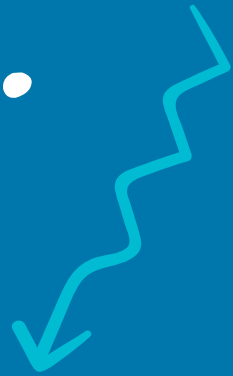


# Open:UK Ezine

**L**ICENCE  
DISTRIBUTED  
AND APPROVED  
BY THE OSI



Open  
Source  
is...



*...Usable in  
whole or in part*



# A message from *the Ed*



Amanda Brock

Hi!

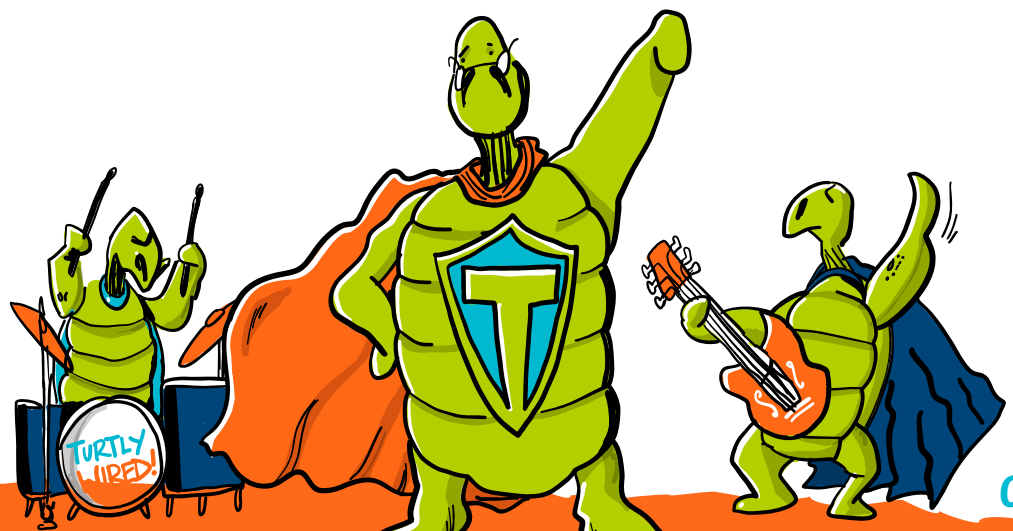
I love superheroes and, of course, open source heroes. We have already met quite a few open source heroes in both of our camp ezines. Today we meet Helen Leigh, creator of the MiniMU glove. She's a particularly creative hero ;- ) and collaborated with rock star Imogen Heap to create the MiniMu glove. You can see more about coding rockstars at <https://www.youtube.com/watch?v=6avJHaC3C2U>

Creativity is something important to solving problems and fixing bugs in code, also for drawing turtles or other sea creatures. When we think about the sea in 2021, sadly we also think about plastic and the problems our marine life faces thanks to humans. Some things in our lives, including code, are better if we can recycle them. Our turtles, even the Ninja ones, would be happier if there was less plastic polluting their homes.

Pamela talked about Greentech and that's an important focus for all of us in tech.

We need creative solutions to sustainability problems in the same way as we need creative solutions to code problems. 2021 is the UK's year of Climate Action and you can find resources about this and further activities at <https://together-for-our-planet.ukcop26.org/>. Also, of course, you can learn more from Cristian's columns.

*Amanda*  
CEO, OpenUK



# Ask Ashleigh



Ashleigh Monagle

## Invisible disability

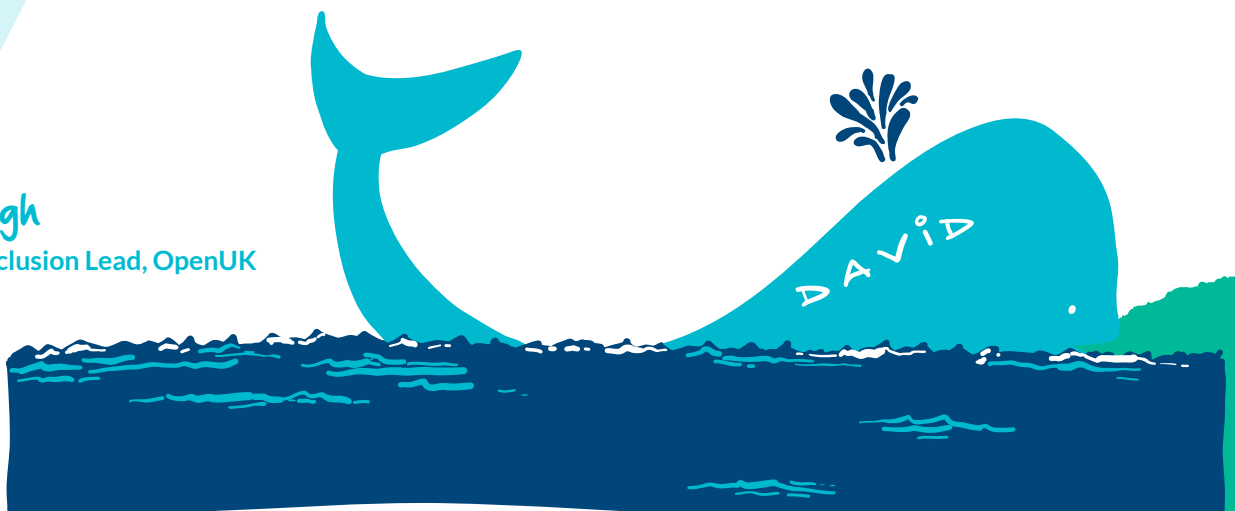
When asked what your superpower would be, some people reply saying that they would like the power of invisibility but for some people, unfortunately, this is not a choice. You have probably heard the phrase 'do not judge a book by its cover', but if not I will go into a little more detail and share with you how you can be a different type of superhero.

In the UK, 70% of disabilities are hidden, meaning that it is unlikely you would be able to tell they have a disability just by looking at someone. Some of these disabilities were mentioned in the neurodivergence column in Ezine [5] and others include Anxiety and Fibromyalgia (a condition that gives you pain all over the body). The lesson to be learned from this is that we should treat everyone fairly and not judge a book by its cover. There are some people who need support and some who suffer from disabilities that prevent them from doing certain things.

To help, we should all be open, respectful, and try not to judge people for their behaviours and choices. Always put your trusting foot forward and believe that people have good intentions.

Ashleigh

Digital Inclusion Lead, OpenUK



# Sustainability

## Food!



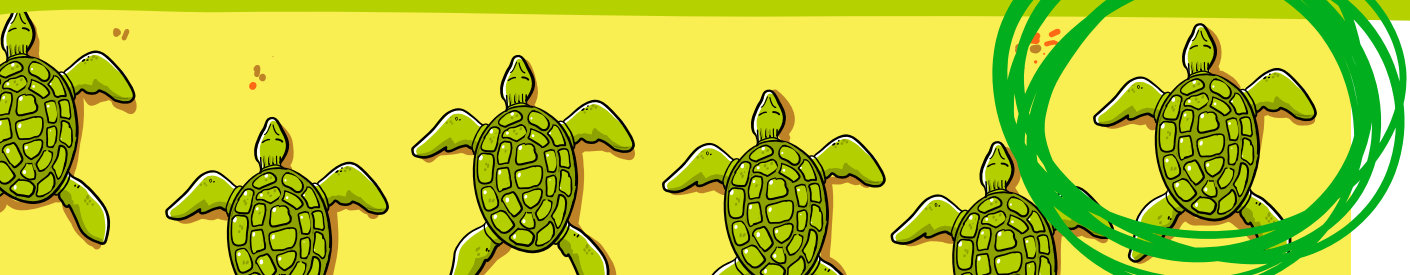
Sustainable food comes from a combination of factors which include how the food is produced, how it's distributed, how it's packaged, and how it's consumed.

It involves many entities such as farmers, food processing companies, food brands, food packaging companies, transportation, distribution companies, and supermarkets - it can get complicated very quickly! The food industry is responsible for cleaning up that supply chain from emissions and pollution, bad packaging, overproduction, and other inefficiencies around transportation and waste.

But, we also each have an important role to play as individuals.

Here are some ways you and your families can make food choices that are more sustainable and environmentally friendly:

- Eat less meat and more vegetables. Farming animals for meat and dairy requires space often created by cutting down trees, using loads of water, and feed. According to the World Wildlife Fund, animal agriculture accounts for nearly 15% of greenhouse gas emissions worldwide. With meat consumption increasing by 500% over the past twenty years, it's clear we need to reduce this. Doing so can be easy and fun - pick one or two days a week when you don't eat any products made from animals and see how many days you can be on a veggie streak!

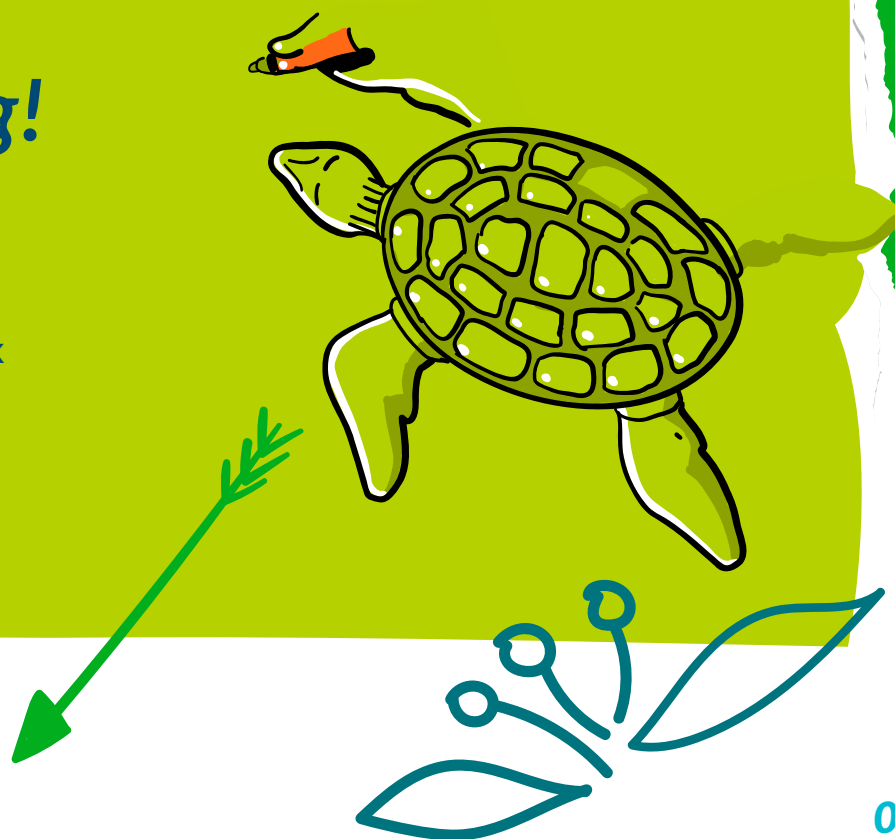


- Choose foods that are seasonal and locally produced since they don't need to be transported far.
- Choose products that have been traded fairly, since this means that no person in the supply chain has been exploited to lower costs.
- Reduce your food waste. Over 30% of food produced gets wasted and doing something about that is simple: freeze food you can't eat while it's fresh, buy loose fruits and vegetables so you can choose exactly the amount you need, and while you're at it, eliminate packaging waste too.
- Try growing your own fruits and vegetables in pots, in your garden, or community gardens. They are tasty and don't come with the travel mileage and packaging of supermarket fruit and vegetables.

## Keep Coding!

Christian

Chief Sustainability Officer, OpenUK



# Please Miss Boal



## Create the shape!

In this lesson, we return to the holy grail of software engineering. Do you recall that Douglas Crockford was quoted as saying “code reuse is the holy grail of software engineering.” This time we are reusing the code from the Turtle module in Python.

When I started programming in the early 1990s, I learned Logo. This is a programming language that involved a turtle icon that you could move around the screen with just a few simple commands - left, right, back, forward. I remember that amazing feeling of being a real programmer as I controlled this icon on my screen. This was what got me interested in programming in the first place.

Turtle is a pre-installed Python library that I believe recreates that amazing feeling. This enables beginner programmers to create pictures and shapes by providing them with a canvas. The onscreen pen that you use for drawing is called the Turtle and this is what gives the library its name.

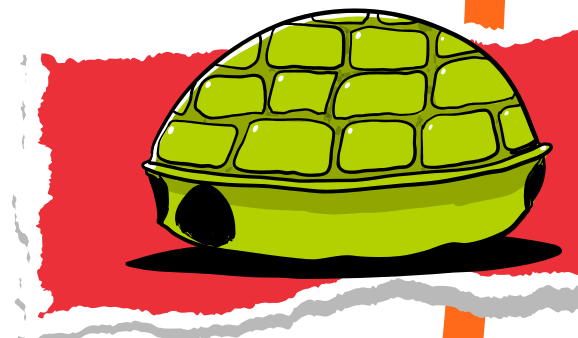
In short, the Python Turtle library helps visual programmers get a feel for what programming with Python is like in a fun and interactive way.

The challenge for this Lesson is to use your glove to make the most creative shape that you can with the Turtle module.

## Keep Coding!

Pam Boal

Computer Science Lead, OpenUK





# Open Source Hero



Helen Leigh

## Playing with tech!

As a musician and technologist, I worked with Imogen Heap and her MiMu software glove to create a Kids version of the glove, which was called the Mini Mu glove. We were able to open source the MiniMu glove and the OpenUK digital gloves that you are using to work on your kids course are inspired and follow the design of the glove I created.

I specialise in creative use of new technologies in education and like to play with technology, many different projects not just the gloves you are using for this course. You can find ideas to inspire you in my book.

My childhood and education were in the UK and then I lived in Berlin and now in the US where my day job is to run the community for an open hardware business called CrowdSupply.

Software is great, but it runs on hardware, the devices you use, like your gloves' micro:bits, and speakers. I really enjoy working with those devices and hardware. Just as you are hearing about the open source software communities we also have open hardware communities, sharing and collaborating around hardware.

I really hope that you enjoy using your glove, learning to code and maybe, keep in mind that there is a whole world of hardware to get involved in too.

Helen

Creative technologist and author



# Industry

## Foundation 8 micro:bit foundation



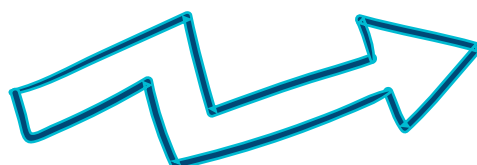
The BBC micro:bit is a pocket-sized computer that introduces you to how software and hardware work together and, of course, it is at the heart of the OpenUK Kids Course. It was designed to help you take your first steps with technology, by helping you design and build your own innovations.

The BBC micro:bit has an LED light display, buttons, sensors, and many input/output features that, when programmed, let it interact with you and your world. You can begin to learn how to code in a few simple steps by writing simple programs and transferring them to your micro:bit.

The Micro:bit Educational Foundation is a non-profit organisation that develops the micro:bit hardware and makes lots of free activities and projects you can do from home, at school, your code club, or anywhere at all. They also run the global do your :bit challenge, which invites you and your peers to develop solutions to the UN's Global Goals using technology.

The micro:bit team believes that all young people should have the opportunity to experience digital technology, build skills for the 21st century and change the world in the process.  
<https://microbit.org/>

micro:bit





# Open Data



## *Data in art and culture*

Why make art about data? With organisations collecting more and more data about us, we need to make sure they are using it to benefit us and make society better.

But discussions about data can often be very technical, and it's easy to lose sight of the impact on people and the environment. Art can be the bridge between the human world and the world of data – it creates a space for people to think about things on a more emotional level.

Data art is not about finding solutions to problems; it's about asking questions, exploring new topics, and challenging people to see things from another perspective. Data art can be playful (like a vending machine that gives out free crisps when there's bad news about the economy), or provocative (like an online work that exposes the tracking technology built into our everyday internet browsing experience).

Sometimes by making data more visual, we can find out things that we didn't know before, or see new patterns that might tell a different story to the one we assumed was correct.

By letting us imagine the future, art allows us to think again about the decisions we make today. It can help us move towards a more ethical and sustainable society and a world where data can work for everyone.

# Learn with Lowena



Lowena Hull

## Imposter Syndrome: how to deal with it

Have you ever heard of imposter syndrome? Maybe you haven't heard that specific name, or you have heard it but don't know what it means?

It's when you feel like you're not as good as everyone thinks you are and are waiting to be caught out for not knowing. You can sometimes feel like a fraud. It happens to the best of us and even our CEO at OpenUK, Amanda talks about feeling it.

Here's the good news: it's a very common feeling and you're certainly not alone!

But how can we deal with these annoying thoughts? Well, everyone deals with things a different way, but here's what I do. I keep a list of things I've achieved and next to each of the items I write how I achieved it. For example, "I got X % on this exam" and next to that I'd write "I spent [X] number of hours studying" or "I created flashcards which I used to study". To me, it helps show me that the things I've achieved aren't an accident and that I didn't just get lucky, but worked hard for them and deserve any success that work brings.

So, if you've ever felt like I have, give it a go and see if it helps!

Lowena

Student, Cambridge University



# Nasa



Chris Mattaman

## Recognition

Recognition for open source contributions is one of the most important aspects of the project. We've all contributed towards things that we got little in return for. How did it feel? Not too good right? It feels like all that effort, and then poof, you don't feel valued, you feel like you've had something taken from you.

That's the feeling you get in open source when you invest a lot in for example making patches, and then having your patches or pull requests (contributions committed to a project) sit and never get merged while the open source project contributors - those with write access to modify the repository - go about their merry way developing the project. Your work out there, never merged, no credit, you don't get to tell people that you worked on the project or software, they can't see it if they inspect it, but you contributed.

Doesn't feel too well at all.

Fix that by merging patches, by ensuring that documentation that your community writes is improved, is included, and do it by being responsive not only to your project demands and needs but to those of community building and recognition for those that are contributing to your project.

Chris

Chief Technology and Innovation  
Officer, NASA Jet Propulsion  
Laboratory





# Entrepreneur in residence



## Will open source continue to be important in the future?

The future of open source is very bright and there are new projects created all the time. Open source development has never been as vibrant as it is today, and it will continue to accelerate even more.

One reason it will accelerate is, as well as being a way for developers to come together and create new projects, it is a way to attract investment and eventually make money.

This is because large companies, in particular, want to use more and more open source software in their infrastructure, or “stack”. Every large tech company now has a team of engineers whose job involves ensuring the technology being deployed across the company is using the best open source projects. Another very strong reason why open source will continue to be important is because very large tech companies, such as Google, Apple, Microsoft, and IBM see it as a way to be competitive whilst collaborating. This is why their software developers are the largest overall open source contributors.

As long as there is a desire to use software to innovate, open source development will be important to making ideas fully come to life and be something you should know about.

**Matt**  
President & Co-Founder, Jetstack

110111100  
0110001111  
1000111001  
0001111001  
111100110111



# Kubernetes

## An illustrated guide



As The not-so-distant future. Space outposts (cloud-native infrastructure) are the next frontier for settlement and Captain Kube is in charge of the cutting-edge Mars outpost. As the outpost has grown in size and complexity, Captain Kube needs to find solutions for many of the settlement's growing pains. He has recruited Phippy to work with him on the outpost's Day 2 challenges. On their way to Mars, Captain Kube and Phippy plan to brainstorm solutions.

“Right now, the outpost platform (Kubernetes) is set up and there's enough compute, storage, and networking to support rapid growth,” Captain Kube tells Phippy, “but we also want to protect ourselves from accidental failures and be able to replicate our outpost in case of outright disaster.”

“Currently, at the outpost, storage is easy to use and self-service works in seconds. Citizens (developers) can also easily deploy changes to their homes (containerized applications),” explains Captain Kube.



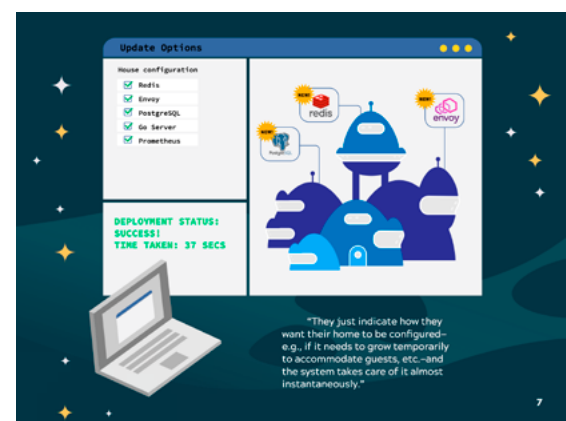
“This includes easily building homes’ libraries (databases and NoSQL systems), which are essential for outpost homes. Kubernetes takes care of keeping everything available and working smoothly.”

Captain Kube continues, “The outpost infrastructure (Kubernetes) allows our citizens to build, improve, and update their homes (applications) quickly, no matter how complex they are.”

“They just indicate how they want their home to be configured e.g., if it needs to grow temporarily to accommodate guests, etc.—and the system takes care of it almost instantaneously.”

“However,” Captain Kube continues as Phippy listens carefully, “because home changes no longer go through a planning board approval process (change control) and citizens have complete control, it's also very easy to get things wrong—to even accidentally turn a mansion into a house of cards.”

“There can also be any number of accidents in space, and we should also be prepared for malicious destruction. Our current systems only allow us to bring back the house, they don't bring back any contents inside it.”



**To be continued....**

# Word game

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

Browser  
 Community  
 Compass  
 Degrees  
 Factor  
 Firefox  
 Fork  
 Foundation  
 GUI  
 Increment  
 Leader

Licence  
 Magnetic Field  
 Map  
 Mozilla  
 Naming  
 Permission  
 Product  
 Range  
 Scale  
 Separate



courtesy of [puzzlemaker.discoveryeducation.com](http://puzzlemaker.discoveryeducation.com)

# Thanks for reading!

## Contributors

### Editorial:

Amanda Brock - Editor @amandabrockUK

Georgia Cooke - Creative Director [nuwcreative.com](http://nuwcreative.com)

### Columnists:

Ashleigh Monagle - Ask Ashleigh

Pam Boal - Please Miss Boal

Cristian Parrino - Sustainability

Helen Leigh- Open Source People

Micro:bit - Industry

Chris Mattaman - NASA

Lowena Hull - Learn with Lowena

Matt Barker - Entrepreneur in Residence

Open Data - ODI <https://theodi.org/>

CNCF - Kubernetes An Illustrated Guide <https://www.cncf.io/phippy/>

The characters Phippy, Captain Kube, Goldie, and Zee and the two books are owned by The Linux Foundation, on behalf of the Cloud Native Computing Foundation, and licensed under the Creative Commons Attribution License (CC-BY), which means that you can remix, transform, and build upon the material for any purpose, even commercially. If you use the characters, please include the text “phippy.io” to provide attribution <https://phippy.io>

All content is contributed by the author and the opinions of the author, and may not represent the opinion of OpenUK. ©OpenUK and licensed in accordance with: <https://creativecommons.org/licenses/by/4.0/>



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

Course sponsored by



In kind glove sponsor



OpenUK glove inspired by



Giveaway sponsored by



NOMINET

© OpenUK 2020. OpenUK is a not-for-profit company limited by guarantee, company number 11209475, registered at 8 Coldbath Square, London, EC1R 5HL. Contact [hello@openuk.uk](mailto:hello@openuk.uk) [openuk.uk](http://openuk.uk) @openuk\_uk






# Instructions Lesson 8

{create.withcode.uk}

```
mycode.py   
1 from microbit import *  
2 import turtle  
3  
4
```




{3E015C98BBF5D78CF7}

```
mycode.py   
1 from microbit import *  
2 import turtle  
3  
4 # Create our turtle!  
5 t = turtle.Turtle()  
6  
7  
8  
9  
10
```



{A264307DEB9C40365B}

```
mycode.py   
1 from microbit import *  
2 import turtle  
3  
4 # Create our turtle!  
5 t = turtle.Turtle()  
6  
7 while True:  
8     if accelerometer.was_gesture("left"):  
9         t.left(90)  
10    elif accelerometer.was_gesture("right"):  
11        t.right(90)  
12    elif accelerometer.was_gesture("up"):  
13        t.forward(25)  
14    elif accelerometer.was_gesture("down"):  
15        t.backward(25)  
16    elif button_a.was_pressed():  
17        t.pencolor("green")  
18  
19  
20  
21
```

