CISC-680 – Software Engineering

Assignment No. 2

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**Abstract**

Since blockchains immergence it has become a wide topic of discussion. Yet, a lot of people don’t understand quite what it is, where it came from, and where it is heading. In this paper I will include topics that include how blockchain has created emerging trends in blockchain engineering and how those trends are developing. Building from that we will delve into why blockchain is not always the best choice for situations and guide into when and where to implement one. From that we will lead into issues and problems that affect blockchain. This will be discussed in greater detail to address and resolve these issues. Although blockchain has mainly been associated with innovative financial services, it also has roles in other fields such as e-government, supply chain management, and cyber security. If a blockchain is used maliciously it could build an argument case on whether a blockchain solution should be encouraged or not from a security point of view.

**Chapter 1: Introduction.**

To begin let’s start by defining what blockchain is. This has been a very confusing construct for most because typically it is synonymous with the crypto currency Bitcoin.

Although Bitcoin and other cryptocurrencies use blockchain it is not it’s only real world use case. In its most basic from Blockchain is simply a digital leger. This digital ledger, is a distributed database that is constantly reconciling new information know as blocks.

These blocks are appended onto the end of the data set. This effectively creates a blockchain. The data is then stored in multiple locations in contrast of one central location. This makes blockchain pretty difficult to manipulate considering multiple copies are stored on a machine simultaneously and can be verified from multiple nodes. This is what makes blockchain a public, decentralized, and verifiable. From its conception blockchain snowballed to the market essentially piggy backing off the popularity of Bitcoins financial revolutionary concepts but behind these concepts driving this new technology was the decentralized ledger itself. Of course, the history of this new technology is still argued and somewhat shrowded in mystery simply for the fact we really don’t know who or where this technology came from. When Bitcoin was implemented it also implemented the world’s first public blockchain database. The white paper for this technology was authored by a pseudonymous entity names Satoshi Nakamoto. This could also lead to the argument of the validity of blockchains security. Why, so secretive? Would want to hide their identity from getting credit to a revolutionary new concept? This alone could make someone wary from a security standpoint. Bitcoins conception was the start of blockchains breakthrough phase in its technology innovation cycle. (38.1txtbooks)Next would come the replicator phase, the birth of alternate coins. The replication of already mysterious technology adds to the argument of using blockchain in security but this phase actually led to the advancement of new blockchain technology. Originally bitcoin was a store of value on a decentralized digital ledger only to be used to verify transactions between two parties in a peer to peer network. From this the next generation of blockchain advancement came, the advancement of decentralized applications and smart contracts. This technology allowed blockchain to grow from a just a store of value to building full scale decentralized applications. At a high level smart contracts are back end server code ran on the decentralized blockchain network. A decentralized application will have a front end code that makes calls to back end code blockchain powered code.

In the security realm nothing is impenetrable, even multilayered security can have its flaws and this certainly holds true in the case of blockchain. Being a new construct always comes with some kickback. Due to its rapid development many crucial mistakes were taken advantage of in the crypto currency market. Although blockchain itself was secure, the way businesses utilized it was questionable. One of the most infamous examples of a cryptocurrency hack was the incident that happened at Mt.Gox. The Mt.Gox hack at a high level was due to poor software development methodologies involving the development of blockchain applications. Another issue was that certain standards were not yet created in the blockchain community to adhere to security. It is still contested on what truly happened in the Mt.Gox hack but the underlying basis is that private keys were not yet encrypted at the time, so someone was able to access wallets private keys in clear text. This in turn led to the standard practice in blockchain to encrypt wallet private keys when at rest and is a prime example of how the blockchain space and software in general evolves to meet the needs of security.

Background

Problem Statement

Dissertation Goal

Research Questions and/or Hypotheses

o Note: Some studies have research questions and hypotheses while others have one

or the other.

Relevance and Significance

Barriers and Issues

Assumptions, Limitations and Delimitations: Assumptions are the unprovable factors that

are accepted as true within the context of the study. Limitations are factors that are

beyond your control and potentially impact the internal validity of the study.

Delimitations are factors that you intentionally impose to constrain the scope of the study

What is the Problem?

Why is it a problem?

How did you address it?

What were the results?

1) Define your problem. or area of investigation (BlockChain

2) State your goal of the paper (How it is evolving software engineering.)

3) Why is this work significant and relevant? (new technology )

4) Review current research in your area of choice. (your three papers)

5) Summary, conclusion and future work.

Definitions:

Methodology, goal, significant, relevance, summary, conclusion and future work:

Refer to the Nova Southeastern University Dissertation

**Work Cited.**

Follow the APA guidelines for references and citations.



**Certification of Authorship**



Submitted to: Professor Yair Levy.

Student’s Name: Eric Webb

Date of Assignment: 10/27/2019

Title of Assignment: Assignment No. 2

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