# IT Technologies

## Blockchain and Cryptocurrency

### What does it do?

As a means of introducing blockchain, cryptocurrency should be discussed to get a better idea why blockchain is created. A straightforward way to explain cryptocurrency is that is virtual currency (Blockgeeks, 2020). Cryptocurrency is an exchange medium that is created and stored in a blockchain using encryption technique. The backbone of cryptocurrency is that it relies on the concept of blockchain to securely transfer from one person to another without a middleman to verify or authenticate the product being transferred.

Blockchain is way to passing information from person A to B in an automated and secured fashion (Blockgeeks, 2020). Without the needs of another middleman to verify the authenticity of the money which takes time to be process. Blockchain is much quicker in processing and verifying the transfer. Where this would eliminate the needs of paying for transaction fees due to centralised bank to verify that it is real money. The idea of blockchain is that this would replace processes and business model. This eliminates business that makes a profit as a middleman (Blockgeeks, 2020) **(**BlockchainHub, 2020).

**What is the state of art of this blockchain technology and cryptocurrency?**

The state of the art of blockchain technology is was originally used for peer to peer electronic cash payment without the need of going to financial institute for verification (Blockgeeks, 2020). Solving the problem of trust system using digital signature as a part of solution to the problem. As well solve problem with double spending which is refereeing to unauthorised creation or copy of money **(**BlockchainHub, 2020).

**What can blockchain and cryptocurrency do now?**  
  
For the blockchain and cryptocurrency can be accomplished because of the peer to peer (P2P) network topology. As well the participates computers act as nodes, running a program to process and verify the transaction between every node in the network that will approve the transaction whether it is valid. Once it is valid transaction the transfer of virtual money will be transferred to the to the other person. Without transfer fee charge.

**What can Blockchain technology and cryptocurrency do in next 3 years?**  
  
The concepts of blockchain will be the one that will make an enormous difference in lowing cost, improving the efficient way of sharing information and data between open and confidential business networks. Where the blockchain concepts can be used as records of data about physical products that requires to be verify for authenticity and prevent fraud and counterfeits (Al-Saqaf and Seidler, 2017). For example, peer to peer payment (sharing economy), ID management, contracts, land titles (a deed in real estate title) etc. Other application of blockchain that can be implemented can be seen in Figure 1.

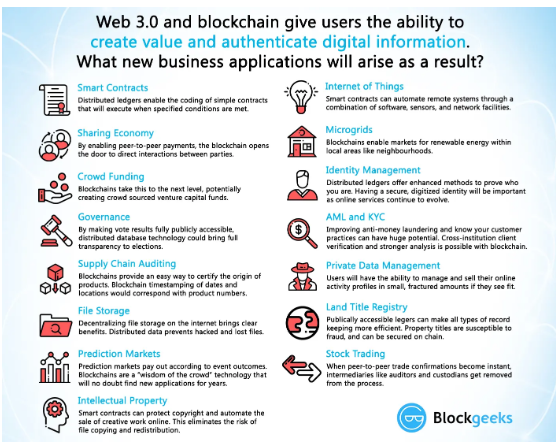


Figure 1.Application and uses of blockchain model concepts. Source:Blockchain Hub. (2020).

**What technology or development make this technology possible?**  
The blockchain technology that will change the future as a concept that can branch out to other sectors rather than cryptocurrency only. Where it requires need for peer to peer (P2P) networking file sharing to verify authenticity **(**BlockchainHub, 2020) (Blockgeeks, 2020). Everyone on this P2P network can see everyone else's entries in near real-time. That makes it difficult for one user to gain control of the P2P network. This is what they called decentralised and not own by any company. The blockchain programming will make this technology to be implemented in a wide variety of application. Developing application using programming languages such as C++, Java, python, PHP etc.

### What is the impact?

The blockchain technology would results in loss of jobs in low-skilled labour. Which would eliminate jobs that relies on intermediary companies such as banks, insurance, and giant social media business (Al-Saqaf and Seidler, 2017). Job loss would include people in stock trade as well, such as clearing house, auditors, and custodians etc (Blockgeeks. (2020).

This affects business that are the middleman that relies on transaction or subscription fee. For example, Apple or Spotify, Central banks (example Reserve bank of Australia-RBA) etc (Blockgeeks. (2020). To give more detail in some of the companies and distributors for music streamer relies on users to pay for subscription to listen to the music app.

### How will this affect you?

Blockchain will change the financial world. In terms of stock exchange, loans and insurance contracted. Which will affect bank accounts. Every financial institute will go bankrupt or forced to change fundamental of safer ledger technology without transaction fees (Blockgeeks. 2020). The effect on online security for everyone would be affected as well. Where hackers will have a tough time committing cybercrimes online with this blockchain technology. Which would make people lives more secure online when a distributed system, (P2P) network would allow data storage in the cloud to be more robust and protected against attacks (Council, 2020).

In terms of IT professional and students entering IT field job requires to adapt to changes to this blockchain technology and cryptocurrency. Where they might be involves in this blockchain technology in their work. Which will force everyone, such as other business to adapt to blockchain technology model rather than the traditional business model. Where the demands of blockchain developer will increase in job demands due to this revolution blockchain technology (Blockgeeks. 2020).

Better communication that would be more secured than centralised platform. As well have better database system for healthcare. Where there will be no need for doctors to transfer information about the patients from one database to another (Council, 2020).

## Description

The teams project idea is a web app that runs Spring Boot framework as the team have only have some exposure to java programming. Where Spring Boot is a java-based framework that easy to create a stand-alone and production ready application (Spring Boot Tutorial - Tutorialspoint, 2020). The group will get involved in the project with the help of using the tutorialpoint.com which provided a very good documentation on using spring boot framework. As well using LinkedIn learning to help develop the web app using the spring boot framework.

The Raspberry Pi will act as a web server for the user which allows to remotely control the garage door. The Raspberry Pi will use a WIFI dongle to connect to the home network. There will be a weather app implemented in the web app for garage door opener. The reason for it being in the web app to allow the users know the weather and determines whether the garage door need to be closed or open. The API for the web will be opensource where we are planning to used Open Weather Map API. To implement the weather API, we must search more or learn using tutorials from LinkedIn learning to apply to the spring boot framework app.

There will be a relay module connect to the Raspberry Pi and the garage door. This relay module board allows the users to control devices that uses large currents applicants. In this case a garage door that we are trying to control in this project.

The safety feature that the web app for the garage door opener will be implement using some sort of camera or sensor to stop the garage door from closing on a living creature or children etc. We are still looking for alternative safety features that will improve the garage door opener web app.

## Tools and Technologies

* Raspberry Pi B - that act as a web server for the web app
* Edimax EW-7811Un USB Wi-Fi N Dongle or another Wi-Fi dongle that compatible with Raspberry Pi
* Magnet switch – this determines whether garage door is open or closed.
* SainSmart Relay Module – which allows control of the garage door
* Resistors
* And wiring of choice

## Skills required

* Some knowledge in Java and possibly Python programming languages.
* Understanding or willing to learn html and CSS language.
* Able to go thought the Command line on windows and navigate to project folder.
* Willing to learn how to wire a cable to the relay module.

# Group Reflection

## Van Nguyen

Was uneasy for couple of days before the group was assemble at the end of week 5. However, turn out great at the end of the report writing. However, was very awkward at first. But a simple introduction of each other made it a little easier for the team to get to know each other.

Communication on slack made life easier without the need of minutes taking. Working individual did seem to follow the same idea of each other. For example, structure of report is different in the Information technologies. As it can be seen in the contents page. Round robin did not work as I thought, it was very easy and relax way of communicating via slack. The other part that worked willing well is allow each member to take part in the editing of the report. Which shows that it was a team effort. Which I am proud to be part of this team for next following assignment in Introduction to information technology.

Al-Saqaf, W. and Seidler, N. (2017). Blockchain technology for social impact: opportunities and challenges ahead. *Journal of Cyber Policy*, 2(3), pp.338-354.

Blockgeeks. (2020). *What is Blockchain Technology? A Step-by-Step Guide For Beginners*. [online] Available at: https://blockgeeks.com/guides/what-is-blockchain-technology/ [Accessed 15 Apr. 2020].

Blockchain Hub. (2020). *Blockchain Explained - Intro - Beginners Guide to Blockchain*. [online] Available at: http://blockchainhub.net/blockchain-intro/ [Accessed 13 Apr. 2020].

Blockgeeks. (2020). *What is Cryptocurrency: [Everything You Need To Know!]*. [online] Available at: https://blockgeeks.com/guides/what-is-cryptocurrency/ [Accessed 13 Apr. 2020].