

Open:UK Ezine



Open
Source
is...



*...Does not allow
discrimination amongst
people or groups*



Issue

5

A message from *the Ed*



Amanda Brock

Hi!

Can you believe that this is the last episode in the first half of the course? It's amazing how time flies and I hope you are enjoying the course. What is it with Steph, our voiceover artist, and ice cream? Hopefully, you have had one or two 99's and some fun this course, as well as doing the #openkidscamp.

Have you had a chance to read Ask Ashleigh? Ashleigh is OpenUK's Digital Inclusion lead and she has worked hard this year to get our glove kits out to people who are digitally excluded. We want everyone to have a chance to be part of the course and to help them have the kit they need to participate. This year's glove kit is an OpenUK special edition and I hope you managed to get hold of one - it's super cool.

In this ezine, Ashleigh discusses neurodiversity. I don't think she knows, but I am neurodiverse. I have an ASD - autism spectrum- diagnosis. I see lots of patterns that many other people can't see. A lot of the time, that's a big advantage for me in life. Although sometimes being neurodiverse is confusing too. One of the great things about OpenUK is that we are very accepting of people, and my colleagues accept that the way I think can be different and sometimes even seem to enjoy it. We also believe in social justice and collective equity which Cristian talks about.

Hope you enjoy our lesson.

Amanda
CEO, OpenUK



Ask Ashleigh



Ashleigh Monagle

The importance of Digital Inclusion - Celebrating difference and welcoming all.

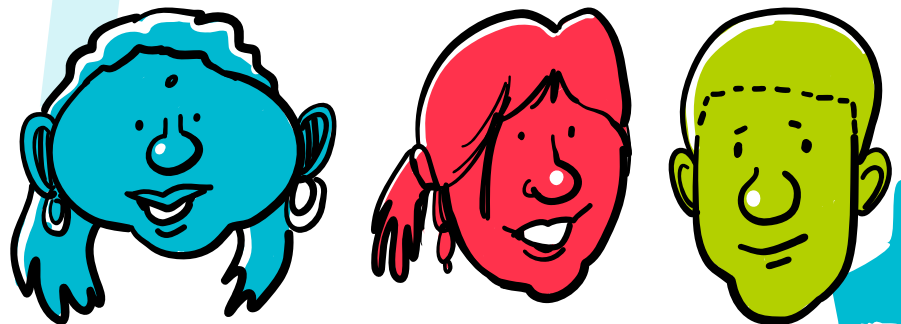
Have you ever felt like an outsider and struggled to fit in? Do you want to be able to help your friends, family and fellow course mates feel more comfortable with who they are? If so, this column will teach you how.

We call it Belonging.

Throughout the course, I will be writing about things we have all experienced and how we can learn to celebrate our differences and be more understanding of each other. Belonging is about making everyone feel welcome and wanted. This is something we all want and need in order to be happy and healthy. I will also give you some examples of how being different is great and show you that we all have something amazing to offer the world.

In reading these, you will learn how to make a change in society and make a positive difference to the people you meet. That's a powerful thing -

watch this space!



Ashleigh

Digital Inclusion Lead, OpenUK



Sustainability



Cristian Parrino

Intersectionality and Climate Justice

We have already explored how climate change has an impact on people and the planet, and how sustainability needs to be about finding solutions that secure the wellbeing of all people and the planet.

However, how climate change impacts people isn't equal. That inequality intersects with other proven and deep-rooted social injustices towards people marginalised because of their race, gender, and geographic location, around their access to health, income, justice, and education. A few examples:

Research has shown that in the UK, it is harder for black, brown, and low-income communities to have access to clean air, water, and natural spaces. In addition, minority and low-income communities are more likely to live in neighbourhoods that are nearer to waste landfills, motorways, toxic waste, and other environmental hazards.

Oxfam demonstrated that the richest 10% of the world population produces over 50% of global CO₂ emissions, yet the population around the world that is currently most affected by climate change because of droughts, extreme weather, or sea-level rise, produces no more than 10% of global CO₂ emissions.



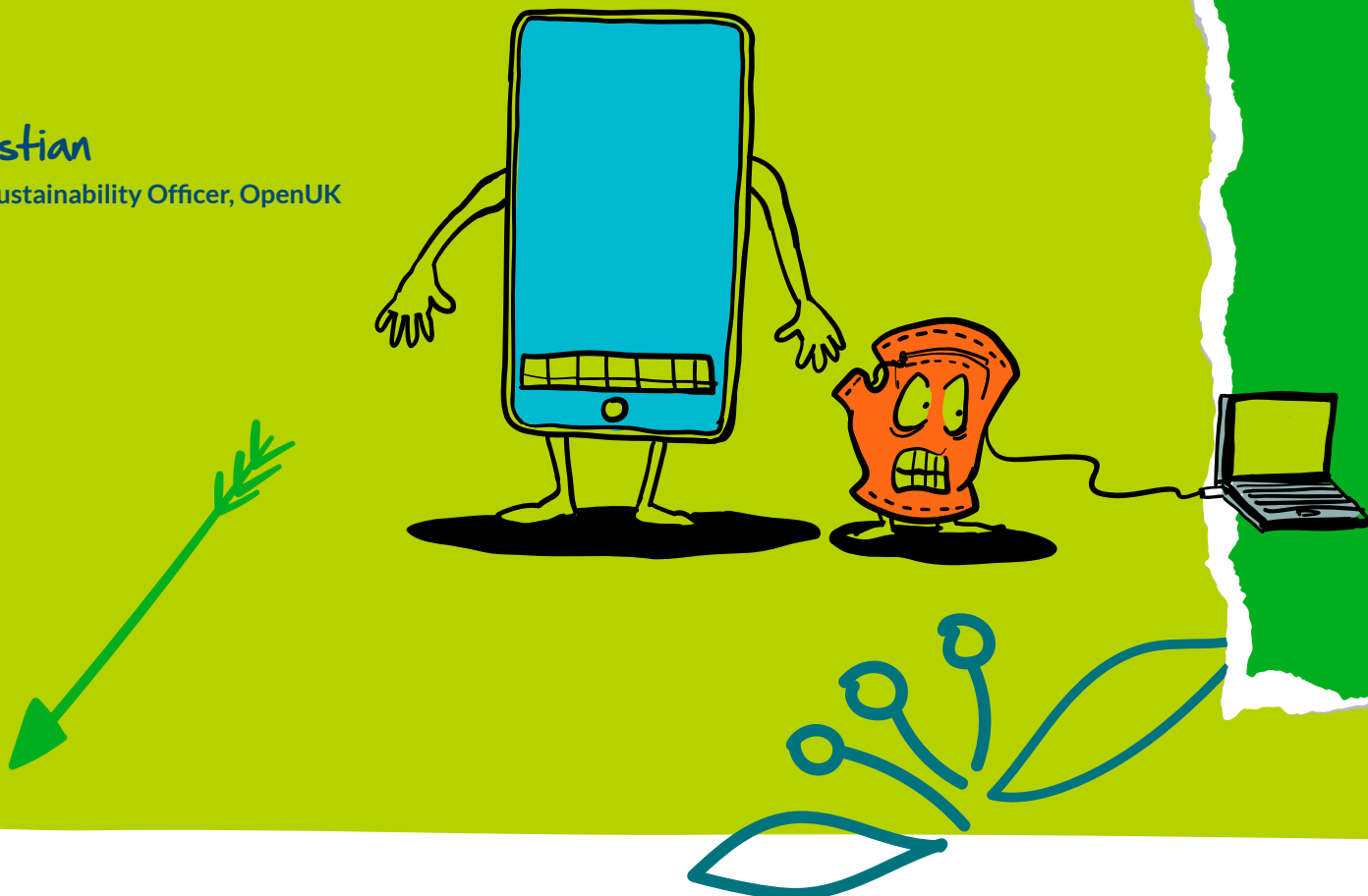
So the people least responsible for the climate crisis are the ones already experiencing the brunt of climate change!

This means that climate justice, social justice, and racial justice are all connected - this is called intersectionality - and we need to fix them together. To fix them together, we need every group to be represented and have a voice when coming up with solutions.

Because if we don't, we risk coming up with solutions that perpetuate the inequality of our society and its systems.

Christian

Chief Sustainability Officer, OpenUK



Please Miss Boal



Pamela Boal

Dots & dashes!

This course is developing your skills as programmers but the first step in writing any program should be solving a problem. Our aim should always be “first, solve the problem. Then write the code,” to quote John Johnston. Communication over long distances is a problem that has existed for generations.

In the 1830s and 1840s, Samuel Morse worked with other inventors to develop the telegraph which revolutionized long-distance communication. It worked by transmitting electrical signals over a wire. He then invented a code that assigned a set of dots and dashes to each letter of the English alphabet and allowed messages to be sent across telegraph lines.

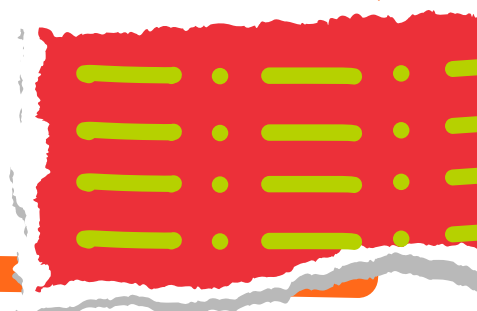
In 1844, Morse sent his first telegraph message, from Washington DC to Baltimore and, a few years later, a telegraph line had been laid across the Atlantic Ocean from the U.S. to Europe. The telegraph has now been replaced by the telephone and the Internet. Nowadays, people communicate by text messages or SMS, email, and a multitude of electronic communication systems like Signal. During the Covid pandemic, it has become more common for people to use video conferencing to speak with friends and do business.

Despite all these advances in communication, the US Navy and Coastguard still use signal lamps to communicate using Morse Code. The challenge of this lesson is to use your glove to communicate with someone in your household using Morse Code.

Keep Coding!

Pam Boal

Computer Science Lead, OpenUK



Open Source Hero



Working together

I started contributing to open source software over 20 years ago when I was working on the signs at Piccadilly Circus, in London. I needed hardware supported on Linux. The Linux maintainers helped me to make my first code contribution and I have never looked back!

I am Chief Technology Officer at Docker, a company that builds tools for software developers. Docker started seven years ago by releasing an open source tool that made it easy to take code you have written and share it with other people in the Cloud. It became an overnight success. Today, millions of people use our tools. Everyday we get great feedback about how people love our software!

My job is to help decide the areas and features that we will work on and make sure that what we build helps the Docker business. There is a lot of cooperation between open source companies. We work together and share technology, code and ideas, so I work with other companies too.

I live in Cambridge, but Docker has people working in many countries. We all work from home. The open source community invented remote working, just meeting up in person every few months. We engage people based on talent, not location.

Justin Cormack
Founder, Docker



Industry

Eclipse Foundation



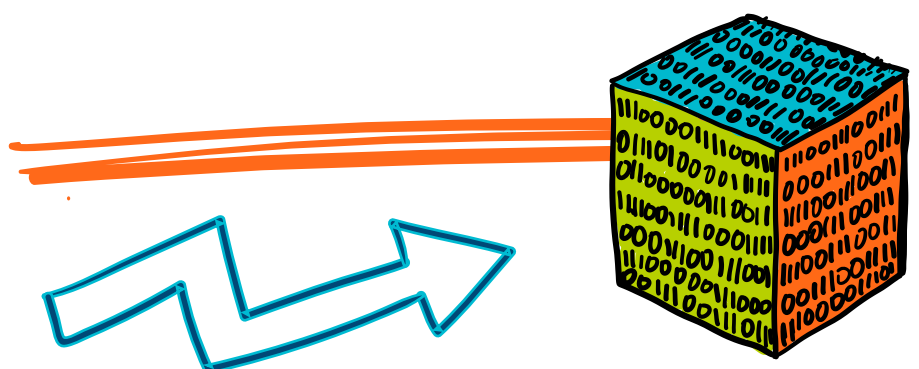
In the late 1970s and early 80s, the first contact many future developers had with programming was through affordable home computers. The VIC-20, Commodore 64, TRS-80 Color Computer, and many others could be used with the living room television and had the basic programming language built-in. They provided a perfect environment for discovery and experimenting.

Today, most students have been exposed to technology at school. The luckiest of them have even dabbled in automation and robotics using micro:bit, Arduino, and similar boards. Sensors, actuators, and microcontrollers supplanted computers as a gateway to the world of technology.

Many Eclipse open source projects contribute to those learning experiences. The current version of the Arduino IDE is built around [Eclipse Theia](#). [Eclipse CDT](#) and [Embedded CDT](#) have a long history of success for embedded development. Most robotics projects leverage the [ROS 2](#) platform nowadays; [Eclipse Cyclone DDS](#) is now the default ROS 2 middleware and the innovative [Eclipse zenoh](#) protocol is increasingly used with it as well.

The Eclipse Foundation is proud to power tools used by millions of developers every day, younger and older alike. We plan to make our IoT technologies even more accessible to kids soon.

Eclipse Foundation



Open Data



What is data ethics (and why is it important)?

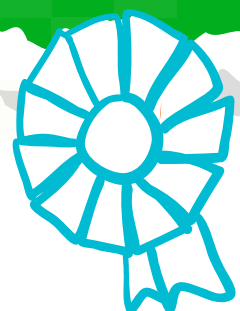
Data has the potential to have an impact on people and society, either directly or indirectly. For example, data might be used to decide how expensive someone's car insurance is, or whether someone can get a mortgage on a house.

Because data can have very real effects on people's lives, it's important to make sure we are not causing harm when we are dealing with data. This is called 'data ethics' – good practices that help us decide how data should be collected, used, and shared.

Data ethics should be considered whenever you're dealing with data – whether that's collecting it, using it to build an app, or making a decision based on data.

For example:

- If you're collecting data, how can you make sure that data isn't 'biased' (that the data isn't unfair in some way or favour certain viewpoints)? Might collecting data about someone stop them from being themselves?
- If you're making a tool based on data, how can you make sure that everyone can use that tool? For example, if the tool uses facial recognition, will it recognise everyone's faces?
- If you're making a decision based on data, how can you make sure that that decision is fair? Is everyone affected by the decision OK about it being made in this way?



Learn with Lowena



Lowena Hull

Using different Python modules

One of the great things about Python is the large number of modules available, from maths modules to artificial intelligence modules to art and music modules. There are even modules to analyse text patterns using the natural language processing toolkit (NLPT). Do any of these catch your eye?

For example, I once used the “geopy” module to see whether latitude and longitude coordinates correspond to places in the ocean or not, while creating a project to study ocean phytoplankton.

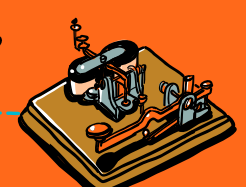
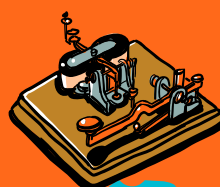
It’s always worth checking if there are any useful modules before starting a project that might help you and allow you to reuse rather than create code!

This time my great words of wisdom might seem a little obvious: there are tonnes (and I mean tonnes) of great resources out there for learning to program and sourcing existing code. I personally enjoy using Youtube. I simply search “[python module] tutorial” and chances are some amazing person out there has done a video explaining from a beginner’s viewpoint which is a lot less daunting than just staring at documentation!



Lowena

Student, Cambridge Univeristy



NASA



Chris Mattaman

Consensus not universal agreement

It's hard enough to convince five people to eat the same thing for lunch, imagine how hard it is to convince five highly technical people that they must all agree in order to move the needle forward in your open source project. Universal agreement should not be the minimum bar to move your project forward. You are looking for consensus. Consensus means "loose agreement" as defined by a majority of those present, or perhaps some preset percentage / threshold that must be met to move forward. Consensus breaks disagreements that happen because, let's admit it, we're all human, highly technical, passionate, and innovative people.

Disagreements are the norm, not the strange events.

Consensus allows you to break blocking disagreements and to ensure that the most important part of building out your open source project - having the agency to move forward in a highly diverse and energetic community - is able to proceed and not be blocked trying to get everyone to agree to the avocado toast (although it's really tasty!)



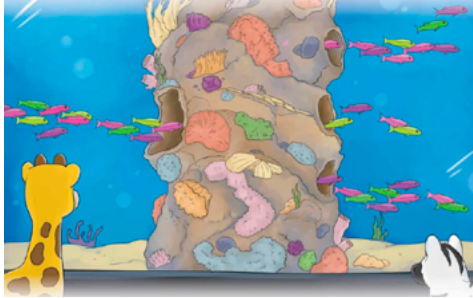
Chris

Chief Technology and
Innovation Officer,
NASA Jet Propulsion Laboratory

Kubernetes

An illustrated guide. Continued from issue 4

As they walked on, they saw an aquarium with an enormous reef. Edge-to-edge, it appeared that the rock would keep anything from passing from one side to the other. Zee watched as hundreds of tiny fish made a dash for the center of the face of the rock. At full speed, the fish swam into a hole bored into the rock face and momentarily vanished from sight.

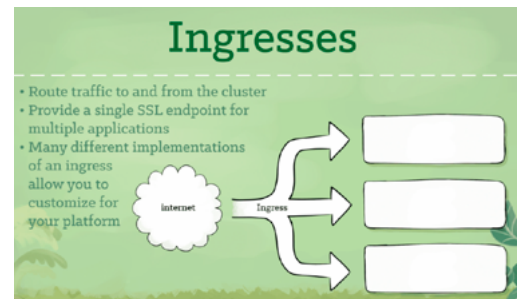


Zee let out a gasp. Multicolored flashes erupted from the opposite side of the coral. Instead of coming out of a single hole, the fish seemed to materialize from tiny fissures all over the far side of the rock. “Ingresses are beautiful,” said a dreamy eyed Phippy.

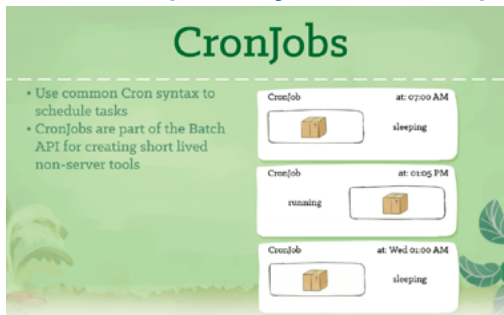
Enchanted, Zee muttered, “Uh-huh.”

Ingresses provide a way to declare that traffic ought to be channeled from the outside of the cluster into destination points within the cluster. One single external Ingress point can accept traffic destined to many different internal services.

Zee pointed to the raccoons sprawled motionless in the next enclosure. “What’s wrong with them?” Suddenly, one sprung to its feet, did jumping jacks, then settled back down for another nap.

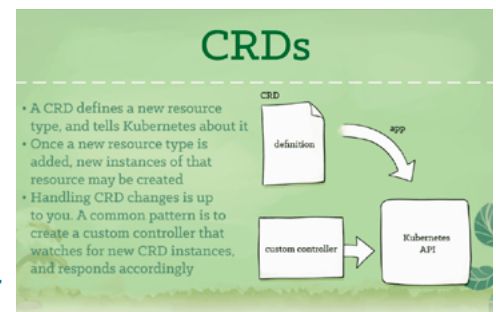


“Those are CronJobs,” said Phippy. “Mostly, they just sleep. But periodically, they spring into action to do a specific job.” As she spoke, another bolted upright, grabbed a broom, swept the entire enclosure, and then dropped off to sleep again. “Aunt Phippy, can I bring that one home to clean my room?” Phippy laughed as they walked on.



CronJobs provide a method for scheduling the execution of Pods. They are excellent for running periodic tasks like backups, reports, and automated tests.

Zee halted abruptly. In the distance, a black-railed fence arose. The arches above the pen were marked C-R-D. Between the bars, Zee could make out some peculiar critters. A giraffe with a hippopotamus head. A snake with raccoon ears. A lion with a beaver’s tail. A unicorn with no horn. Zee wasn’t sure she liked the looks of that place. “Oh,” said Phippy, a look of concern on her face, “Uh... look! It’s lunch time! We’d better head home.”



With a look of mild relief, Zee complied. “Can we stop at Captain Kube’s Shake Shop on the way out?”

CustomResourceDefinitions, or CRDs, provide an extension mechanism that cluster operators and developers can use to create their own resource types.



Entrepreneur in residence



Matt Barker

Can open source change the world?

Open source software now relates to almost everything we touch in our modern daily lives. From simple things such as the moment you wake up and switch off your alarm, to using your kitchen utensils, and turning on the television.

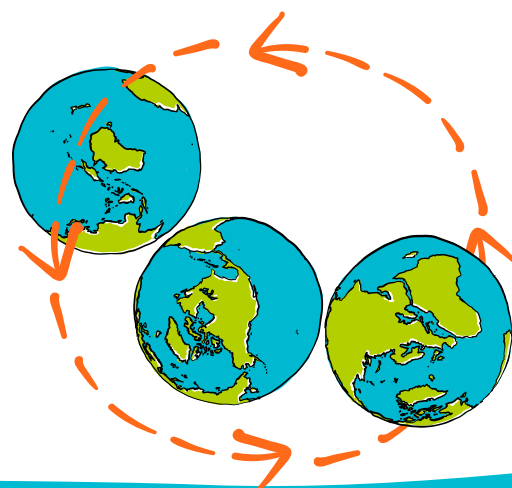
Open source software is playing some part in our daily routines, so it is fair to say open source has already changed the world and will continue to do so.

But not just this world. The recent Mars mission landed a helicopter on the planet's surface, and all the code running the helicopter was fully open source. The core system used by the helicopter was based on Linux, but what was fantastic about this project was that it was entirely community based and you can read more details in Chris' NASA column.

The Mars landing fired people's imagination and compelled software developers from all over the world to contribute to the project and make it happen. Innovation and purpose can truly come from a community, and open source software development thrives on community. Open source development empowers developer communities and together they have shown this is very powerful and is changing the world.

Matt

President & Co-Founder, Jetstack



Word game

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

Android
 Array
 Bug
 Console Simulator
 Discrimination
 Diverse
 Feature Phone
 Google
 Grace Hopper
 Linus Law
 Morse Code
 Moth

Operating System
 Real Time
 Release
 Reset
 Serial Port
 Simulation
 Smart Phone
 SOS
 Telecommunication
 USB



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Thanks for reading!

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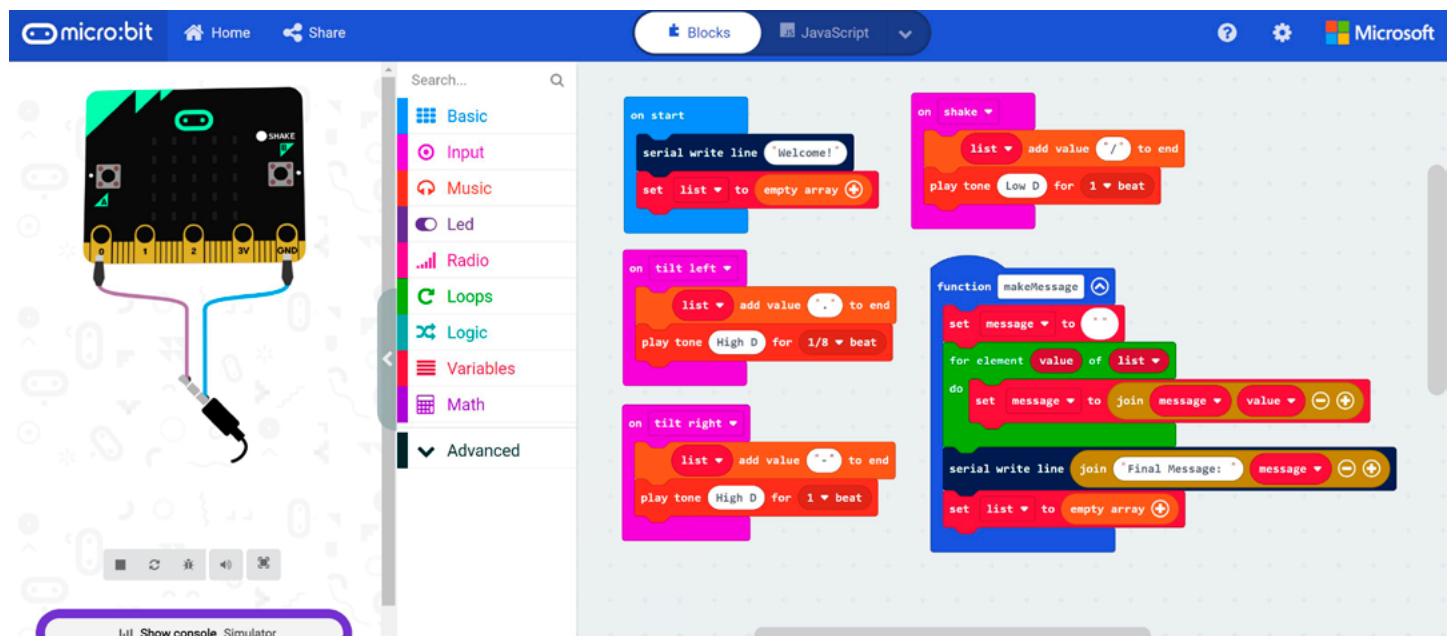
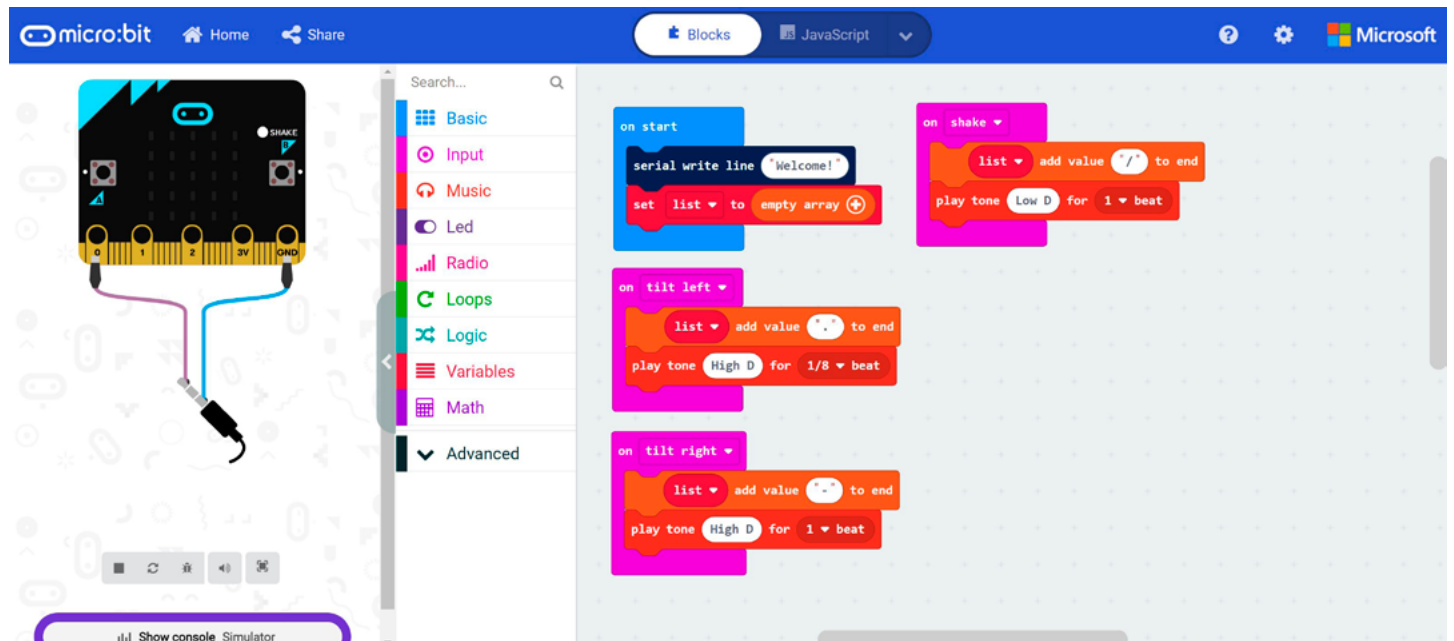
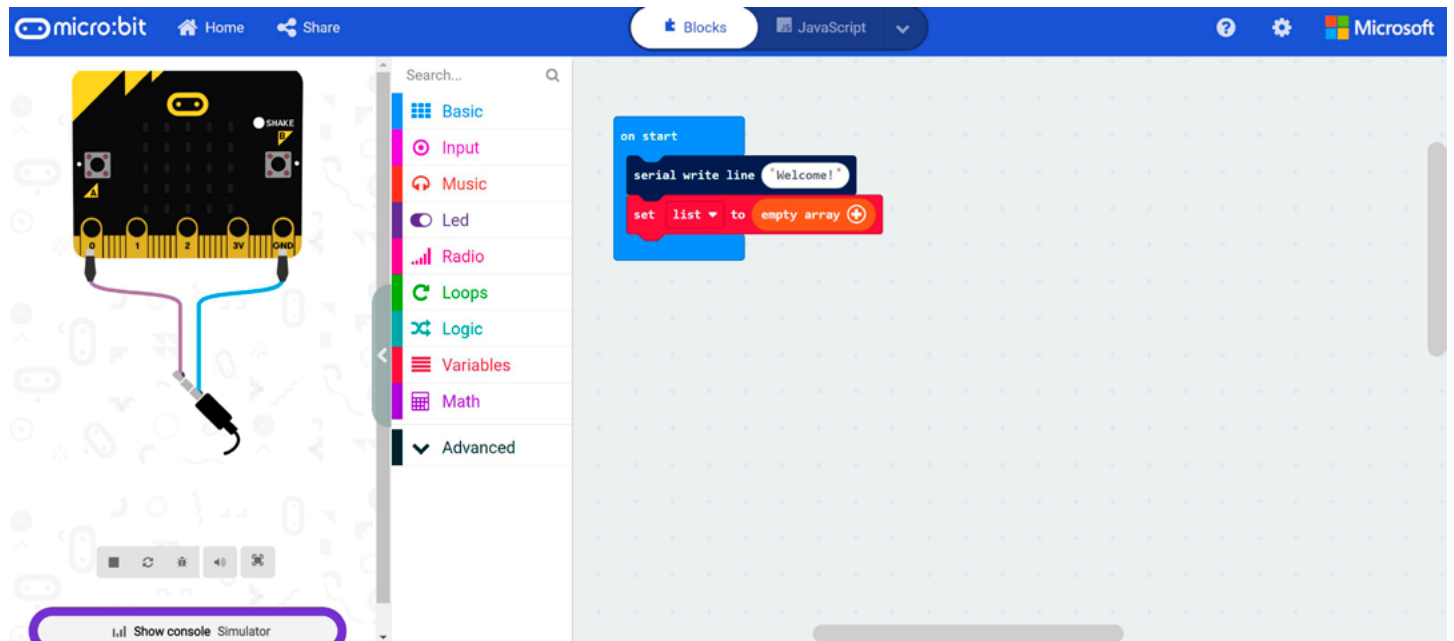


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Instructions Lesson 5



Instructions Lesson 5

