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SPEAKERS

Paul Cutler, Joshua Lowe



Paul Cutler 00:01

Welcome to the circuit Python Show. I'm your host Paul Cutler. This episode, I'm joined by Joshua Lowe. Joshua is a Python entrepreneur who invented edge blocks to help bridge the gap from scratch to edge blocks. And then into python three, Joshua started learning Python in 2013. And wanted to find a way to make it easier for others to understand. Josh, welcome to the show.



Joshua Lowe 00:16

Hi, thanks for having me.



Paul Cutler 00:17

Tell me about Edublocks.



Joshua Lowe 00:18

So as you look, this was a project I started about six years ago. Now, it all surrounded this idea of you know, I've always been interested in like computers and technology from a very young age, you know, being the age I am 18, I've always been surrounded by, you know, technology. And we were talking a few days ago about you not having an internet for a few days, I can't imagine life without the internet, or, you know, technology just because I've always been surrounded by it. I've always been interested in technology. And it was around the time the Raspberry Pi came out, which was 2012. Now 10 years ago, which seems like a crazy, crazy thing to me. Yeah, when the Raspberry Pi came out, it kind of stemmed this interest into the coding and programming side of technology. You know, I've always been curious about messing around with laptops and stuff, but I never really had any exposure to being able to code being able to program and messing about with hardware, that kind of stuff. And yeah, so in 2012, the Raspberry Pi came out. And about a year later, I joined a rescue jam event. So Raspberry Jam

was all across the world. Now. I'm sure most people know what they are. But the light coding meetups, for people interested in the Raspberry Pi, or you know, other related things like circuit, Python, and micro bit, those kinds of things. And yeah, I went along to this event. And, you know, I was really interested in, you know, the coding side of things, I started learning off scratch. So learning scratch the drag and drop programming language, and, you know, building lots of different projects with Scratch, and you know, something that I really enjoyed for a few years, and all the different things you can do with it, you know, even primary stuff with the Raspberry Pi, like GPIO, that kind of stuff. But then after I'd learned scratch for a few years and done lots of projects with that, I kind of realized that, you know, if I wanted to do this as a career, which was kind of set on at that point of, you know, this is something that I'd like to do in the future, that I'd have to learn a text based programming language. And kind of like the main one that you go to after scratch, or at least in the UK, anyway, I'm not sure how it is in other countries, especially in schools, you go from scratch, and then you go to Python, see, I was kind of making this transition from, you know, from scratch for a few years, I was kind of used to how the visual stuff worked. And I have to make this jump to Python, and you know, the text based programming side of things. And like, a lot of people who have picked up Python, from nothing or you know, made the transition from block based text based using Python, it was kind of a big jump between the two, because, you know, suddenly you're having this environment of drag and drop block based environment, where, you know, it's very visual, it helps you along the way, you can't really get any errors or that kind of stuff, to Python, where if you make the littlest mistake of, you know, a missing capital letter, punctuation, indentation, that kind of stuff, you know, you can get a red wall of text that, you know, to a beginner means absolutely nothing. So I kind of wanted to create something that would bridge the gap between the two of a well, you know, bring this block based environment back, but also, you know, have a text element to it of, well, why don't we put the text on the blocks that you dragging and dropping lines of code. So as you well, it's kind of started as a platform where you could build stuff with a Raspberry Pi. So one of the early examples was Minecraft pi. So you could interact with Minecraft on the Raspberry Pi and build projects with that was a really kind of popular thing to kick off. And later down the line, there was projects with GPIO, pins and electronics. So that was kind of like the early start of Azure box. And then from there, it extended to the micro bit, then circuit Python, and then Python on the web. So that's kind of like how it started.

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Paul Cutler 03:00

Wow, that's a heck of a story. What inspired you to make Edublocks open source from the beginning?

J

Joshua Lowe 03:03

it was throughgoing to events like the raspberry jams, and later pi cons and conferences like that, you know, I got to meet a lot of people in the open source community and kind of learn how GitHub works. And the benefits of making a project open source can bring a lot of the success of VirtualBox is kind of down to making it open source. I didn't really fully understand the impact of it at the time, because, you know, I'd seen like these big projects from like Microsoft in companies like that, who would open source things like, not at the time, but make code is an example of an open source project. You know, I've seen that they got a lot of contributions from community numbers to make the project better, I never really thought that would happen to Azure box or, you know, making it open source, you know, would bring that

kind of impact, but there was a big community around it, that would submit issues, submit pull requests, and, you know, really dedicated to a project because, you know, they saw an idea, and they, you know, they believe in it, and they wanted to, you know, help out. So, yeah, it's been really helpful to make it open source and, you know, kind of that community aspect of it is, you know, really important to the project, and a lot of the work that I do, you know, been able to give back to the community and kind of have that community spirit around it. So that was kind of the main reason.

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Paul Cutler 03:54

That's awesome to hear. So tell me a little bit more about Edublocks. Edublocks has different modes, and some of those modes can work with hardware, how does that work,

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Joshua Lowe 03:59

he probably started off as a tool for the Raspberry Pi, he could do basic stuff, like the GPIO pins as a project was using them, and also Minecraft pi, as they were kind of the choosing start. And then it slowly extended into doing more basic things with Python. So you know, print hello world, that kind of stuff. And later Python Turtle. Yeah, that was kind of like the first mode, if you will. And then from there, the kind of whole Azure box toward gaining popularity. And people wanted more things like fought for the mic bit was next. So I've been able to build projects with the mic. But school is tough on the display. Same thing with the Raspberry Pi been able to put stuff into the pins on the mic, but it's build like physical computing projects. And then the next one after that was actually circuit Python. And that came about through meeting Scott and katni. And down from the circuit Python team at PyCon. In 2018, I think it was hopefully I got that right to PyCon 2018, I could have met them. And I'd heard of circuit Python before, but I never really had exposure to it. So I hadn't really played around with the circuit playground, and the other circuit Python boards. And you know, after playing around with them at PyCon, I was like, Yeah, I think this is the next kind of mode that I want to go for. So, you know, I introduced very similar things, being able to build physical compute projects interact with the speaker and the NeoPixels on the circuit playground. So the modes are kind of like different sections of hardware that you can use. And then also alongside that, there's like a Python mode, which is, you know, as basic Python, which you can run in the browser, and more recently, which isn't pricing HTML, so you can build websites and stuff like that. But it is mainly dedicated to Python, because the range of hardware that supports it, and also price and just being you know, the main taxpayers programming language that's used in schools, here in the UK. And it is mainly a program for schools. But you know, there are lots of home users that use it as well, enthusiasts to, you know, just want to learn how to code on their own. So it's a really wide range of users. And that's kind of like how the Mo's integrate with that.

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Paul Cutler 05:30

Out of all of those users over the years, have you seen one or two projects that really stand out in your mind, things that people have done with edgy blocks that maybe you didn't expect?

J

Joshua Lowe 05:37

I think probably, instead of projects, I would probably say, the standout thing for me is, you know, being able to see people who were kind of put off by that transition from scratch to Python, and then going back and using Azure box and being able to, you know, pick up, you know, text based foreign language. I think that that's kind of like the standout thing for me, if I can think of one thing in particular, because, you know, I, I've always wanted to be able to pass on my knowledge and love for coding and computer science, all those kinds of things to other people, but especially the problem that I was seeing in UK schools, at least was, people were being put off by the idea of coding and programming. Because, you know, they saw this horrible red line of text when they were learning textbook programming, and they had all this visual element of it taken away from scratch, when they will learn in Python. And so being able to provide something that helps people to kind of follow a similar path to me and be able to share the love that I have for it. I think that's really kind of like the last and legacy of that dicey. And, you know, the kind of big stand up thing, you know, that I can think of,

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Paul Cutler 06:23

where do you see Edublocks going next?

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Joshua Lowe 09:25

is a difficult question, because it changes it changes all the time. I kind of like what I want to do next with it. Yeah, I think, obviously, you know, expanding the feature set. So one of the big things that I'm working on at the minute is tutorials and examples. So, you know, I really want anyone to be able to load a page box and, you know, kind of had this guided tutorial experience where, you know, they can learn themselves and have like a self guided learning experience. So that's kind of the main thing that I'm working on lots of content in and lessons and that kind of thing. So yeah, expanding the truth. Are we all set and also, you know, I've got some different mode ideas I want to kind of work on. Know, last year, I introduced the ability to have extensions in the mic bit mode, Sabina was typing a GitHub URL, very similar to how make code works and extended the capabilities of the mic mode to support different mic bit libraries. Alongside the tutorials, the other thing that I want to do in the next release I do is expand the extension capability to the circuit Python mode in the Python mode, so you will to use third party libraries. With those modes, which will be pretty exciting to see what there are.

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Paul Cutler 10:39

We've been talking a lot about education, you graduated high school and 2020, just as the pandemic was starting to hit, what role do you think remote learning can play in education going forward?

J

Joshua Lowe 10:49

I think the pandemic has kind of brought forward the use of lots of technology in the classroom, you know, forward, and I think we're always going to see the shift to, you know, using tools like Google Classroom, Microsoft Teams, and things like that, to be able to provide education to a wider range of people. But yeah, so the pandemic, you know, all of a sudden, people were

forced to, you know, kind of learn from home, and, you know, use all these new tools. And I think, you know, the use of things like Google Classroom probably has, you know, kind of died off a bit as people move back to the classroom. But I think things like that are always going to have a place now, you know, where other subjects, you know, when I was in my last year of high school, and no, we use Google Classroom for all of our classwork of our homework. And, you know, it was just a normal thing in that subject. But, you know, I think things are going to move across all the subjects where we kind of embrace technology, and technologies used across school. And I think also the pandemics highlighted the need for wider access to internet, you know, we just take for granted that everyone has an internet connection, but pandemics kind of made us realize that, you know, technology is not accessible to everyone. And you know, the thing is that, that we enjoy, you know, not everyone can access. So I think over the next few years before we're going to see a push to, you know, make internet, which at this point is kind of something that's fundamental to, you know, modern day life, but we just take it for granted. So I think we are going to see a big push, you know, for making the internet more accessible for everyone. And also bringing more opportunities to people who might not have had them before. And, you know, things that we're really interested in, like building things with circuit Python devices, or learn how to code, you know, these things are going to be really big over the next few years, I think, you know, where more jobs are involved in technology. And you know, there's a greater need for people in software engineering, and computing in general. I think there was a statistic that I learned an event that I went to the other year, where 60% of jobs all existing, I think 10 years it was or the age group that were there 6% of jobs, that this age group are going to, you know, go for in the future, you know, don't exist yet, because it all relates to future technologies and augmented reality, artificial intelligence, that kind of stuff. I think there is a real need to kind of push this whole switch to virtual learning. And, you know, to make sure Conan is accessible for everyone. I think the pandemics really highlighted that, you know, everyone needs equal opportunities to be able to access these things.

P

Paul Cutler 13:40

I absolutely agree. Oh, we're almost out of time. But before we go, I have one last question. I like to ask all of my guests, you're about to start a new project, which microcontroller do you reach for?

J

Joshua Lowe 13:50

So this is probably quite an easy one for me. So it has to be the mic, but specifically the mic, v2, that came out over a year ago now, actually, which is pretty hard to believe. And the thing I really liked about the mic is it's a really cheap device, certainly in pounds in the UK, if I got that, right, but it's got lots of capabilities as well. So you've got Bluetooth, you've got a display where you can scroll messages. So that's a really fun beginner project. But you've also got the pins at the bottom where you can plug into lots of different atom boards to be able to accent the capabilities. And yeah, I think I think the mic bit and the features that the V tube or like the better processor and the onboard speaker, the torch logo, which is pretty cool. I think it's a really good beginners board. But also it provides you know, the capability to be extended into lots of different advanced projects as well. So there's no kind of like limit with it. I think that's why I really like about the mic, but I think whilst the mic bits are really good general board, and

there's so many like other boards I really like like the circuit playground Express is one that I really liked use before or some of the smaller trinket boards whilst it might have it's kind of like my favorite all around board, there's lots of others that I really enjoy using as well.

P

Paul Cutler 15:08

That's a great pic. If people want to learn more about edge ublox Are you? Where should they go

J

Joshua Lowe 15:13

at the best places@vox.org You can find all the social links on there, and also the guides and resources to get started and places to contact me if you've got any questions, or you got any queries or need help with a project if you want to start using it, as that's probably the best place to go.

P

Paul Cutler 15:31

Josh, thanks so much for being on the show.

J

Joshua Lowe 15:33

Thanks for having me.

P

Paul Cutler 15:35

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