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Fake Certificate Detection by using Blockchain

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Abstract - *Education is developing in India and people are realizing the significance of education. scholars earn numerous instruments. With their instruments, they can apply for jobs in the public or private sector, where all these instruments need to be vindicated manually. There may be cases where scholars may submit a fake instrument and it's delicate to identify them. All this can be achieved using a technology called Blockchain. The number of instruments in our society has come grueling and current. moment instrument phony has come a business decline from people's need/ desire for employment. To break this problem, numerous experimenters designed a instrument verification system. Being systems can break some of the major problems, by furnishing a central database for the electronic operation of these records similar as penetrating to pupil records still. This discussion developed a instrument generation and verification using blockchain technology and a Quick Response (QR) .*

Key Words: *Blockchain, IPFS, Certificate, decentralization, Generation, Verification and Fast Response Code.*

1. INTRODUCTION

The use of blockchain technology to descry fake instruments is driven by the need to address the growing problem of instrument fraud. With the growing fashionability of online education and remote work, there has been an increase in the product and distribution of fake instruments, which can have serious consequences for individualities and associations. Easily proving that you have an academic instrument (university degree) is a process that varies from country to country or educational institution. without asking who's requesting the information Some academic centers allow a quick and easy online inquiry to corroborate the authenticity of their instruments. Some assign a part to third parties so that we can confirm whether a qualification or instrument is valid or not. we use blockchain technology to descry fake instrument. The lately passed computer wisdom break, Blockchain is a ultramodern, artificial and disruptive technology that's anticipated to promote global profitable growth over the coming many decades. Grounded on numerous studies that survive about a million scholars each time, the authorities in the instrument are generally at threat of scholars' sequestration powers. The inflexible property of the block chain helps to break the problem of instrument phony.

2. LITERATURE REVIEW

Researchers have made several efforts to validate and validate certificates to eradicate the problem of certificate forgery. The certificate verification method is still prevalent today due to the existence of a manual process where organizations interested in certificate verification send a written request visit the institution.

Dr.Kishore.t. Patil has proposed blockchain technology to create a decentralized environment where data and transactions do not control any third party organizations. Any transaction ever executed is convinced and constantly recorded in the public book. According to Blockchain technology, it is a worldwide reliable, decentralized system of higher education credit and evaluation, which can offer around the world a united approach to students and higher education institutions, as well as other potential stakeholders, such as companies, institutions and organizations. As a proof of the concept, we provide a prototype of the environment based on the open source Ark Blockchain platform.

Zheng and others. (2017) stated that although the number of universities, higher education students and graduates per year continues to grow, the need to easily check the degree is new business opportunities. Blockchain's disorder and its implementation based on Blockchain software provide a simple solution to investigate reliable business models.

Jayesh G. Dongre suggested that blockchain technology could create a decentralized environment where transactions and data do not control any third parties organizations. Any transaction ever executed is convinced and constantly recorded in the public book. Based on the Blockchain technology, we offer a global higher education credit platform called EDUCTX.

3. SYSTEM ANALYSIS

The aim of this project is to solve the problems of the current certificate inspection system and to stop the user's fraud and to offer the transparency of the education system using blockchain technology. This project is designed to evaluate the application of Blockchain to the implementation of the distributed system as a service. The digital certificate, which uses digital signature technology, gives the administrator the

authority to approve the administrator in the digital fields used to verify the user's identity and to access the network resources.

3.1 Problem Definition

Issued certificates are designed to be authentic upon verification. However, there have been many cases of certificate forgery in most organizations over the years. Moreover, distinguishing fake and genuine certificates requires a lot of concentration, such cases call for a fast and easier means of certificate verification to minimize the rate of certificate forgery. This study therefore develops and implements the Certificate Generation and Verification System (CVS) which will adopt blockchain technology and Quick Response (QR) code to alleviate the above problems.

3.2 Objectives

1) a digital certificate that uses digital signature technology, authorizations to verify the user himself in the digital fields used to verify the user's identity and use the authority to use the network resources.

2) This provides clarity to employers to check the educational documents of employees during the recruitment process and saves time to test the educational documents.

3.3 Requirements Analysis

This would include the determination and definition of functional and non -functional requirements in the system.

1) Certificate generation: The system should be able to generate digital certificates with the necessary information, including the recipient name, the type of certificate and the date of release.

2) Certificate Verification: The system should be able to check the authenticity of the certificates using QR codes.

3) User management: The system should allow user registration, login and access management to make sure that only authorized persons can create or verify certificates.

The database, Blockchain stores information in the form of blocks and chains. One of the biggest successful Blockchain real -world programs is cryptocurrency, such as Bitcoin. Blockchain uses a safer and safer mechanism to keep operations records. Blockchain guarantees our data security. Blockchain databases and typical databases are almost the same. Typical database data stores the user's data, but blockchain data is stored in the blocks and the blocks are connected to each other using a circuit. Each block has its own capabilities and information when they are filled.

4. BLOCK DIAGRAM

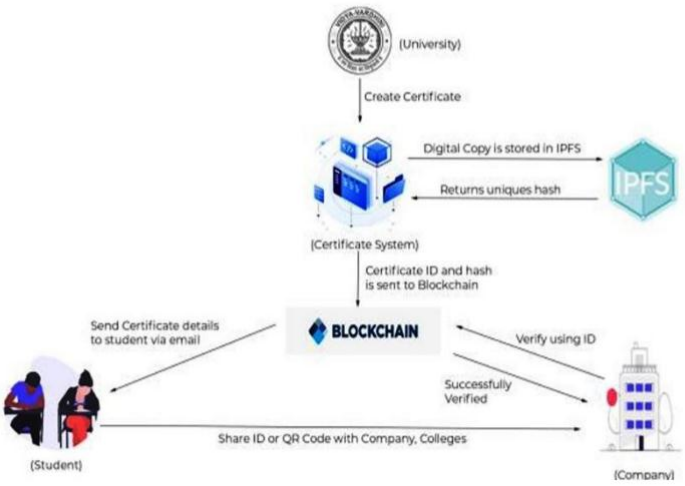

Fig -1: Block diagram of the entire System

5. FLOWCHART

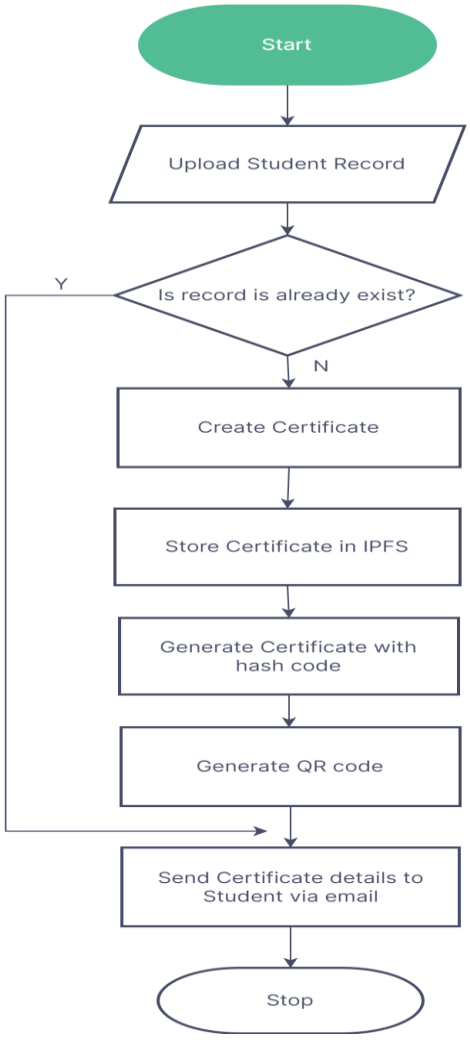

Fig -2: Flowchart of the System

6. WORKING

To create certificates on the blockchain-based system, firstly, the university will have to be registered. Once added the university will have access to the system to generate certificates either in bulk using a predefined CSV template or a singly one with the aid of data fields control. Each certificate generated will be kept in the format of an Interplanetary File System (IPFS), and the unique hash ID and QR code will automatically be generated using the SHA-256 algorithm.

The generated hash ID and certificates details will be kept in the blockchain network and registered students will receive their hash IDs and QR codes respectively. The verifier or anyone can validate the authenticity of any certificate using the hash or QR code and can as well compare the submitted copy with the one displayed by the system.

7. IMPLEMENTATION

By generating detailed certificate information, if the university passing the certificate of the certificate in this system has two capabilities of certificate generation. The first option is to complete the form to generate one certificate as shown in the picture. Once we complete the form the details goes to the desired email address. This kind of process also helps the student to cross verified details.

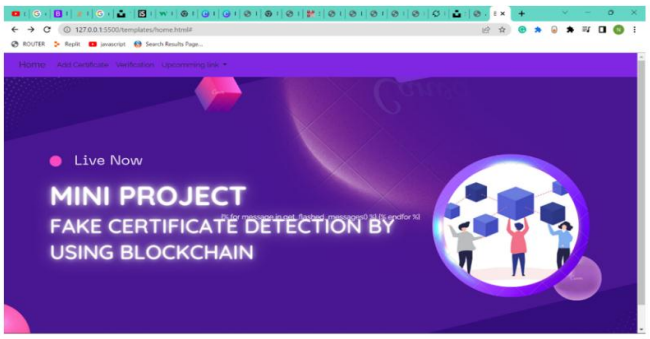

Fig -3: Home Screen

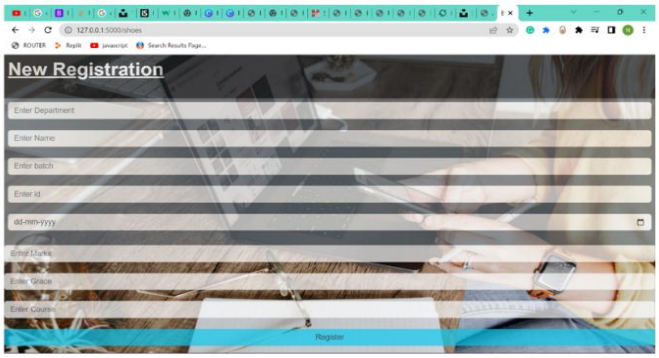

Fig -4: Registration Screen

Once the certificate is successfully generated, the certificate ID and QR code will be sent to a registered email. Email address to review the certificate as shown in the picture.

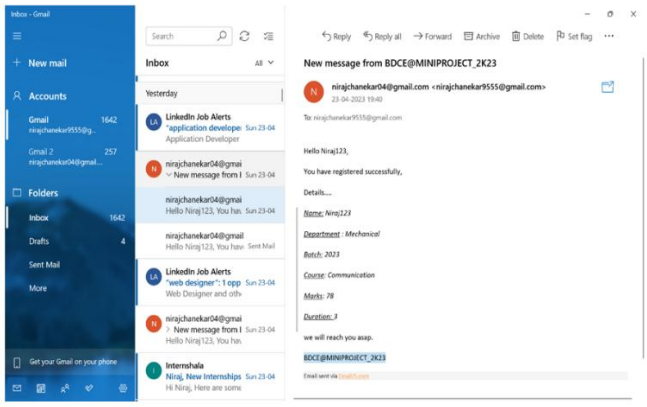

Fig -5: Mail to the Student after Registration

The cleanser is an organization of a company or organization that will have to check graduates or students, applying for work or seeking acceptance, certificates of originality. The checker has two options for this system that needs to be authenticated when entering the student's bag ID or authentication using the student's QR code. Another option is to directly scan the QR code shared by students or graduates at the application or record point. This check process can be achieved using a QR code extension found in Chrome, Firefox and Internet Explorer. Similarly, this process can also be achieved on mobile devices using programs such as QR code scanners.

Fig -6: Generated QR

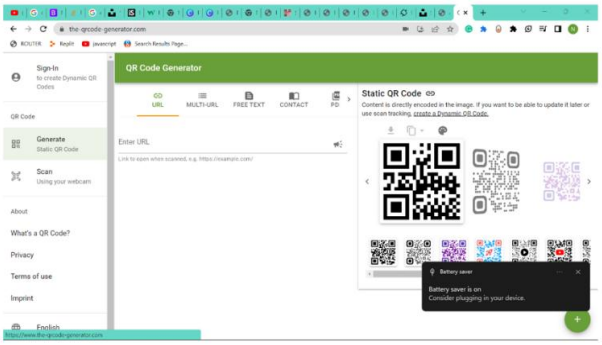

Fig -7: Verification Process

If the scan QR code coincides with the code in the system, and validate this QR code with system and show the particular result. The certificate will be reviewed as shown in the picture below. Although, on the contrary, if the scan QR code does not match the code system, it will return the error message that the inspection failed as shown in the next of this picture.

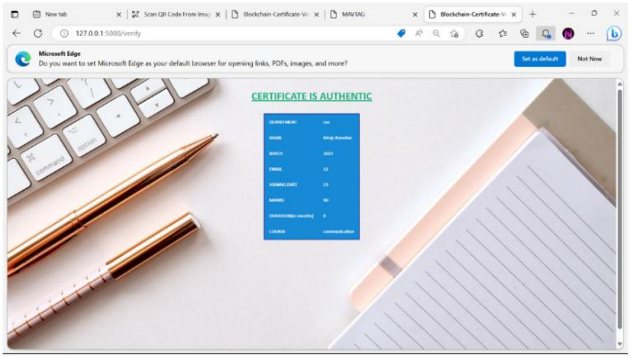

Fig -8: Output Screen

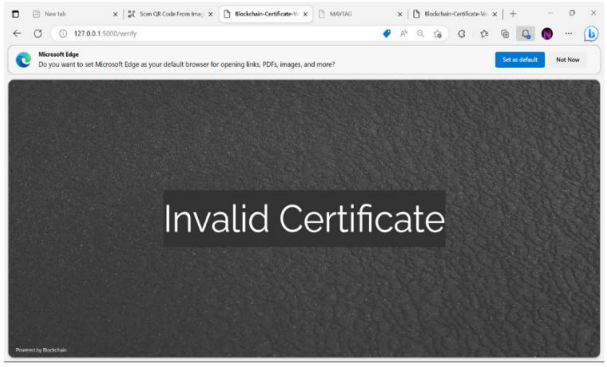

Fig -9: Invalid certificate ID was rejected

8. SYSTEM EXECUTION DETAILS

I. User Registration: Users must first register with the system by providing their personal information such as the name, email. To test the user's identity email address and contact number is used.

II. Create Certificate: After registration, users can create certificates by entering the necessary information, such as the name of the certificate holder, the name and the end date. This information is then stored in Blockchain as an operation.

III. QR Code Generation: Each certificate generates a QR code that contains a unique certificate identifier.

IV Certificate Issue: Later, the certificate shall be issued to the certificate owner in electronic or physical form along with the QR code.

V. Certificate Verification: The certificate can be checked by the scanning QR code using a mobile device. This will show the certificate information on the device screen that can be checked by comparing them with Blockchain stored information.

VI. Blockchain Verification: The authenticity of the certificate can be checked by checking a blockchain that contains a record of all certificate -related operations. If the certificate is authentic, the operation will be confirmed by Blockchain.

Overall, the use of blockchain technology and QR codes provides a secure and transparent method for generating and validating certificates that can be used for a variety of applications, including academic degrees, professional certifications, and licenses.

9. FUTURE SCOPE

The future scope of using blockchain for fake certificate detection is quite promising. Blockchain technology can offer several benefits in this area, including enhanced security, immutability, transparency, and decentralized verification. We are planning to modify this Blockchain system system to assign each course a unique Blockchain address and token fund. After the completing of course commitments, students would receive mail from the course address, not directly from the institution. The address would be a multifaceted person between the institution and the professor.

10. CONCLUSION

In the field of education the use of blockchain technology is a good and right solution. There are some problems descriptions that can be resolved here is there conclusions: The emphasis on diploma forgery can be overcome using blockchain technology. The increasing percentage of certificate forgery will increase. Costs can be reduce by using blockchain. To check the authenticity of the candidate certificate it will become easier. Time, energy and economic efficiency are essential with blockchain technology. The certificate authenticity check process will not last long; The inspection process can be completed within minutes.

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