SECURED CERTIFICATION VIA BLOCKCHAIN

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Introduction

As education becomes more diversified, democratised, decentralised and disintermediated, we still need to maintain reputation, trust in certification, and proof of learning. Lying about education credentials has become a common problem nowadays as counterfeiting of educational documents become easy by the day. This call for a system that provides a platform to keep these documents secured, and available to the concerned person whenever and wherever the need arises.

This project proposes a permanent distributed record of intellectual effort and associated reputational reward, based on the BlockChain technology. A blockchain to store and deliver certificate issued by an institution. Encryption and two-factor authentication are used to create, sign-off on and place the certificate into the blockchain database. The Institute still gives students hard copies of the Certificate, but a system-created decentralised clearing number is generated that allows authentication by employers.

A block chain may be used to certify the existence, integrity, and/or ownership of a certificate. The present disclosure describes receiving a plurality of data units; hashing the plurality of data units to provide a plurality of hashes, individual hashes being unique cryptographic identifiers of corresponding data units such that an individual hash verifiably relates to a corresponding data unit and the individual hashes cannot be used by themselves to obtain corresponding data units; temporarily storing the hashes; generating a first cryptographic structure based on the plurality of hashes; publishing the first cryptographic structure on the block chain; providing proofs associated with individual ones of the plurality of data units that allow independent verification that the data units are certified; and verifying certification of data units based on roots of reconstructed cryptographic structures.

Problem Statement

To develop a platform for certificate issuing, storing and viewing and to help reduce the problem of lying about one’s educational background by producing fake certificates.

Literature Survey -

Based on current perspective, outcomes from this work are methodological. The work reveals that there are severe challenges in designing blockchain systems for application in existing contexts. These challenges arise because Blockchains are infrastructural, something intended to underlie new ways of doing things- ways that can challenge fundamental assumptions about what an organisation is and does. The challenges of evaluation are atypical because they are not about measurement but about envisaging new forms and logics of organisation. We believe it is design fields rather than classic software engineering methods that stand to make the greatest contribution here. Some of the sources of our current study are:

1. Gavin Wood. 2014. Ethereum: A Secure Decentralised Generalised Transaction Ledger.

2.What is blockchain by Mohit Mamoria , Editor ,Unmade Newsletter

3. Maxwell, Deborah, Chris Speed, and Dug Campbell. "'Effing' the ineffable: opening up understandings of the blockchain." In Proceedings of the 2015 British HCI Conference, pp. 208-209. ACM, 2015.

4. Jeff Gothelf and Josh Sieden. 2013. Lean UX: Applying Lean Principles to Improve User Experience O'Reilly. 4. Nielsen, Lene. Personas-user focused design. Vol. 15. Springer Science & Business Media, 2012.

Motivation

A survey by one of the largest online job finder sites, CareerBuilder, shows that a staggering 58 percent of employers have caught a lie on a resume. The site has more than 23 million unique visitors and over 1.6 million jobs.Just over half of employers, 51 percent, said that they would automatically dismiss a candidate once caught. Only seven percent said they would be willing to overlook a lie, if they liked the candidate.A separate report on the 2015 hiring outlook by HireRight, a company offering global background checks, drug testing, and employment

verification services, shows that screening uncovered lies or misrepresentations on a resume for 86% of employers.

The above stats clearly show us that lying on resumes about one's educational background by producing fake documents is a widespread problem. The longer it takes to verify resume credentials, the less efficient the hiring process, costing employers time and money.

Looking at the above facts the advantages of this project are quite clear, people who get certifications will be able to view them, and show them to anyone at any time on the blockchain. The blockchain will serve to secure the validity of the certificate, which will make forfeiting nearly impossible. The certificate will also remain permanently within the blockchain, preventing most data mishaps that might result in the loss of the certificate.

Objective

This project aims to present a platform for issuing and storing certificates in a secure manner and also provide a platform to view the issued certificates whenever needed without any concern for the validity of the said certificates.

Methodology

The starting period of the development process will consist of extensive study into the BlockChain technology, its current implementation and determination of the most suitable language platform for developing the platform. This phase will also include gathering of all the necessary requirements for the fulfilment of the project. After this we will draft a software design that the platform must adhere to for its proper implementation. After the completion of this step we will start off with the coding phase. In this phase of the project we will use the information gathered from the information gathering phase to develop a software platform that adheres to the

software design. Right after the end of the coding phase rigorous testing of the final products will be done and all the shortcomings, error and bugs will be fixed to give us the final product.

Facilities required for proposed work:

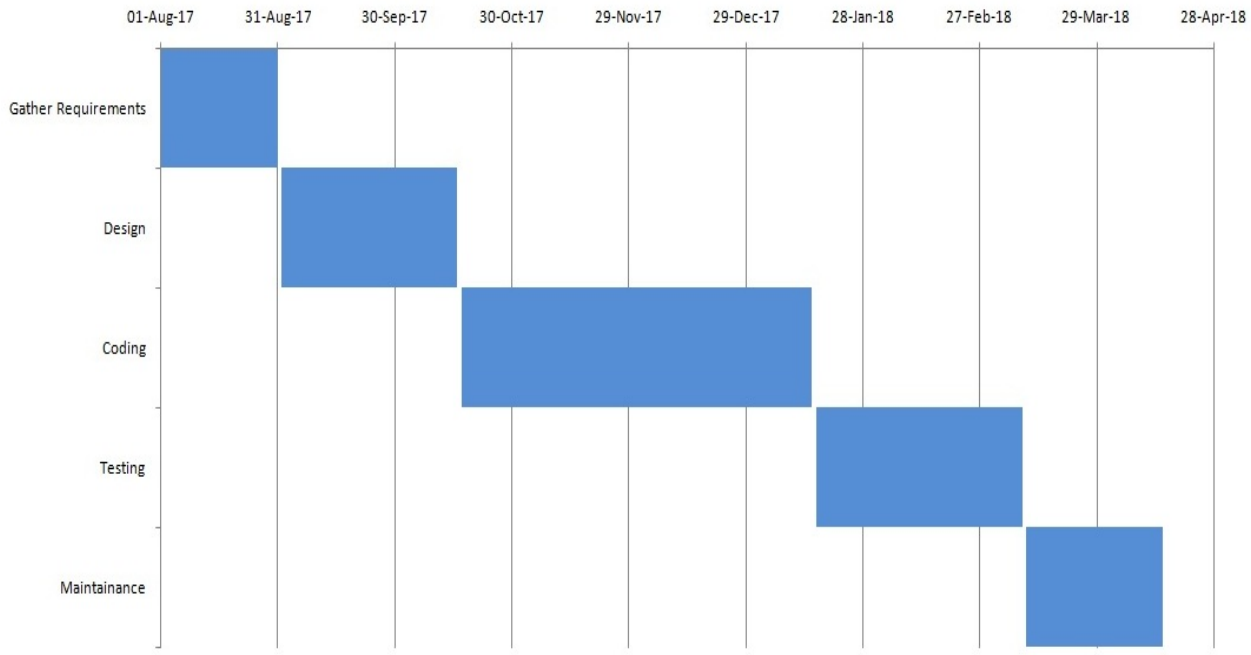
Hardware Requirements

- Processor (minimum) : 2.3GHz Intel Pentium Core
- RAM (minimum) : 4GB

Software Requirements

- Operating System (minimum) : Windows 7 or above
- Browser : Chrome, Firefox, Safari, Microsoft IE 8

Gantt chart/Pert chart



References

Research papers

- MIT Uses Bitcoin's Blockchain To Issue Certificates by BitcoinChaser Staff

  http://bitcoinchaser.com/mit-blockchain-certificates

- Blockchains-Authentication, Education by Luke Parker

  https://bravenewcoin.com/news/authenticating-academic-certificates-on-the-bitcoin-blockchain/

- What is the role of blockchain by Chris Jagers, CEO of Learning Machine.

  www.learningmachine.com

  https://medium.com/learning-machine-blog/blockchain-credentials-b4cf5d02bbb7

- 10 ways Blockchain could be used in education by Donald Clark

  https://oeb-insights.com/10-ways-blockchain-could-be-used-in-education/

- What is Blockchain by Mohit Mamoria

  Editor, Unmade newsletter (https://unmade.email)

  https://hackernoon.com/wtf-is-the-blockchain-1da89ba19348