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Centralized Education and Employment Record System Using Blockchain

[1]Yashus Jain, [2]Prof Rengarajan

[1]Master Student, School of CS & IT, Jain University, Bengaluru, India

[2] Professor, School of CS & IT, Jain University, Bengaluru, India

Abstract: ***:*** Blockchain technology would make it possible for people to have ownership over their data, including their academic credentials, career history, and other relevant information. Employers and educational institutions can have confidence in the information provided since the validity and integrity of the data can be confirmed using blockchain technology. While there would be no longer be a need for middlemen like third-party verification services, blockchain technology also has the potential to boost efficiency. Verifying academic and job records would take less time and money thanks to this, improving the effectiveness and efficiency of the procedure. Blockchain technology may also improve the recruiting process by enabling businesses to swiftly and easily confirm the credentials and work history of prospective seekers. This may assist to simplify the hiring procedure, cutting expenses and empowering businesses to make wiser hiring choices.

I. INTRODUCTION

The process of hiring new employees is drawn-out and laborious. It may take several weeks to find potential employees among a list of applicants, choose the best ones based on the job's requirements, and conduct background checks. A crucial step in the hiring process is running background checks on applicants' employment history, educational background, and other factors. It entails protracted waiting periods for the candidate's records from different organizations and entities, including educational institutions, universities, former employers, and certificate-issuing bodies. With its unchangeable blocks, blockchain technology has made it simpler to validate a certain candidate. Large businesses and organizations now require it because of its secure and dispersed nature. With this project, we've worked hard to produce an implementation that lessens the amount of manual labor that third parties must perform. This chain is distributed over a network of peers that share a ledger, keeping records of that employee. Such a robust and fault-tolerant structure provided by blockchain technology is sure to be a boon to all the companies scrutinizing the candidate. Fabric serves as the network for this website, with Hyperledger Composer serving as the infrastructure. Each applicant's unique identification is successfully used to construct blocks for each candidate. This chain is spread throughout a group of others who have a ledger that contains the employee's records. Blockchain technology offers a framework that is so reliable and fault-tolerant that it will undoubtedly be helpful to all the businesses vetting the applicant.

II. APPLICATION OF PERSONAL DESKTOP VOICE ASSISTANT

Centralized education and employment using blockchain technology has many potential applications, including:

I. **Employment verification:** A transparent, tamper-proof system for job verification may be made using blockchain technology. There is no longer a need for manual verification procedures or third-party verification services because employers can readily evaluate the academic credentials and professional experience of job seekers.

II. **Academic credentialing:** For the purpose of academic credentialing, blockchain technology may be utilised to build a secure, decentralized network. Educational institutions might offer blockchain-stored digital certificates and degrees that are tamper-proof and simple to verify.

III. **Continuing education:** A decentralized network for monitoring ongoing education and professional growth may be developed using blockchain technology. This would make it simple for people to monitor their progress and give companies an open record of their career advancement.

IV. **Skill-based hiring:** With blockchain technology, a decentralized platform for skill and competency verification may be built. This would enable companies to evaluate job seekers' talents in an objective manner, improving the effectiveness and efficiency of the recruiting process.

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III. TECHNOLOGY USED IN PERSONAL DESKTOP VOICE ASSISTANT

In Blockchain based centralized education and employment record, various technologies can be employed, including:

3.1 Learning Machine:

A blockchain-based tool called Learning Machine makes it possible to create and validate digital academic records. Employers and educational institutions can readily verify the platform's tamper-proof digital records because they are created using blockchain technology.

3.2 Blockcerts:

Blockcerts is an open-source platform that develops digital academic records using blockchain technology. Employers and other organizations may readily verify digital certificates that educational institutions are using because to the platform's ability to store them on the blockchain.

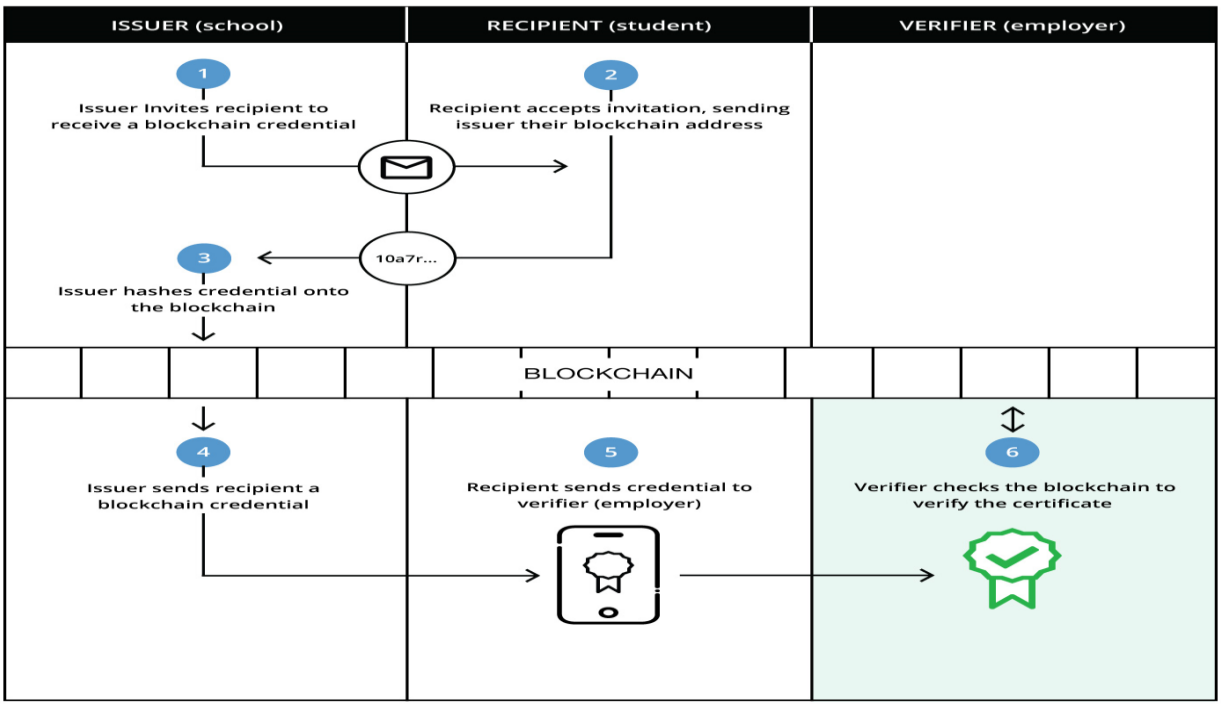

Fig3.2

3.3 Open Badges:

A blockchain-based technology called Open Badges makes it possible to create and validate digital credentials. The platform enables users to earn badges for doing particular actions or reaching particular objectives. Because the badges are kept on the blockchain, they are tamper-proof and simple to verify.

IV. RESEARCH METHODOLOGY

"Towards a Blockchain-Based Student Data Management System" (2018) - This study proposed a blockchain-based student data management system that aimed to address the challenges of data privacy and security in traditional centralized education systems. The study discussed the technical architecture and implementation of the system, as well as the potential benefits for students and educators.

"Designing a Decentralized Education Record System Using Blockchain Technology" (2019) - This study presented a decentralized education record system based on blockchain technology. The study discussed the technical design and architecture of the system, as well as the potential benefits for students, educators, and employers.

"Exploring the Potential of Blockchain for Improving Education Record Management" (2020) - This study explored the potential of blockchain technology for improving education record management. The study conducted a

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comprehensive review of existing blockchain-based education record systems, including their benefits and limitations, and discussed the challenges and opportunities of implementing such systems in the education sector.

"Blockchain-based Credential Verification System for Education and Employment" (2021) - This study proposed a blockchain-based credential verification system for education and employment. The study discussed the technical design and architecture of the system, as well as the potential benefits for students, educators, and employers, such as improved data security, accessibility, and interoperability.

V. PROBLEM STATEMENT

Errors and fraud are frequently present in traditional ways of keeping school and job records, which can have major repercussions for both individuals and institutions. These techniques may also be time-consuming and ineffective, delaying the verification of documents and eventually impeding the hiring process. In order to store and validate records, blockchain technology offers a safe, impenetrable alternative that shows promise. Nevertheless, the use of blockchain technology in the centralized system for education and employment records is still in its infancy and confronts a number of difficulties, including interoperability, data protection, and the requirement for stakeholder cooperation. To secure the confidentiality, effectiveness, and correctness of education and employment records, it is thus necessary to investigate the possibilities of blockchain technology in this field and devise efficient solutions for its application.

VI. IMPLEMENTATION

Implementation of centralized education and employment using blockchain typically involves the following steps:

- 1.Create a secure database: The first step in creating a centralized education and employment record system is to create a secure database that can store and protect the personal data of individuals. This database should use the latest security protocols to ensure that the data is kept safe and secure.

- 2. Collect and store data: Once the database has been created, the next step is to collect and store the necessary data. This could include educational qualifications, employment history, and any other relevant data. This data should be collected from reliable sources and stored in a secure manner.

- 3. Develop an access system: Once the data has been collected and stored, the next step is to develop an access system that allows individuals to view and manage their records. This could be a web-based system or an app-based system.

- 4. Implement additional security measures: To ensure the security of the system, additional security measures should be implemented. This could include authentication and authorization systems, encryption, and firewalls.

- 5. Monitor and update the system: The final step is to monitor and update the system on a regular basis. This could involve making sure that the data

VII. ADVANTAGES

Advantages of centralized education and employment using blockchain:

- Increased data security: Because to the high level of security offered by blockchain technology, it is challenging for unauthorised individuals to access or change data. By guaranteeing the accuracy of educational and job records, fraud may be avoided, and identity theft is protected.
- Improved efficiency: Reduce duplication of labour and speed up the verification process by centralising school and job information on a blockchain. For educational institutions, employers, and regulatory organisations, this may save time and cut costs.
- Enhanced transparency: Because of how transparent blockchain technology is, it is feasible to follow changes to documents and make sure they are correct and current. This can raise stakeholder trust and raise the general standard of people's educational and job histories.
- Increased accessibility: It is conceivable to increase the accessibility of school and employment data to a larger variety of stakeholders by centralising them on a blockchain. This can lessen obstacles to employment and education, especially for underprivileged or excluded populations.

VIII. DISADVANTAGES

Disadvantages of centralized education and employment using blockchain:

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- Technical complexity: Using blockchain technology may be challenging and complex, especially for businesses with minimal technical skills. Due to this, creating and maintaining a blockchain-based system may be challenging, which may cause delays or mistakes.
- Cost: Implementing a blockchain-based system can be costly, especially if substantial people and infrastructure expenditures are necessary. Smaller businesses or those with tighter finances may find it challenging to embrace this technology as a result.
- Privacy concerns: Although though blockchain technology is intended to be safe, several privacy issues remain surround it. For instance, using the data kept on the blockchain, a third party could be able to track out the identities of certain people. Particularly sensitive material, like medical records, may raise this issue.
- Interoperability: A consolidated education and employment record system may need to interface with a number of different systems, such as student information systems or human resources systems, in order to be effective. It can be difficult to ensure that these systems are compatible, especially if they employ several data formats or protocols.

IX. RESULT

Blockchain technology can improve the efficiency, security, and transparency of centralised employment and education institutions. The development of a decentralised digital credential system is one potential application of blockchain in education. Employers could more easily verify students' credentials if students could save actual academic records and certificates on a safe blockchain database. Students might gain greater authority over their own records and be capable of sharing them with others as they see appropriate thanks to blockchain-based credential systems. Similar to this, a decentralised employment system may be established using blockchain technology. This would make it simpler for companies to locate eligible candidates by enabling job seekers to keep their resumes, employment histories, and other relevant data on a blockchain-based platform. Due to the fact that all applicants will be judged in accordance with objective standards, a decentralised employment system might also aid in lowering bias and discrimination throughout the recruiting process. Ultimately, by making centralised education and employment institutions more open, safe, and effective, blockchain has the ability to alter them. Yet, the use of blockchain technology calls for thorough preparation and thought, as well as coordination amongst important players.

X. CONCLUSION

Using blockchain technology to build a centralized system for keeping track of education and employment has the potential to bring about a number of important advantages, including better data security, more productivity, increased transparency, and expanded accessibility. It's crucial to note that this strategy might potentially have certain disadvantages, such as technological complexity, expense, privacy worries, interoperability difficulties, and regulatory barriers.

Despite these difficulties, there are a lot of potential advantages to a blockchain-based education and employment record system, therefore it is probable that more and more businesses will investigate it in the years to come. It may be feasible to fully utilize the capabilities of this technology and produce value by carefully weighing the benefits and drawbacks of blockchain technology and building a clear implementation strategy. In conclusion, creating a centralized system for recording education and employment using blockchain technology has the potential to bring about a number of important advantages, including greater efficiency, higher data security, and enhanced. It could be able to fulfil the full potential of this technology and build a more effective, transparent, and open ecosystem for education and employment by carefully weighing the benefits and drawbacks of blockchain technology and creating a clear implementation strategy.

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