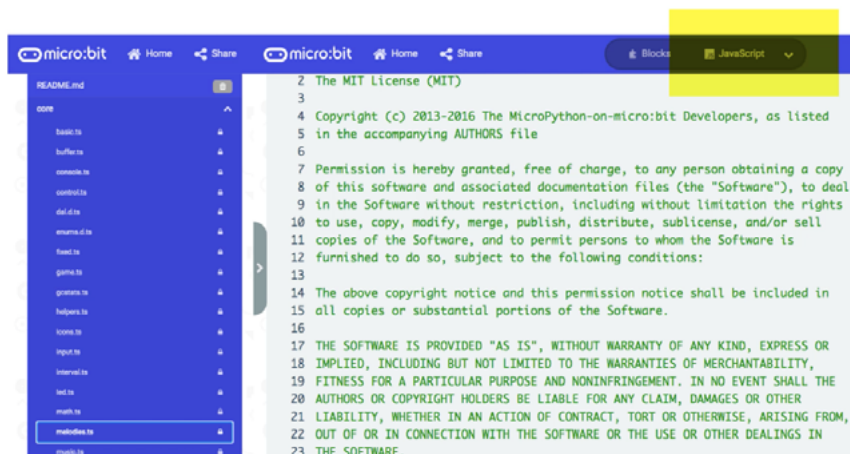

Figure 6: Finding the copyright statement for MakeCode melodies.

Figure 7: Finding the attribution for the original AUTHORS.