

ISSUE 3

openuk zine

The OpenUK open source how to guide

THIS EP

STEADY
G LOVE



CODE, BUILD, CREATE, COMPETE



To see Lesson 3 click here



WELCOME TO EPISODE 3!

I guess you know the routine by now....

Have to say, Matt (Mr Illustrator)'s drawings make me smile. There are lots of hidden jokes. Sometimes I don't spot the joke first time I watch as I am concentrating too hard on what Steph (the Voiceover Artist) is telling me.

You might want to watch the video a couple of times to spot them all.

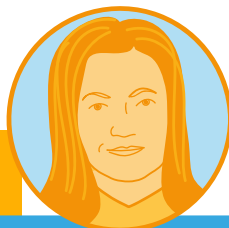
In Ezine One, you met Helen Leigh who created the glove and is an Open Hardware expert and in Ezine Two, VM (Vicky) Brasseur who is a leading figure in Open Source Software. This Episode you meet Frank Karlitschek who is one of my personal heroes. He gets very embarrassed when I tell people that.

If you want to find out more about how to become a developer, Vicky's book, Forging Your Future with Open Source, is great reading. fossforge.com

I really love hearing from our Heroes. Maybe one day I will read that you are an Open Source Hero. That would be great.

Happy coding.

Amanda Brock is CEO at OpenUK



Amanda, Editor

MAKING THE GLOVE



KEEP IN TOUCH



openuk.uk

TEEN ZINE

Your step by step guide to coding genius

#03 DEBUG IT!



Femi

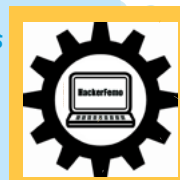
Debugging goes hand in hand with learning to code.

Learn to have a bit of patience and that if something doesn't work at first it is probably a really simple error. For example, you've forgotten a capital letter, missed a space out or missed a bracket.

If you're using a block language then, usually, it means that something is in the wrong order or you've misplaced a block.

If you're still stuck then reach out to someone who is also learning to code or a volunteer or mentor in your community (just make sure your parents know what you are doing). I've actually learned some awesome things from debugging mistakes I've made in my code - so remember, it's all good as long as you learn from them.

Femi Owolade-Coombes, age 14



micro:bit WIZARD

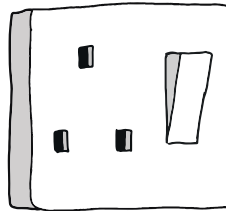
Your micro:bit questions answered by micro:bit expert **David Whale**!



What features does the micro:bit have?
Gabrielle, Cambridge



David



PLEASE

MISS

BOAL



Pam

GET WITH THE ALGORITHM!



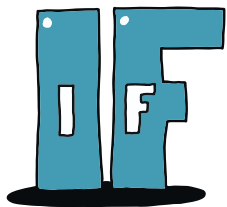
The micro:bit has many features, including: buttons, a display, a built-in compass, a built-in temperature sensor, and it has pins you can connect other sensors to. As well as all that, it can sense movement and tilt and can measure ambient light. It also has a built-in radio that can be used to send messages between micro:bits or can be used as a bluetooth-link to a tablet or mobile phone. There is a full list of features on the micro:bit website <https://bit.ly/3i8VOui>.



How can we link our micro:bits up with Bluetooth?
Ronan and Dinil, Watford



To communicate between micro:bits you can use the built-in 'radio' blocks (which don't use Bluetooth). To connect to a tablet or a mobile phone, you don't need any extra gadgets, just use the 'bluetooth' blocks in the MakeCode editor, and download the micro:bit app from the app store for Apple or Android. You can also use the 'bitty software' applications with it as well <http://bittysoftware.blogspot.com/>.



David Whale is a Software Engineer

In the Lesson, you were encouraged to experiment with your code. Don't worry about making mistakes - "Anyone who has never made a mistake has never tried anything new." – Albert Einstein.

While you are busy experimenting, let's think about the new Computing Science concepts that have been introduced.

Variables are named locations in a computer's memory which are used to store a value that can change. **Boolean variables** are stored as just 1 bit (0 or 1) as they have only two values: True and False.

Nested Ifs are another example of a selection statement. It is the term used when an **If statement** is placed inside another **If statement**. Both **conditions** need to be True for the code to be **executed**.

Computer Science is more than just programming so let's look at some Computer Systems to keep our learning moving forward?

The Lesson explains that engineers at Lancaster University and ARM have Open Sourced Low-level **machine code**. Low-level machine code refers to language which the machine understands such as Binary or Assembly language.

Now that you have created an amazing game and understood the concepts why not Open Source your creation? All you have to do is share and give permission for other creators to change the code in a licence.

Keep Coding!

Pamela Boal is an Educationalist

openuk.uk

INDUSTRY INSIDER

ALL ABOUT THE DEVELOPER



Mihail

A developer is someone who turns ideas into software, source code that is executed by a computer.

This is exactly what you did with the Steady Glove game in Lesson 2!! The idea is the game itself: to carry a delicate simulated object without spilling a drop or breaking it.

You wrote Open Source Code that represented the game in the MakeCode™ web editor.

Then, by downloading and flashing the .hex file to the glove, you moved your code to the computer within the glove and the computer **executed** the code when the glove was activated.

If you have not coded before, once you do Lesson 3, you will have completed your first project, congratulations!

Developers in industry do exactly the same thing. The only difference is that their projects are much more complex. For instance, Firefox, the Open Source Software web browser has more than 20 million lines of code!

While it may sound intimidating, all these lines of code are nothing more than a mix of simple code patterns. You are already familiar with some of them: ***If statements, event handlers, or forever loops.***

Senior developers are just knowledgeable about a more diverse range of coding patterns. Even they continue to learn new things as the Source Code software is constantly evolving!

Mihail Popov is a Software Researcher

OPEN SOURCE HERO



Frank

#OWN YOUR STUFF AND DO INTERESTING THINGS!

When I started with computers, all you got after you turned it on was a blinking cursor waiting for you to give a **command**.

Now, I can simply ask Siri on my phone what the weather is. Computers change faster than anything! But computers also change everything else.

We use them for communication and work, they predict the weather and are about to drive our cars.

Something that is so important should be something we can all understand, don't you think?

Ask yourself: if you can't look inside a device, figure out what it does, fix it when it breaks, do you really own it? Or does the company you bought it from merely lend it to you for as long as it works as THEY wish it to work?

I got involved in open source in the late 90s, and over the years I've come to believe that working together, without keeping everything secret – is super important.

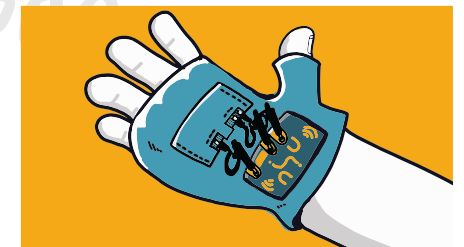
Also, it is more fun.

What do YOU want to do – solve a problem 1000 people have

already solved before, or do something that is actually new and interesting? Yeah, me too.

Giving people that opportunity, to do something new, is a major reason I started Nextcloud!

Frank Karlitschek is CEO and Founder of Nextcloud



(From the Ed: Nextcloud is an Open Source collaboration platform and OpenUK uses it to create these Ezines, <https://nextcloud.com/>)

WELL BEING

IMPROVING FOCUS THROUGH MINDFULNESS



Matthew

Do you find it hard to focus? Whether in class or doing something you love, it's easy to get distracted.

Well, you are not alone. A recent study shows that the average person has about 12,000 to 60,000 thoughts per day: 80% negative, and 95% are exactly the same as the day before.

Additionally, a Harvard study showed that humans spend 47% of their time not fully engaged with what's right in front of them.

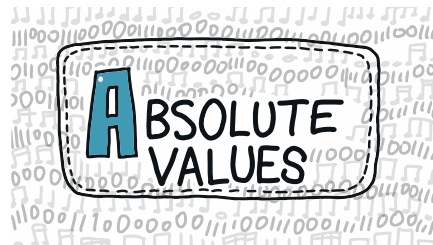
Thankfully, mindfulness (paying attention to your thoughts), or being 'mindful', can help.

An easy way to practice mindfulness is to close your eyes and follow your breath.

Follow your breath in and follow it out. Try repeating this for one minute.

You will more than likely get distracted within seconds but don't get frustrated. Just bring your attention back to your breath.

Soon, you will be able to focus on your breath for one minute. Then increase it a little, to two minutes, keep adding on time until you get to 10 minutes. You'll find that you become able to focus on something for an hour straight. As well as that, your mood will also be 10-times better.



Matthew Springer is a Founder

micro:bit

Wise words from the bit brain



PINS

On the bottom edge of your BBC micro:bit there are 25 gold strips, called **pins**. These pins allow you to create **circuits**, make your musical glove work, connect external things like buzzers and motors and make your own fun projects.



Click here to view the film

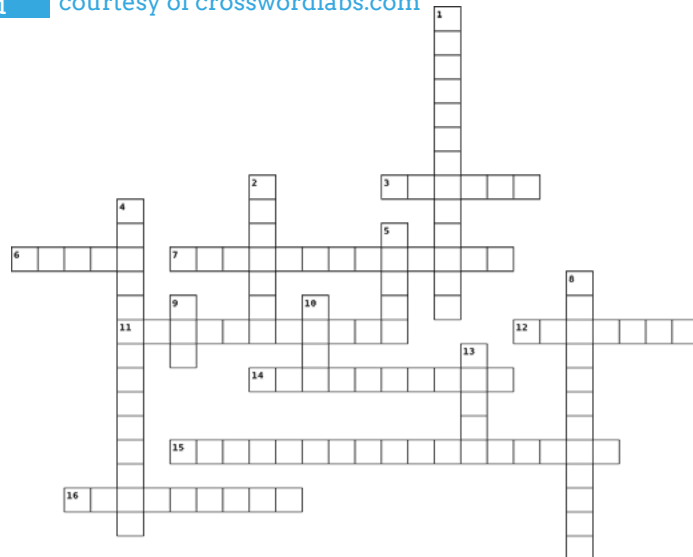
openuk.uk

BRAIN GAMES

COMPETITION

Just email your finished puzzles to enter ezine3@openuk.uk

Crossword courtesy of crosswordlabs.com



Across

3. What is data or information sent out from your computer or electronic device called?
6. What sounds when you tilt your glove too far to the right or left?
7. What is a specific place called? (Two words, 5 and 8 letters)
11. What are the two things that a Boolean variable can be? (Three words, 4, 2 and 5 letters)
12. What is checking if something is working also known as?
14. What is the name of the game Stephanie wants to challenge her friends to play where you walk slowly and carefully across the room as if carrying something delicate? (Two words, 6 and 4 letters)
15. What is it called when one If is inside another If? (Three words, 6, 2 and 9 letters)
16. What are named locations in the computer's memory that store different values called?

Down

1. What is an expert in mathematics called?
2. What is the name of the block that loops round and round until you stop it?
4. What are RAM and ROM examples of? (Two words, 8 and 6 letters)
5. Which Boolean variable do you join to the 'set run to' in the 'on logo up' event handler to stop the continuous alarm sounding?
8. What is the name of the event handler that senses when your glove is palm up? (Three words, 2, 6 and 4 letters)
9. What is a prompt to do something called?
10. What is an activity you engage in for fun called?
13. What is data or information sent to a computer or electronic device for processing called?

Word search

courtesy of discoveryeducation.com

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

BOOLE
DEVELOPER
HAND
MAKE
OPEN
PROGRAM
RUNNING
SOURCE
STOP

BOOLEAN
GEORGE
LOGIC
MOVEMENT
PALETTE
PROGRAMMING
SENSING
STATEMENT
SYMBOL

CODE
GESTURE
LOOPS
NESTED
PATTERN
RUN
SENSOR
STEADY
VALUES

PRIZE

Win a Huawei MatePad T8



HUAWEI MatePad T8
Everything You Need, On The Go
Powerful Performance | Bladeless Design | 11.5" HD+ Wide Display



To enter the prize draw you must submit the completed Crossword and Word Puzzle from Ezine1, by email to ezine3@openuk.uk. All entries are subject to our terms and conditions which you can read <https://openuk.uk/ezine-3-comp-terms-and-conditions/>. By entering you agree to them and confirm that you have parental or guardian permission if you are under 16 years of age. One winner will be drawn from completed entries received by 10 September. No cash alternative. UK residents only. Judges decision is final. No correspondence will be entered into. Surname and county of prize winners will be made available on request. Promoter, OpenUK.

CONTRIBUTORS

Ezine

EDITORIAL:

Amanda Brock - Editor @openuk_uk
Georgia Cooke - Creative Director nucwcreative.com
Kim Russell - Editorial Assistant
Stuart Hodge - Editorial Consultant @hodgeythehack
Eleftheria Kokkinia and the team @civic.civicuk.com - Technology and Web

COLUMNISTS:

Femi Owolade-Coombes- Teen Zine @hackerfemo
David Whale - micro:bit Wizard @whaleygeek
Pam Boal - Please Miss Boal @PamelaBoal
Mihail Popov - Industry Insider @Gateau_au_Lait
Frank Karlitschek - Open Source Hero @Karlitschek
Matthew Springer - Well Being @matthewspringer

Kit designed and distributed by @pimoroni



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The OpenUK glove kit giveaway and Ezine are made possible thanks to the generous support of



OpenUK MiniMU INSTRUCTIONS

LESSON THREE



Stephanie has an idea for a game that she wants to play with her friends; she wants to challenge her friends to a steady hand game. The game involves walking slowly and carefully to the other side of the room as if they were holding a delicate object such as a glass full of water, without spilling a drop.

But, her mum doesn't like the idea of the carpet getting wet! Stephanie thinks it would be possible to play this game virtually using her mini.mu glove. In today's lesson you will help Stephanie to design a program for the steady hand game.

By doing this you will learn about:

- ☐ Events;
- ☐ variables, (including boolean variables);
- ☐ loops;
- ☐ 'if's and nested 'if's.
- ☐ You will also learn a little more about Open Source.

You will need:

- ☐ your assembled Mini.Mu glove;
- ☐ the MakeCode web coding editor;
- ☐ a large room to practice in;
- ☐ and a very steady hand!

You might also find it useful to have a small object to carry in your glove, so you can imagine it is very delicate and fragile to the slightest of movement.

OpenUK MiniMU INSTRUCTIONS

LESSON THREE

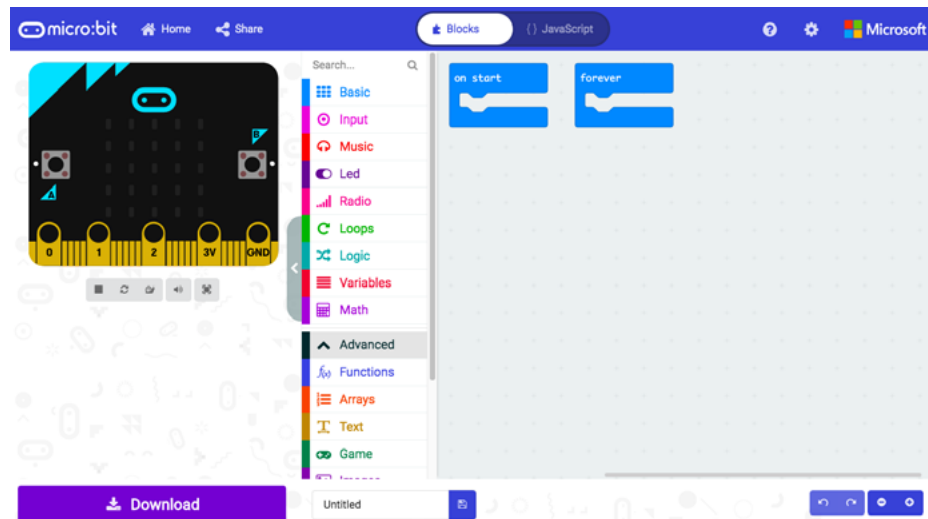


Figure 1: The MakeCode web coding editor

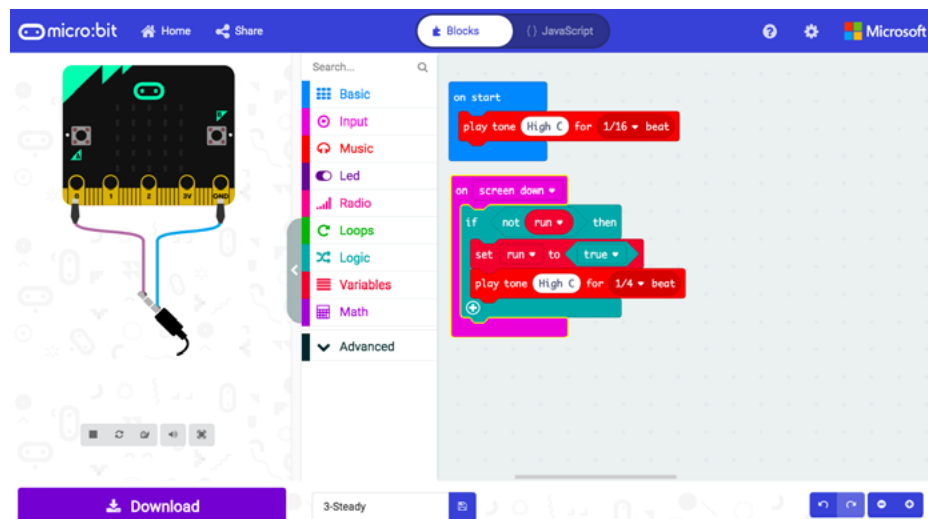


Figure 2: The 'on screen down' gesture starts the game.

OpenUK MiniMU INSTRUCTIONS

LESSON THREE

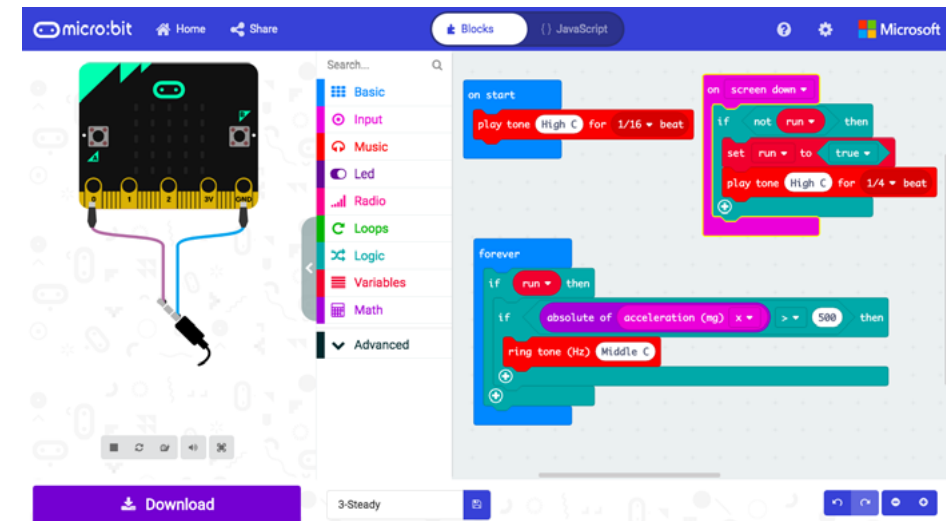


Figure 3: Building a custom gesture with forever/if.

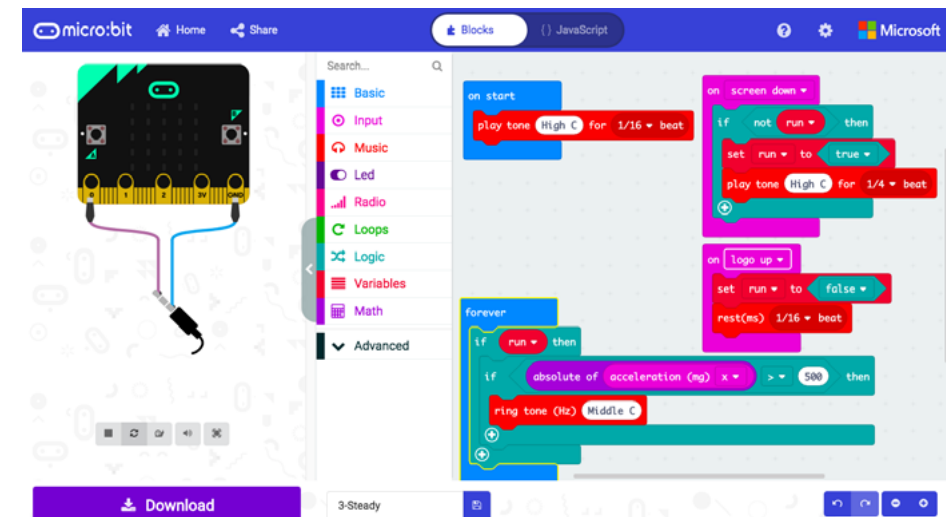


Figure 4: Adding the 'on logo up' gesture, to stop the sound.

OpenUK MiniMU INSTRUCTIONS

LESSON THREE

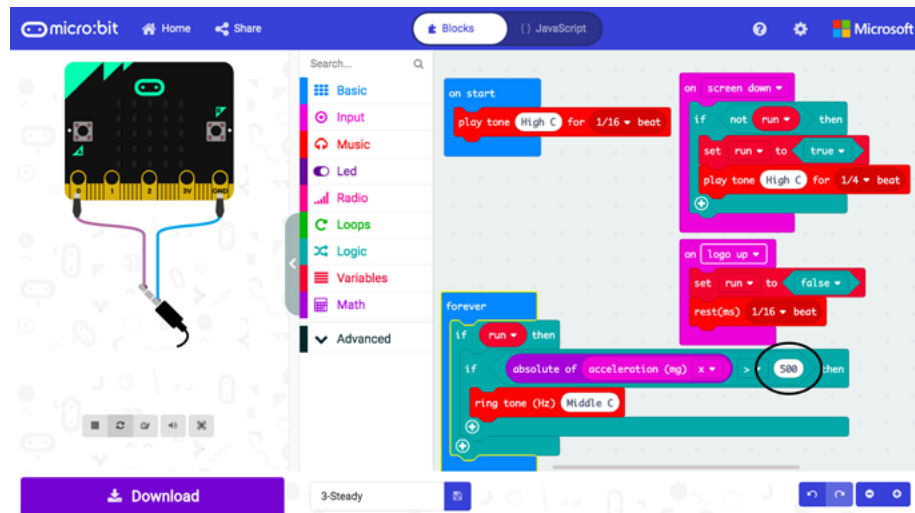


Figure 5: Change the 500 to alter the sensitivity.

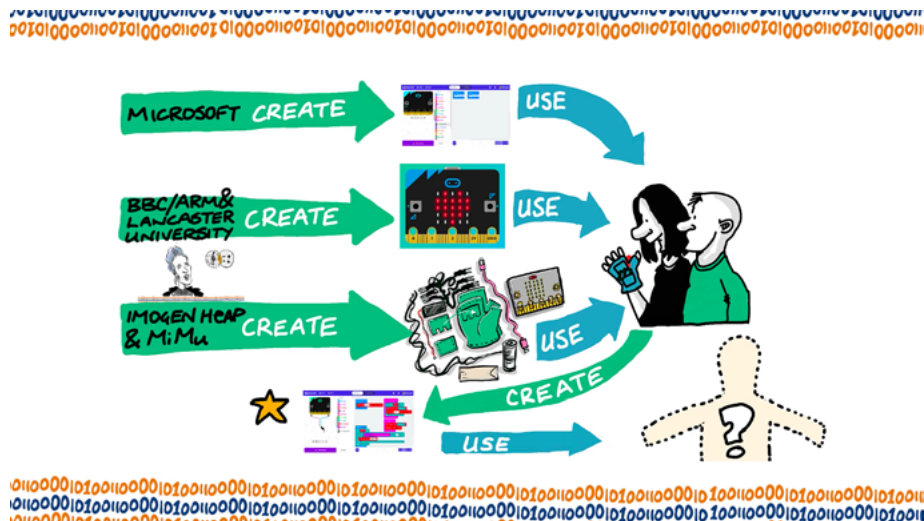


Figure 6: Open Source 'creators' - you are a creator!

OpenUK MiniMU INSTRUCTIONS

LESSON THREE

