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Blockchain Based Marksheet Authentication

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ABSTRACT

In the current education –Industry cooperation, substantive information asymmetry exists between universities and employing companies. Student credit systems and the historical information data chain need urgent establishment and maintenance. We make use of the transparency and non-tampering features of the blockchain system to implement an education-Industry cooperative system based on the blockchain Hyperledger framework. Using the certificate authority service and transactions in the Hyperledger framework, the system simulates the roles of universities and companies it enables universities and enterprises to share information transparently, which achieves information, demands of enterprise recruitment and current market trends. This offers a significant attempt on the application of blockchain technology to Education-industry cooperation as a pilot development for technology deployment. Blockchain is the underlying technology of Bitcoin. It is considered a prospect by industries such as finance, education and healthcare, due to its decentralization and non-tampering features. Delegated Proof-of- Stake (DPoS) algorithm is used to validate the data. We can use the details at anywhere using the webpage and our college website. Our college admin has been posted the record in the college website, students can view the details using the individual username and password. In this webpage we can't modified any of the records, admin only enter the students details in the college website.

Keywords: Delegated Proof-of- Stake, Blockchain System ,Blockchain Hyperledger framework

INTRODUCTION

Recruitment and employment build a bridge between education and industry. However, the current education- industry cooperating needs seamless convergence among university students, Educational institutions and companies, and the efficiency and transparency need to be improved. The current student credit

system is not sound, with limited data dimension and incomplete historical records. On one hand, diploma fraud, academic fraud and resume fraud exactly exist, on the other hand, institutions and companies lack effective means of verification. As a result, the government and companies cannot obtain complete and

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credible student information, which reduces the trust between universities and companies.

Computer is one such device that can harness this power, combined with the information technology advances and high-speed communication that can create a very reliable network for a company to function on. The World Wide Web (www) that was developed initially for defence purchase became an essential in the World can be interconnected and information can be exchange, thus making it the backbone of the hi-tech world. The web is a user-friendly graphics-based part of the global Internet, accessible to any person or organization anywhere in the world.

This is the platform that we have chosen to work upon for the following reasons:

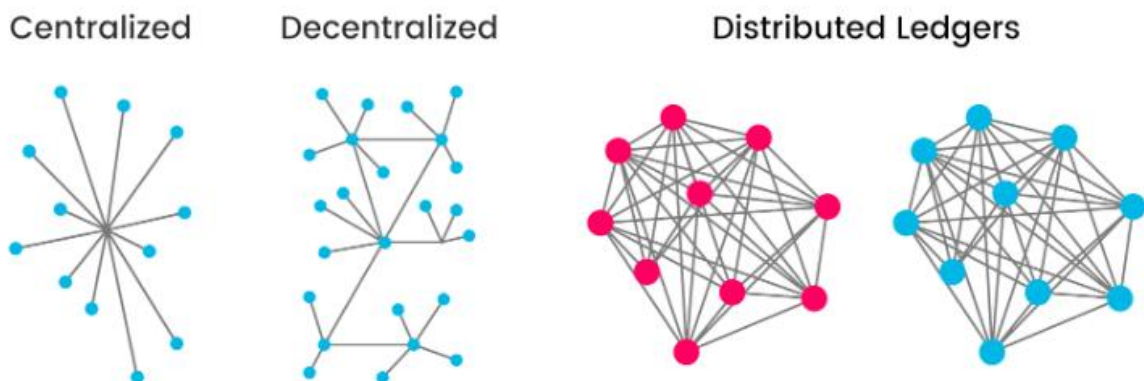
Because of it's essential in day-to-day life. Simplicity of its use. Easy accessibility.

Resume fraud is pervasive and has detrimental consequence, but is rarely studied despite the negative impact it can have on job-related outcomes. While this is only a way of resume fraud prediction with limited accuracy, which cannot solve the problem from the very beginning. So, we make use of the transparency features of the block chain system to implement an Education – Industry cooperative system

using hyper ledger block chain framework, which provides an innovative and viable solution for universities and companies collaboration and information sharing. Frauds are expected to be eliminated and the trust between universities and companies can be established. It shows the overview of the current status of block chain technology and the hyper ledger project. The major pain points of the collaboration between universities and companies and the scenes in which block chain can be applied are analyzed.

Blockchain

A blockchain is, in the simplest of terms, a time-stamped series of immutable record of data that is managed by cluster of computers not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain). For an even more detailed explanation, check out our guide on explained. The blockchain network has no central authority. It is the very definition of a democratized system. Since it is a shared and immutable ledger, the information in it is open for anyone and everyone to see. Hence, anything that is built on the blockchain is by its very nature transparent and everyone involved is accountable for their actions.



How Does Blockchain Work?

Picture a spreadsheet that is duplicated thousands of times across a network of computers. Then imagine that this network is designed to regularly update this spreadsheet and you have a basic understanding of the

blockchain. Information held on a blockchain exists as a shared and continually reconciled database. This is a way of using the network that has obvious benefits. The blockchain database isn't stored in any single location, meaning the records it keeps are truly public and easily verifiable. No centralized version of this information exists for a hacker to corrupt. Hosted by millions of computers simultaneously, its data is accessible to anyone on the internet. To go in deeper with the Google spreadsheet analogy, I would like you to read this piece from a blockchain specialist. The traditional way of sharing documents with collaboration is to send a Microsoft Word document to another recipient, and ask them to make revisions to it. The problem with that scenario is that you need to wait until receiving a return copy before you can see or make other changes because you are locked out of editing it until the other person is done with it. That's how databases work today. Two owners can't be messing with the same record at once. That's how banks maintain money balances and transfers; they briefly lock access (or decrease the balance) while they make a transfer, then update the other side, then re-open access (or update again). With Google Docs (or Google Sheets), both parties have access to the same document at the same time, and the single version of that document is always visible to both of them. It is like a shared ledger, but it is a shared document. The distributed part comes into play when sharing involves a number of people. Imagine the number of legal documents that should be used that way.

Instead of passing them to each other, losing track of versions, and not being in sync with the other version, why can't all business documents become shared instead of transferred back and forth? So many types of legal contracts would be ideal for that kind of workflow. You don't need a blockchain to share documents, but the shared documents analogy is a powerful one. William, Venture advisor, 4x entrepreneur, marketer, strategist and blockchain special list.

Hyperledger Fabric

The Hyperledger is the first significant exploratory development in terms of open and standard blockchain technology. With the support of the Linux Foundation, Hyperledger has attracted the participation of many technical and financial corporations. In March 2016, under the auspices of the Linux Foundation, the Hyperledger project formally incorporated the source code contributed by members of Blockstream, Digital Asset Holdings and the technical giant IBM into a new code base to form a new enterprise-level blockchain base. This code collection is called Hyperledger Fabric architecture supports the plugging and unplugging of modules, which will further promote the application of Smart Contracts for various business scenarios.

The blockchain in Hyperledger Fabric can be understood in the model of state-machine replication, where a service maintains some state and clients invoke operations that transform the state and generate outputs. The blockchain emulates a trusted computing service through a distributed protocol, run by nodes connected over the Internet. The nodes share the common goal of running the service but do not necessarily trust each other.

Block:

A group of confirmed transactions, ready to join the blockchain.

Blockchain:

A chain structure made up of multiple blocks, each block contains the hash of the previous block content, except the first block.

Certificate Authority:

Responsible for authority management, also called Member Service or Identity Service.

Chaincode:

The application logic code on blockchain, derived from a Smart Contract, running in an isolated container environment.

Ledger:

It contains the block chain(with all transaction information), and the World State.

Order:

Responsible for consensus service, sorts unconfirmed transactions, gives the global order for confirming.

World State:

A key-value database, helps Chain code to store the global status of transactions.

Literature Survey

Holthas suggested a different method to store log in a encrypted fashion which makes it difficult to modify , and incase if it is modified it can be detected easily.He emphasizes on the security by explaining log creation and verification process separately[1].

And Rew Sutton and Reza Samav have presented on “blockchain enabled privacy audit logs”which concentrates integrity and authentication of the data based on the linked data technique[2].

The main concept of blockchain is immutability it is attained by calculating checksum using previous checksum value in that link which makes it impossible to

modify,are stored in a cloud by concatenating the previous log hash with the current log hash[3].In log validation process,generated local hash and cloud hash will be compared , and it returns valid if both hash values are same [4].

DApp (Decentralized apps)stores the data in decentralized manner and changes made in a single ledger will reflects in every other ledger [5].Token mechanism is employed in it[6].

There are three architectural patterns of DApps.In first pattern (self GeneratedTransactions),users can directly send a transaction or use a web frontend such as MYEtherWalleto use a browser such as chrome with metamask,cipher,status [7].It doesn't depend on third party provider[8].

In second pattern (self –confirmed Transactions),User should trust the DApp provider since DAppprovider generates the transaction and further verification will be done by the user[9].

In third pattern (Delegated Transactions), User can interact with the website offered by DApp provider without the support of cryptobrowsers. Interaction with blockchain and sending transactions will be backend of website offered by DApp provider .Commom example for this pattern is Kraken[10].

Naota Yanail has suggested a ID based multi signatures[11],In that signer generates a partial signature and combines it with signatures of group of signers[12] .

Existing System

The existing system was the information are stored as the manual records.In the existing system we maintain the records of the student as the manual records in college.Marks, Internal marks, all certificates are given to student as the hard copy[13]. Here there is a chance of creating the false records. If the student wants to get job outside the campus, they need to submit

the certificate to show their qualification. In some scenario the students are very smart enough to get job by submitting the false records created by them. So, companies who are recruiting them getting cheated. This should be prevented and steps should be taken to overcome this problem.

Disadvantages

Time delay:

In the existing system, information related to all details is stored in manual records. Since all the details are stored in manual records it takes lot of time to fetch the details.

Redundancy:

As the information passes through different registers, each register is consolidated and sent to next register. So, the same information is being tabulated at each register, which involves lot of complication and duplication in work, thus it causes redundancy.

Accuracy:

Since the same data is compiled at different sections, the possibility of tabulating data wrongly increases. Also, if the data is more, validations become difficult. This may result in loss of accuracy of data.

Information Retrieval

As the information is stored in the particular Format, it can only be retrieved in the same format. But if it is to be retrieve in different format, it is not possible.

Proposed System

The drawback of the existing system is that it is very difficult to retrieve data from the files. It is difficult to handle the whole system manually and it is less accurate and to keep the data in record files for future

System Model

reference because it may get destroyed. Moreover, it is very difficult to retrieve data. Redundancy of data may occur and this may lead to the inconsistency. The manual system is so time-consuming. The proposed system is very easy to operate. Speed and accuracy are the main advantages of proposed system. There is no redundancy of data. The data are stored in the computer's secondary memories like hard disk, etc. it can be easily received and used at any time. The proposed system will easily handle all the data and the work done by the existing systems. The proposed systems eliminate the drawbacks of the existing system to a great extent and it provides tight security to data. Delegated Proof-of- Stake (DPoS) algorithm is used to validate the data. In the proposed system we introduce block chain concept to Education and industry cooperation. Block chain uses crypto algorithm, so that the transaction done on this are super secured. It is difficult to change the details of the student in the block chain. Education system will put the student information into the blockchain. Recruiters will get the details from the institution of the student. So that there is no way of fraudulent here. No manual errors.

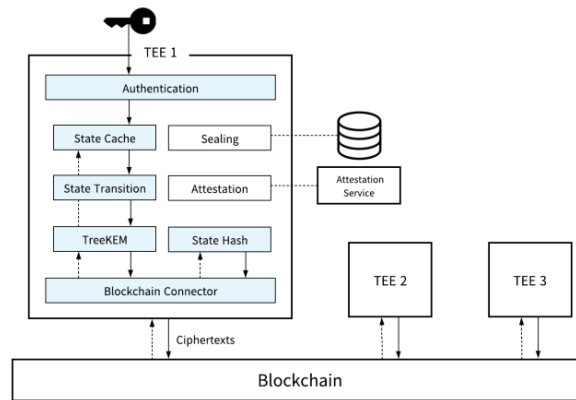
Advantages

Storage Media

- In the existing system, data share being stored in long registers. So, it becomes very difficult to refer the same information after some time has elapsed.

Reports

- At present the various reports are tabulated manually. They are not attractive and require more time. They do not provide adequate help in maintaining the accounts.



Methodology

Modules

- Registration module
- Login module
- Admin module
- Recruiter info module
- Enrollment module

Registration module

Registration module is used for adding students and staff details. They can enrol themselves in the college website. A registration form is a list of fields that a user will input data into and submit to a company or individual. There are many reasons why you would want a person to fill out a registration form. Companies use registration forms to sign up Students for marksheet authentication.

Login module

The Login Module is a portal module that allows users to type the user name and password to log in. You can add this module on any module tab to allow users to login to the system. Registered users can login and enter into admin page where they can get the detailsofstaff and student. If username and password is invalid then it shows error. So, we can use the forget password option. Once clicking forgot password it shows the original password along with mobile number details. If you

are the first-time user then you can register using the username and password. Once registering you can able to login. If you are logging for the second time by giving the username and password, it will be shown as you are registered already So click on please login here. It will redirected to the next page. If you need to cancel the login you can click the back button so that it will redirect to home page.

Deep learning classification efficiency. The selection of features increases the precision of classification and reduces the model time. The DL algorithms have been used for selecting features, and a multi-layer perceptron algorithm has been utilized for binary classification problems.

Admin module

Admin module allows system administrator to set up back-end of the system and perform basic system configuration. Admin will have access of all students and staff details and add the details of students in the block chain. The normal users in our application are not allowed to access admin pages. All users use the same form to login. After logging in, the normal users are redirected to the index page while the admin user was are redirected to thee admin page. mainly the definition of predefined drop-down fields. Admin can also set up overall system

security settings such as required password strength, inactive session time out, inactive accounts lockout, a password reset period, etc. An important part of security is audit log – any changes in the system are logged here – so it's easy to check who changed/removed what, at what time, what was the original value and what is the new value set.

Recruiter info module

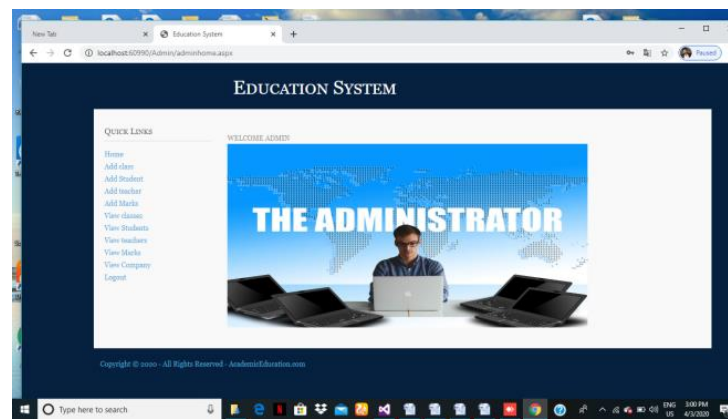
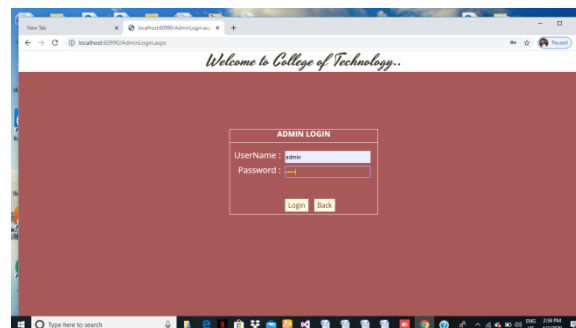
Recruiter details will be available in recruiter info module. Recruitment module is used to post job details like location, salary package and so on. It allows the candidates to apply for the posted jobs. It also provides the information related to these jobs and allow the candidates to view the information. Recruiter will interview the candidate and can view the candidate details eg: Semester marks. This mark will be entered by the

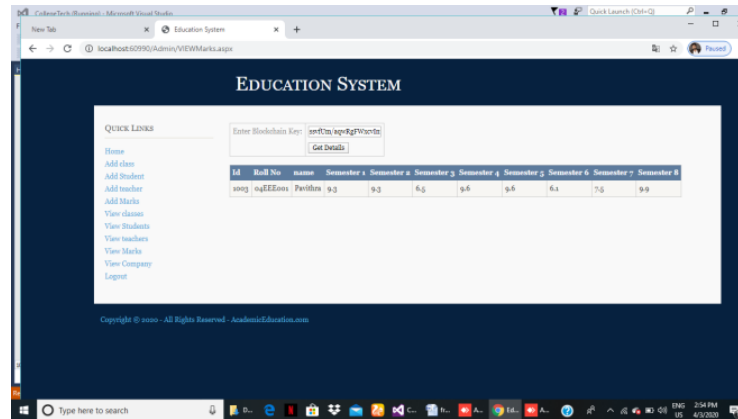
administration which we scored in our Semester exams. In Recruitment Info module candidate can view the recruiter information: HR Name, Phone number and so on.

Enrollment module

In Enrollment module Students can login using the username and password. Students can view their personal details but cannot edit. They can enroll themselves to the posted jobs and attend the interview based on their requirement. They can search the jobs related to the information posted in their resume. In enrollment module, administration will be entering the mark details which we scored in our Semester exams. If they are not enrolling they can click the back button which will redirect them to home page. User can able to revisit their enrollments.

RESULT AND DISCUSSION





CONCLUSION

In this Project we address the current information asymmetry between universities and employer enterprises an incomplete student credit system and that the historical information data chain is unestablished. With the help of block chain technology, the data transparency, authenticity and validity can be guaranteed. Seamless convergence is achieved among students, educational institutions and employer enterprises, which improves the efficiency and transparency of education and employment agencies. With the help of hyper ledger fabric, we have designed and implemented an education –industry cooperative prototype system. The system proposes a new way for universities and enterprises to share information

transparently, which achieve information symmetry among student skill and knowledge information, demands of enterprise recruitment, and current market trends. Enterprises can precisely arrange their offers, and graduate students can wisely choose available opportunities. This offers a significant attempt on the application of blockchain technology to education-industry cooperation as a pilot development for technology deployment. Using the web development software we can enter the student records and details regarding the semester marks, we can upload the mark sheet .Using this webpage company can be easy to identify the original marks of students, this can build a bridge between company and universities. We can see our details at anywhere anytime using this webpage.

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