Work Shift – Blockchain

[music]

CHILD 1: When I grow up, I wanna be a contractor because I like building stuff.

CHILD 2: When I grow up, I wanna be a stunt double.

CHILD 3: When I grow up, I wanna be an astronaut and travel to Mars.

SHAWNE McKEOWN: I'm gonna do an audio word cloud here and Ray, you guess what I'm talking about, okay?

RAY HARRIPAUL: Okay, Sounds good.

SHAWNE McKEOWN: Okay. Distributed ledger technology. Peer to peer. Cryptography. Crypto currency. Crypto candies. Decentralization. Ethereum. Ray, what am I talking about?

RAY HARRIPAUL: Um…

SHAWNE McKEOWN: Okay. Big hit here. Bitcoin.

RAY HARRIPAUL: Blockchain, right?

SHAWNE McKEOWN: Yes. This episode we're talking about a topic that many of you may have heard of but if you don't work in the tech industry, you may not know much about.

RAY HARRIPAUL: We're exploring the world of blockchain. The demand for blockchain developers is exploding and we're gonna tell you why.

SHAWNE McKEOWN: Today were talking to a blockchain expert and two blockchain students who are going to break it down for us and help us understand what blockchain does and why it has the potential to disrupt many industries. And spark a digital revolution

RAY HARRIPAUL: Wait. What about the CryptoKitties?

SHAWNE McKEOWN: Oh, don't worry we're going to talk about them too. Meow.

[music]

RAY HARRIPAUL: Welcome to Work Shift.

[music]

CEIT BUTLER: It's completely different than everything that’s come before. It's a disruptive technology, right? So they're adaptive technologies that build off previous iterations of things and then they are disruptive technologies that are a complete break from what existed before. And this is one of them.

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RAY HARRIPAUL: Digital disruption.

SHAWNE McKEOWN: The gig economy.

RAY HARRIPAUL: Artificial intelligence.

(synthesized voice) Robots.

RAY HARRIPAUL: There's a lot of talk about these things in the media and online but what do they mean for you?

SHAWNE McKEOWN: I'm Shawne McKeown.

RAY HARRIPAUL: And I'm Ray Harripaul.

SHAWNE McKEOWN: We are exploring the future of work and changes you can expect to see at your job.

RAY HARRIPAUL: We'll tell you how this massive digital shift could change your career and what you can do to adapt, evolve and thrive.

SHAWNE McKEOWN: Today we're talking about the massive growth potential of blockchain technology and the surging demand for blockchain professionals.

RAY HARRIPAUL: Ceit Butler is a blockchain architecting and consultant and a privacy and security proponent. She's also a professor in George Brown College’s Blockchain Development program.

SHAWNE McKEOWN: Blockchain was created as a public transaction ledger for bitcoin but it can be used for so much more than crypto currency. Ceit tells us how and we'll also hear from blockchain students Shivani Joshi and Pei Chi Chien about what they find so exciting about this field.

RAY HARRIPAUL: Okay. Before we get started, what is blockchain and how does it work?

CEIT BUTLER: So, it started with bitcoin. Bitcoin was the first and bitcoin is a crypto currency. So the bitcoin blockchain is-- it's not a database. It's more like everyone can have a copy of the

books, right? So the record of every transaction ever can be traced. And there are no bad books out there because if someone tries to fudge the numbers, you can compare their copy against every other copy and immediately see where someone has tried to fool around with things. The big problem bitcoin solved is something called the double spend. There have been attempts before creating digital currencies but how do you really tell if someone has already sent this digital piece of data to someone else? So with bitcoin, the transactions are really a record of cryptographic signatures verifying this data. And you have this enormous network of people-- miners-- who are verifying and validating that data. But anyone can participate. It's a decentralized system. All you have to do is download the software, run it on your machine and connect to the network.

SHAWNE McKEOWN: And when you're talk about mining, how does that work?

CEIT BUTLER: So if I were to send you some bitcoin, I would open up the wallet app on my phone or on my computer and I would sign a transaction saying that I wanted to send currency to your cryptographic address. And it would be encrypted with your cryptographic keys so only you can actually spend that money and that's broadcast out to the network. And it sits there in a mempool waiting to be confirmed. So it's basically waiting for validation. And what miners are doing is they're assembling those transactions into a block of data and they're taking a hash which is just a numerical representation of that exact data; if you were to change even one bit, flip one of those zeroes to a one, that numerical representation of the data changes so you have verification that it's accurate and the miners were attaching the hash of the previous block. Whatever the current block on the blockchain is, they take the hash of that, they add it to the hash of their block and they're trying to guess a random number. That's the verification process. That's why they call it proof of work because you have to have enough computational power-- you have to have a serious investment in hardware to make hundreds of millions of guesses per second. Because you're racing against every other miner on the network to guess that number first, right? So no one can fake it. No one can sneak their way. You can't say, "Aha, I've got it." and have your block be added. You have to randomly do the work to guess the right number that allows your block to be the next one chosen. And then as a reward, new bitcoin are generated and they're sent to you and your block is added to the chain and it's now the next current block on the chain. And every other miner out there stops what they're doing. They take the hash of your blog and they start the process over again with the new unconfirmed transactions. So it means that every block is linked to the one that came before it and the one that came after so you have this cryptographic chain of blocks. A blockchain.

RAY HARRIPAUL: Okay. So we've discussed blockchain in terms of crypto currency but it can be used for lots of other things like the logistics and supply chain management; even real estate, banking and voting.

CEIT BUTLER: You talk about cryptocurrency. I think the crypto currency is the least interesting thing about the technology. In fact, it really annoys me that all of these traditional financial institutions and traders are getting rich off of this technology because if you look at the very first bitcoin transaction, it's pretty clear what the intent behind this was. Embedded-- there was

a message embedded in the genesis block, the very first block on the bitcoin network and it's a headline that says, 'Chancellor on brink of second bailout for banks'. So this is right after the 2008 crash when the big investment banks and trading firms collapsed the global economy. So this technology is clearly-- it's supposed to be better. There are so many use cases; supply chain is a good one because you can record the providence of any item from its inception to the date that it hits the consumer's hands. It's being used in the fishing industry because an alarming number-- I can't remove the exact statistic but at an alarming amount of the fish that you order in restaurants is not actually what it's labeled as. Salmon and tuna are the most fraudulent types of fish out there. And then you have ethical and sustainable fishing as well. So if when the fish is brought in, you tag it, that tag has a unique identifier and the fish is weighed and that's recorded. That can be recorded on the blockchain and you now have the start of this record of that fish. You could have sensors within the holding tank-- wherever they're being kept that are recording the temperature that they're stored at so that you know that it was kept at a safe temperature. When you pass off that shipment of fish to someone who's actually going to process it at the processing plant, you can now access all of the checks that have been performed by regulatory bodies: cleanliness, hygiene safety standards, all of the certifications of that plant, ethical working conditions. All of these things can be attached to that fish. Okay. So each of these-- let's blow everybody's mind. Let's say like this could revolutionize everything. Diamonds. Diamonds is another big one. IBM is working on eradicating the blood diamond industry by tracking each stone from the second it comes out to the ring it's put in. So one of the case studies actually that we covered, we talked about was a case study called Cambria Coffee. And there was a company called Scan Trust that makes secure QR codes the can be counterfeited. And they do this by having a really dense pattern of dots in the centre of it that takes advantage of the way that copiers degrade an image when you make a copy of something. So this QR code is attached to the product so if you were to buy a bag of coffee, you would simply bring up the app on your phone and scan the QR code and it would open up all of the data about that bag. And you could see the farm that the beans were grown on; you can see the record of the employees that actually harvested it; you could see where they were roasted; you could track literally the path that the truck went as it picked it up every single step of the way. In terms of financial applications-- I was just looking up the current numbers. Now one of the first great use cases with bitcoin-- so as of right now, 66 % of sub-Saharan Africans are listed as 'unbanked'. They have no access to any traditional banking services. They can't cash paychecks, they cannot get loans, they cannot send money. But there have been several projects since I think as early as 2013, 2014 that were allowing people to send payments and to get microloans by sending bitcoin over SMS-- just using cell phones to actually broadcast out transactions to send things back and forth. You just need something that can talk to a network. There's no special is hardware needed. There's no central source. It's just a network protocol.

RAY HARRIPAUL: Pei Chi Chien said blockchain tech is currently used in supply chain management in her home country, Taiwan. She's studying blockchain because she hopes to become a blockchain product manager. Right now, she's doing a work placement at a consulting company Bitcoin Bay.

PEI CHI CHIEN: Some from Taiwan and then right now it's already have a real use case. We do many business with all the world, right? And so the supply chain is very important so we use a blockchain site and you can just scan the QR code in any product and you can check this product where is it from. The original because is the powerful. The blockchain is immutable so no one can change the data.

SHAWNE McKEOWN: George Brown blockchain student Shivani Joshi studied computer engineering in India before coming to Toronto to continue her education. Right now she's doing a work placement as a junior testing engineer with the Interchain Foundation.

SHIVANI JOSHI: I'm very interested in blockchain and I'm very eager to know how this will bring a change in the world. And I am working with Interchain Foundation which is the Foundation who funded Cosmos-- that's blockchain as well. It's an application specific blockchain which I'm more interested in. It's not a cryptocurrency. It's not like Ethereum or Bitcoin; it's more application specific. So right after I finished my diploma program in computer engineering, I was like, I don't want to do a traditional Bachelors because everyone does that. What's the new thing that I have because that's what everyone looks for. And meanwhile I learned about blockchain. I obviously-- I was constantly hearing about bitcoins and all that. So like, why not? This is something different and I'm totally interested and why should I waste three or four years doing the same thing and then trying to learn about blockchain which is already, you know, which is already got up there and, you know, then I would find it difficult to decide where to go. I think this is the best time to start learning about blockchain and thank you to George Brown College for this program. This is the first program in college so this helped me a lot.

RAY HARRIPAUL: And here's Pei Chi.

PEI CHI CHIEN: So in school I learned the technical part. Until now, I'm still learning the technical as well because I need to know what's going on in the technical part so I can talk to the customer. So I feel good I can know technical and also can know some communicate like soft skill.

SHAWNE McKEOWN: There's a huge demand for blockchain developers in a range of industries. George Brown launched its Blockchain Development program in 2018 to help fill that need. Randstad Canada, an HR consulting and recruiting firm listed blockchain developer among its top ten emerging jobs for 2019. Why was the course developed?

CEIT BUTLER: There was a demand from Industry so a program advisory committee of industry professionals was put together and then the demand in the work force was discussed and the courses really shaped around creating people that could fill that need. So actually, I pulled up some current status. So hired.com has just released a report this year and what their marketplace reveals is that the global demand for blockchain engineers and developers has seen a 517% increase year over year. There was an explosion in demand in the last 12 months. The companies that are currently leading the pack for hiring cryptocurrency and blockchain engineers, number one is Deloitte, IBM, Accenture, Cisco, Collins Aerospace, Ernst and Young,

Coinbase, Overstock, Ripple, Verizon, Kraken, Consensus, JPMorgan Chase and Signature Bank. That's from the IEEE report on the blockchain job boom. So there are big, big names in the space.

SHAWNE McKEOWN: I understand Toronto is a hub for blockchain. Is that true?

CEIT BUTLER: Yes, it is although I don't think the rest of the world knows it yet. I mean, the big money is being raised down in the U.S. There are a lot of ICOs last year and the year before so token sales in order for start-ups to fund themselves. So the money is there but I think the innovation is happening here.

SHAWNE McKEOWN: And why here? And why now?

CEIT BUTLER: Ethereum, the concept for it was created by Vitalik Buterin who is from Mississauga.

SHAWNE McKEOWN: And for people who don't know what Ethereum is?

CEIT BUTLER: Ethereum was the first big application-based blockchain. There were lots of forks of bitcoins so versions of it that were cryptocurrency based. Ethereum was the first big one that came out as being this decentralized virtual computer rather than simply a record of transactions.

SHIVANI JOSHI: So if you consider bitcoin as a first generation blockchain then Ethereum is the second generation just like a step forward. A big step forward.

RAY HARRIPAUL: Blockchain has the potential to disrupt industries but also revolutionize our economic system, Ceit says.

CEIT BUTLER: It removes the centralized gatekeepers that control access to services right now. The most exciting thing that I think is coming with blockchain is it alters the nature of capitalism. Right now we have this system where you have the top dog, right? You have the big guy that's controlling the market share and everyone else is fighting to come up with something that's slightly better so that they can knock them off that pedestal and they can be the one. With blockchain, you have this network of collaborative applications and services that can work together. The example that I use is the CryptoKitties. It was one of the first blockchain games and then created a tokenized digital asset. So just like trading cards. You can buy this token and it's a cat. It's a cute little and picture of a cat, right? And each token has these unique attributes. And you can buy this token and you now own a CryptoKitty. And when you log into the CryptoKitties' website, you can see a picture of the cat. You don't own the picture. The picture is simply how the crypto kitties team chooses to visually represent the attributes of the token that you own. But that means that anyone can create an application that visually represents those attributes in any way that they want. So you could create a website where maybe people log and other CryptoKitties are a three-dimensional cat, like a virtual pet in this virtual world

and you could play games with them, you could sell them add-on tokens to change the cat's colours or give it a colour or create a new world and your application doesn't take any value from the original project because the users have to go to the original project to buy the tokens so those users are making money. So you actually give more value to their project and their project gives more value to yours. So you get this ready player one style multiverse of games and applications and services that can co-exist in a collaborative space instead of an adversarial, competitive one.

RAY HARRIPAUL: Worried about all the personal information the internet giants collect? Blockchain could give you total control over what pieces of information are shared online and how. Ceit explains.

CEIT BUTLER: I'm excited about digital identity. I'm a big fan of personal privacy. I try to be conscious of the data that I give out and who I give it to. There are tons of articles on the subject-- we're in the middle of the next industrial revolution and it's a digital one. You see headlines that say that data is the new oil and right now we're giving all of our data away for free in response to silly services and we're giving it to these giant companies that are monetizing it. And they're creating detailed digital personas on all of us. There's a horrifying Bloomberg article from a few years ago called, Palantir knows everything about you. Everyone should read it and consider that the next time you check in on Facebook with your location. But what blockchain does is-- your identity or what I think our identities will become it's not just log in credentials but our entire digital persona will become our identity and we'll have true ownership of that data and we can decide who we allow to see it, who we share with and we will get to monetize it. And there are some really great blockchain-based identity projects that are actually building on that.

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SHAWNE McKEOWN: It's time to take a look at the future want ads.

RAY HARRIPAUL: We're going to ask our guests to give us an outline of a job that doesn't exist yet. According to the Institute of the Future, a non-profit think tank based in Palo Alto, California, 85% of jobs that will exist in 2030 haven't been invented yet.

SHAWNE McKEOWN: Okay. Ceit Butler. What have you got for us?

CEIT BUTLER: I think that digital life coach should be a thing.

RAY HARRIPAUL: What will the digital life coach do?

CEIT BUTLER: I think that the job should exist for people-- someone can sit down and teach you how to develop this awareness of the data that you give out and see who you actually interact with and what data you're giving to them. I think this is especially important for kids. I have a teenage daughter who posts photos online and sends these messages and in their mind, this

isn't a permanent record. I think they think of it as just sitting down-- this is just-- this is every day for them. This is like sitting down and having a conversation with a friend and that awareness that this is a permanent record. You're giving someone something that they could use against you, something they could post online. There are young girls committing suicide because they're being shamed online because they've sent provocative photos; they've shared it with someone that they're dating. Yes, I think digital awareness-- so important. I want to see that job exist.

SHAWNE McKEOWN: What skills or education will be required for this job?

CEIT BUTLER: You have to have awareness of security. It's a big thing, right? What data are you leaking on these various devices even just walking around with the Wi-Fi turned on on your phone? It's pinging constantly. This is how you know what access points are available because your device is constantly saying, 'hey, I'm here and this is my mac address and this is my IP address and this is the model of the hardware that I'm talking from, right? You would need a strong tech background and probably security as well in order to be qualified for that role.

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SHAWNE McKEOWN: That's a wrap on this episode Work Shift. What did you think?

RAY HARRIPAUL: Want to share your thoughts on this episode?

SHAWNE McKEOWN: Email us at workshift@georgebrown.ca.

RAY HARRIPAUL: Get in touch and we might share your thoughts during our next episode.

SHAWNE McKEOWN: This podcast is brought to you by the fine folks at George Brown College. We want to thank Ceit Butler, Shivani Joshi and Pei Chi Chien for sharing their thoughts with us today.

RAY HARRIPAUL: It's the end of your Work Shift. Thank you so much for listening.

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