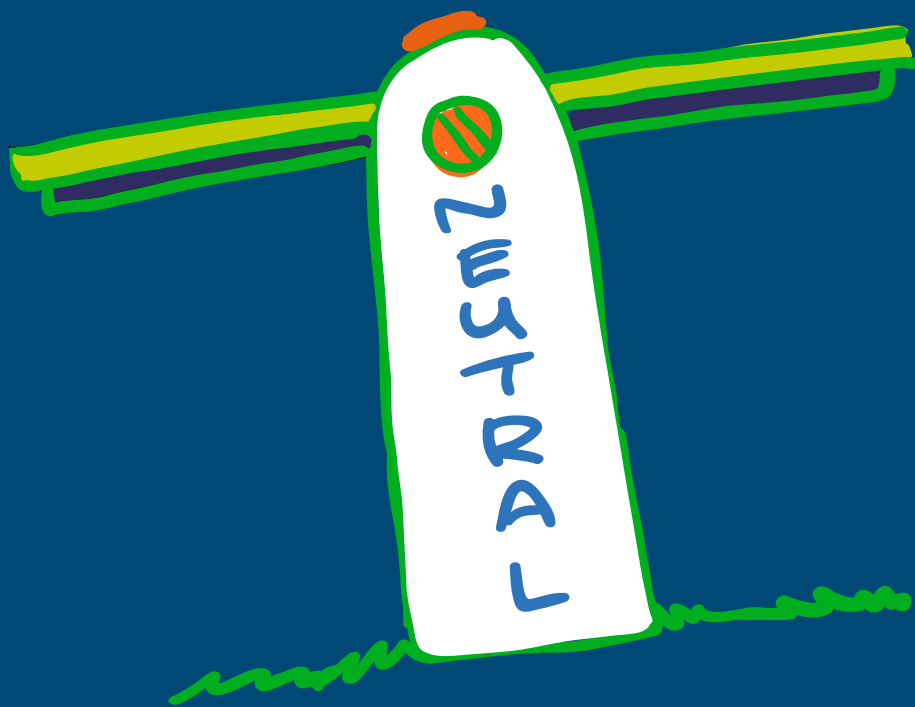


Open:UK Ezine

Open
Source
is...



*...Licensed
technology neutral*



Issue 10

A message from *the Ed*



Amanda Brock

Hi!

A key learning from this course is the importance of the Open Source Definition and Open Source Initiative - which manages the definition and the approval of Open Source Licences. Any code can meet the OSD but unless it shares its copyright under an OSI approved licence it is not open source software.

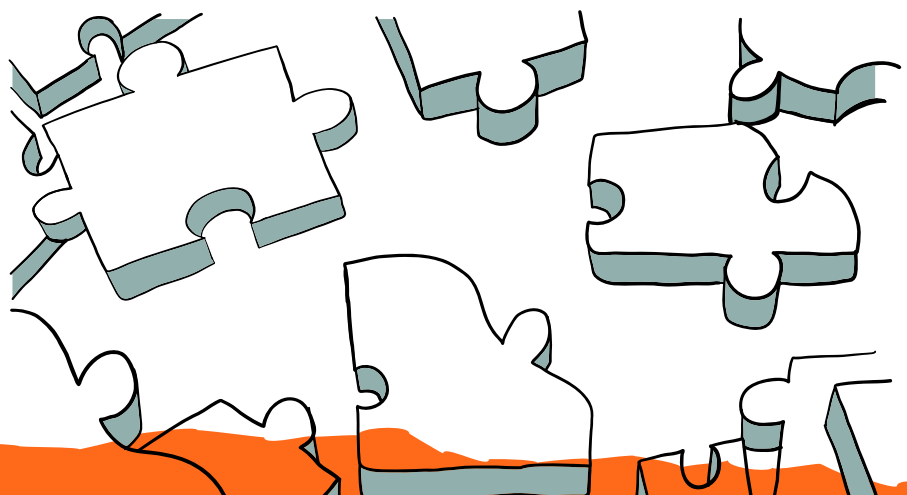
We've learned a lot about the OSD but one of the things that is most important is that it does not allow discrimination across users, uses, technology that code is to be used on, or code it is to be used with. This ethos is an important part of Open Technology as it sits at the heart of collaboration and community.

Many of the people in the ezines run software businesses but are also part of the open source software community, which is a global community. Although only some contributors are recognised as rockstars, everyone and their contributions are valuable.

We nurture and care for our communities and their diversity, not just diversity of people, but diversity of contributions, whether code, documentation, organising events, supporting governance and licensing, or running an organisation. All contributions are valuable and important.

I hope you're inspired to join the many UK people who contribute to our community.

Amanda
CEO, OpenUK



Ask Ashleigh



Ashleigh Monagle

How you can make a difference ..to the people around you by helping to make people feel like they belong

In these columns, we have talked about a lot of things from understanding your identity, treating people fairly, and celebrating diversity. There is a lot to talk about, but even a small change in your behaviour can make a difference to people around you and to the society in which we live. You may not think you can make a difference, but you definitely can.

Here is a summary of my top tips to support you in making a difference:

- Know that you are awesome and more than enough!
- Accept everyone for who they are - not what they look or sound like.
- Be aware of those who feel left out and bring them into the conversation.
- Some people's brains are wired differently - embrace and explore creativity!
- Remember that being different is good and we shouldn't shy away from it.
- There is always room for one more so be welcoming to others.
- Don't judge people.
- Consider that everyone has different needs and we should try to help each other.

Ashleigh

Digital Inclusion Lead, OpenUK



Sustainability-



Transportation



Over 25% of global carbon emissions come from the transportation industry, which includes the production and use of motor vehicles that run on roads, railways, air, and sea.

But sustainability in transportation also includes social and economic aspects - for example, do all people have access to affordable and convenient transportation for their food, work, school, and health needs?

As we saw in the food and energy sections, changing transportation systems so they become sustainable is a shared responsibility across governments, businesses, and our individual choices.

We want our institutions to make the necessary regulatory and infrastructure changes to ensure our transportation system is clear of pollution and carbon emissions, and affordable and accessible to all people independent of their geographic location and income levels.



There are a number of simple things we and our families can do in our everyday lives to help the environment, our fitness, and our health:

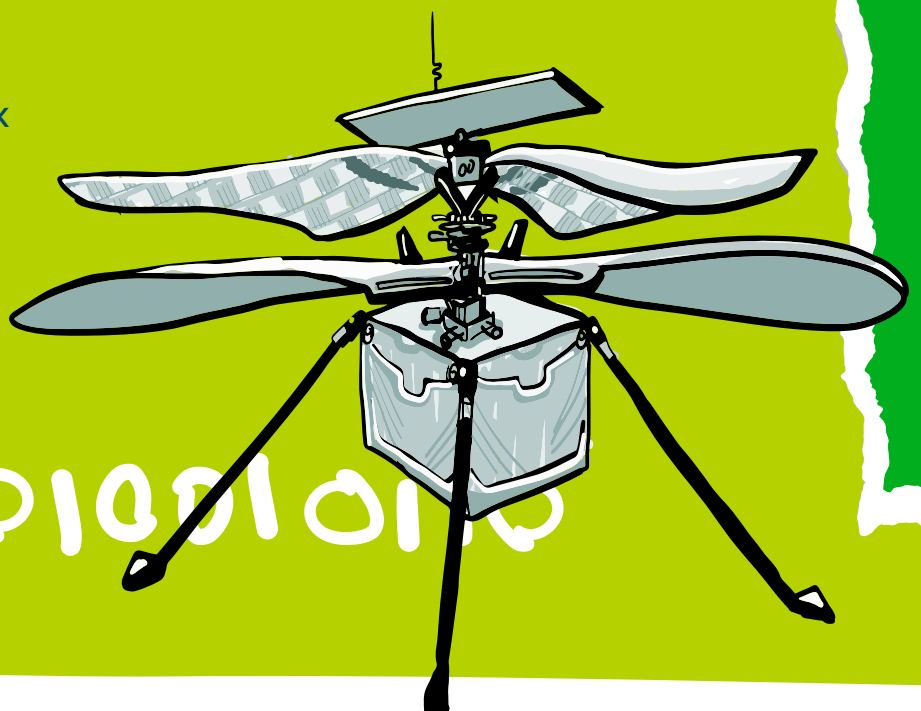
Walk and cycle to school whenever possible. It's a healthy and environmentally friendly activity which you can do with friends. If your parents have to take and collect you from school in a car, ask them to carpool with other students, and also to turn off the engine while waiting for you so that the car doesn't pollute the air and waste fuel.

For longer journeys, public transportation like trains and buses are always more environmentally friendly than cars.

When going on holiday with family, "slow travel" options such as trains and boats are always more environmentally friendly than airplanes.

Christian

Chief Sustainability Officer, OpenUK



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Please Miss Boal



Pamela Boal

Custom block it!

An impressive way to finish this course is writing a program in another new text-based language - Javascript. Javascript is a commonly used language on the world wide web. Douglas Crockford says “Javascript is the only language that I’m aware of that people don’t feel they need to learn before they start using it”

It is a scripting language that is used to create and control interactive website content, i.e. anything that moves, refreshes, or otherwise changes on your screen without requiring you to manually reload a web page. Features like:

- Animated graphics;
- Photo slideshow;
- Autocomplete text suggestions; and
- Interactive forms.

An even better way of understanding what JavaScript does is to think about certain web features you use every day and likely take for granted such as Snapchat updates or the Google browser’s autocomplete of search terms. Yes, these are all the work of Javascript.

My final challenge to you for this course is to try and create your own custom-block using Javascript. Keep being creative, keep experimenting, and keep fixing the errors in your code!

Keep Coding!



Pam Boal

Computer Science Lead, OpenUK



Industry

W3C, Standards & Improving the Web with Multicast



Have you ever wondered how the Internet works? How do the many billions of computers, including mobile phones, tablets, and the many other connected devices that make up the Internet of Things (IoT) talk to and understand each other?

The answer is standards.

Standards are simply a set of rules or processes that are agreed upon, documented, and usually given some sort of fancy name so we can refer to it easily, like “RFC 1149” or “Hypertext Transfer Protocol (HTTP)”. These standards are developed by several organisations, such as the World Wide Web Consortium (W3C), the Internet Engineering Task Force (IETF), or the Institute of Electrical and Electronics Engineers (IEEE).

Many of these standards are developed in the open and it’s possible for anyone to get involved in many of these processes. Generally, a standard starts with someone who has an idea they want to pursue (an itch to scratch). They publish a draft proposal about their idea through one of these standards bodies and invite comments (the rules that govern the Internet are called “Requests for Comments” or RFCs, from other people. After a lot of discussions, debate, drafting, and redrafting a new standard is born.

Internet standards are a bit like road rules. We all agree to drive our cars on the left or the right. It really doesn’t matter which - only that all users of the roads all use the same standard. Otherwise, the traffic jams and crashes would be even worse than they already are!

It may surprise you, but unlike the road rules, obeying Internet standards isn’t compulsory - they’re not laws made by the government. Not following the standards is often the cause of things on the Internet breaking. Sometimes email servers can’t talk to each other, or parts of the Internet stop working because standards aren’t followed correctly by everyone. Standards might not be compulsory, but they are important.

In June 2021 the W3C launched a Multicast Community Group because there is a small group of 5 or 6 of us who want to work on improving web browsing with a technology called multicast.

Multicast is a special type of internet protocol that lets multiple computers talk to each other at once. A bit like a radio station, anyone can tune into the multicast channel they are interested in and will receive the traffic, but the radio station only has to send it once. Importantly for your privacy, the radio station doesn’t even know you are listening or who you are.

Learn with Lowena



Lowena Hull

Public Speaking and presentations

If you spend time in technology chances are you will be asked to give a presentation. I certainly was and knowing some tricks of the trade as a presenter really helps.

What's the difference between an engaging speech and what feels more like a lesson? The trick is to connect with your audience. Use something to draw them in. Maybe share a funny story or a personal anecdote. That personal touch brings you closer to your audience and helps whatever you're speaking about seem a whole lot more authentic and real to them.

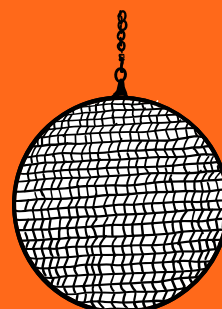
You can also start with a quotation or a question relevant to your presentation like "When's the last time you read a good book?". It's important to have a well-structured talk with a clear beginning and end. Say that you are ending and give a clear take away message to your audience.

This is true if you are recording a video or giving a live presentation.

I would argue, the words are only 50% of a talk. The other 50% is you. How do you come across? Are you confident? Do you stand tall or shrink back, project or mumble, look at the audience or into the distance? How you say something is often just as important, if not more, as what you're saying. And try not to get too hung up about little details either - I often forget words when I'm making a speech, but if you speak with confidence no one can ever tell!

Lowena

Student, Cambridge University



Open Data



The future of the web of data

As we hear in lesson 10, Sir Tim Berners-Lee invented the world wide web (or the web as we now know it) in 1989. The web uses URLs (Uniform Resource Locators) as addresses for information from different online locations via the internet. You'll have seen them in your browser's address bar. Hyperlinks allow people to navigate from one page to another – online across the web.

Over time, more and more websites containing inter-linked web pages were created. But Sir Tim's vision was much bigger. He wanted to invent a way to connect data on the web for computers to access, not just the documents that people read. This would mean not only having URLs as addresses for pages but URLs as addresses for pieces of information (or data). This is called the Semantic Web or as Sir Tim himself has called it “a web of data”.

To build the Web of Data, we need a way for computers to understand online information. But, of course, they're not quite clever enough – yet – to read words or understand pictures as we humans can. So new technologies have been developed to help computers understand what things mean and to communicate with each other. One of these is metadata – or data about data!

Some people think that we will never build the Web of Data because there's just too much data. At the start of 2020, there were 44 zettabytes of data in the world. By 2025, it's estimated that the amount of data being generated every day will reach 463 exabytes. Linking all of that data together is, some people say, impossible.

Even so, many companies (like Facebook, Google, and the BBC) already use Semantic Web technologies to deliver their services.



Nasa

Permission to use!



Chris Mattaman

What, software licenses, what do those matter? Well you should know something about the permissions that you grant others to use, modify, copy and update your software. In other words, the open source license matters. You've got some choices out there, and they boil down into two categories. One category involves ensuring that those that use your software contribute back whatever they do to modify it to you and those that built it. This sounds like a positive thing right? Except when those that would otherwise contribute if there were no demands on them placed are put off by requiring them to contribute things back.

This brings us to the other category of software licensing - the permissive license (the other was called reciprocal or viral). In permissive licensing, you basically tell folks that use your software - enjoy it, use it for what you wish, but don't sue me if anything goes wrong with it (sue'ing is like punishing). In other words, I give you my permission to use the software however you want and see fit - enjoy and don't bother me!

The permissive licensing actually really helps grow a community faster because it opens the door to many others - even commercial companies who may want to include the open source software in something they sell - to contribute to your project.

Sometimes we need companies to contribute because they have a lot of resources and energy that can help an open source project, even if it means allowing them to sell derivative works (or changed copies) of the software later on in some product. Inclusivity is enabled by permissiveness.



Chris

Chief Technology and Innovation Officer,
NASA Jet Propulsion Laboratory



Entrepreneur in residence

How I got into open source



Matt Barker

Hi, I am Matt and I am one of the founders of Jeststack, a company we started in 2015. I remember hearing about a technology called 'Linux' when I was at university, back in the early 2000s. At the time I could not believe that there was an alternative operating system to Microsoft Windows, or that people had donated their time for free to create it!

This certainly piqued my interest and thinking that software was a good career to get into. I got a job at a company called Canonical as a sales representative, selling open source software (where I worked with Amanda the ezine editor). I then went on to work at MongoDB - another open source software company.

15 years ago, Canonical, along with Red Hat, were perhaps the two of the most progressive companies in the open source world. Having a sales role at Canonical gave me the best opportunity to learn what software end-users, engineers, developers, or coders and the companies they worked for needed from open source. More often than not, the major driver for them adopting open source was that it solved a challenge that a customer knew they had very quickly and efficiently. Normally it did this for much less cost and hassle than using proprietary closed software.

Once a company has adopted open source software to solve a challenge, they will often need additional support and guarantees around how that software will work. This allows the creators and maintainers of open source software the opportunity to create revenue or monetise features and services in the software. These days we have seen many successful companies built around open source projects.

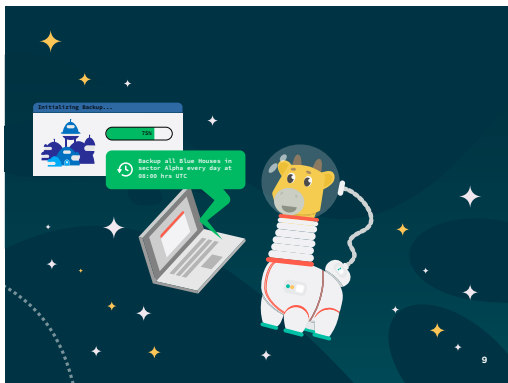
It became clear to me that open source would develop into becoming the preferred way to develop all software. When I realised this, I decided that if I was to start a business I would build it on a foundation of open source software.

Matt

President & Co-Founder, Jeststack

Kubernetes

An illustrated guide



Captain Kube is excited about Phippy's ideas, but voices a lingering concern. "Phippy, while we now have solid solutions to protect individual homes and buildings in the outpost, what happens if the entire outpost is compromised? For instance, what if we have oxygen supply problems? Or a widespread fire?"

"Well," Phippy reflects, "we can easily leverage the space station for disaster recovery. Citizens just need to define a schedule (export policy) to state how often they want their backups exported off-outpost so that their homes and libraries can be restored on any other Mars outpost or even on the upcoming Ganymede

outposts."

Captain Kube adds, "That's great! We do have a backup outpost on the other side of Mars, but our evacuation vehicles have a limited oxygen supply. In an emergency we can't wait for all houses to be restored in the second outpost before citizens need to get evacuated there."

"Well," Phippy notes, "the system can easily take care of that by setting a schedule (import policy). The schedule will tell the Backup Ruby robots in the secondary location to periodically refresh the homes. If disaster strikes, switchover will be instantaneous!"

"Phippy," Captain Kube adds, "with outpost growth, protection will need to extend past the infrastructure layer and extend its reach into the house. Given multiple libraries (polyglot persistence) in many houses, and the increased consistency requirements, backup needs to be custom to the library in use." Phippy smiles, "No problem! The backup platform I am building has a deep integration into libraries. In fact, we'll have a community bank of these integration blueprints that citizens can customize."



"And that's not all!" Phippy continues. "Even for general backup, we'll dig deep into the infrastructure (direct storage integration, data

transformation) to ensure that the least amount of work is done (incrementals, deduplication, compression, encryption) for efficiency reasons. To save on costs, Backup Ruby also disappears when not in use, unlike Earth's always-on systems." Phippy and Captain Kube look out the spaceship's window and see Mars quickly approaching.

"Phippy, your protection and disaster recovery solution for the Mars outpost sounds perfect! It will allow us to scale faster than we had thought, and we won't have to resort to technologies built for a different era. I can't wait to roll it out to everyone!" Phippy is excited to implement her ideas to protect the outpost from all the unknowns of life on Mars, while Captain Kube is relieved to count on her, and knows Phippy's solutions will set up the Mars outpost for success and growth.

As the spaceship door opens, they look out at the outpost and smile. They're ready to get started.



Word game

C	K	S	S	Q	U	G	N	N	S	F	P	W	S	U	C	K	C	X	P	Berners Lee
C	U	S	Q	E	N	M	O	F	E	R	M	T	K	L	U	K	P	T	G	Carbon emissions
C	V	F	Q	I	U	I	O	B	R	Z	G	G	I	B	F	O	S	P	N	Cloud
X	Z	D	K	K	T	L	K	Z	I	D	V	M	E	S	F	I	U	D	A	CNCF
J	U	L	S	C	C	P	A	K	A	G	A	R	A	K	L	X	R	A	E	Diversity
Z	A	J	N	O	L	X	M	V	L	T	N	X	D	X	P	E	H	Q	L	HTTP
W	Y	U	V	O	O	Q	F	X	E	E	E	R	S	P	X	C	E	N	O	Internet
A	F	H	O	H	U	Y	T	L	T	K	E	Y	W	O	R	D	A	P	O	Javascript
E	M	O	G	Q	D	E	E	E	E	C	L	G	C	W	L	T	B	R	B	Kubernetes
S	E	R	V	E	R	A	S	U	U	G	W	N	U	V	C	M	I	L	S	Multicast
C	R	K	F	K	D	I	X	H	H	W	A	I	W	Z	W	N	R	N	D	Native
Q	L	O	P	E	A	S	T	E	K	C	A	R	B	D	N	U	O	R	O	Protocol
A	P	I	R	N	G	C	Z	O	R	H	F	O	E	I	C	T	D	W	G	Recycle
A	C	C	E	L	E	R	A	T	I	O	N	T	N	V	F	C	R	F	P	Request for Comment
D	C	K	D	N	S	C	W	Q	F	V	Y	S	P	H	A	B	E	J	L	Security
T	O	D	I	U	T	Y	G	G	F	N	E	S	Z	X	R	G	F	M	P	Semantic Web
B	P	T	S	R	P	K	U	Q	G	C	H	X	T	A	M	S	D	A	V	Standards
A	D	W	Y	G	I	K	S	S	M	U	N	B	T	D	I	K	N	C	I	Technology Neutral
B	R	E	T	E	M	O	R	E	L	E	C	C	A	J	B	C	T	P	O	Transport
E	V	I	T	A	N	D	U	O	L	C	R	S	A	Z	J	D	Q	W	Y	



courtesy of puzzlemaker.discoveryeducation.com

Thanks for reading!

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Instructions Lesson 10

