A Web Application In Blockchain For First Graduate Scholarship Applicant Using Sha Algorithm

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Abstract: A First Graduation Scholarship Online Web Application is a blockchain-based system designed to automate and streamline the scholarship process. The system aims to eliminate the manual method of processing used by scholarship offices, thereby reducing errors and paperwork. The application provides features such as filtering records, managing schedules, and processing approvals and disapprovals, making it more efficient, reliable, and secure. The use of blockchain technology enhances the security and integrity of scholarship records, preventing fraudulent activities such as tampering with records or duplicating certificates. The system is accessible via an internet connection, and it is designed to be user-friendly and accessible to all stakeholders, including students, scholarship administrators, and government officials. The system is developed following best practices and security standards to safeguard sensitive information and prevent data breaches.Overall, the proposed system is a significant improvement over the manual system, providing a more organized, efficient, and secure way to manage scholarship information.

Keywords: Web application, blockchain technology, SHA 256 , First graduation scholarship, cryptographic technology, Sha algorithm.

1. Introduction

The "First Graduation Scholarship Online Web Application". It sounds like a valuable initiative by the State Government of Tamil Nadu to promote higher education and provide financial assistance to students who are the first in their family to pursue a graduate course.It's also great to hear that the software package has two main modules - an Admin module and a Student module - with sub-modules such as Login and Add Scholarship details. This suggests that the application is well-organized and easy to use for both administrators and students.

Overall, the First Graduation Scholarship scheme and its accompanying online application appear to be positive steps towards promoting education and providing financial support to deserving students.

This paper is to simplify and streamline the process of applying for a first graduation using a secure and user-friendly web application. The use of blockchain technology is proposed as a way to ensure the security and authenticity of the certificates issued through the system. By using blockchain, the system can create a tamper-proof and transparent record of all certificate transactions, making it easier to verify their authenticity. Overall, the aim of the project is to make the process of obtaining a first graduation certificate more efficient and trustworthy, while also improving the user experience for applicants.

2.. Literature Survey

Shuchih E. Chang And Yichian Chen,et al (2020)When Blockchain Meets Supply Chain: A Systematic Literature Review on Current Development and Potential Applications - That systematically reviews the existing literature on the intersection of blockchain technology and supply chain management. The paper evaluates the current state of blockchain in supply chain management and identifies potential applications, benefits, challenges, and limitations. The literature review provides a comprehensive and valuable overview for researchers, practitioners, and policymakers interested in understanding the role of blockchain in supply chain management.

DucKhaiLLam et al.,(2020) Double SHA-256 Hardware Architecture With Compact Message Expander for Bitcoin Mining-That proposes a hardware architecture for Bitcoin mining. The introduce the use of double SHA-256 hashing algorithm and a compact message expander, and discuss techniques for optimizing the design including parallel computation, pipelining, and memory footprint. The proposed

architecture is evaluated through FPGA implantation show that the proposed architecture achives higher performance and efficiency in Bitcoin mining. The paper provides useful insights into the design and optimization of hardware architectures for cryptocurrency mining.

Archana Singh ,et al., (2019) Blockchain Technology and Cryptocurrencies - It likely discusses the basics of blockchain technology and its application in cryptocurrencies, including potential benefits and drawbacks. The paper may also touch on current trends in cryptocurrency adoption and regulation. Blockchain technology is a decentralized ledger system that enables secure and transparent record-keeping, while cryptocurrencies use blockchain technology to enable peer-to-peer transfers of value.

Xiyu Sun,et al.,(2022) A Novel Chaotic Image Encryption Algorithm Based on Coordinate Descent and SHA-256 - A new image encryption method that uses chaotic systems and the SHA-256 algorithm to improve security. The use of chaotic systems increases the randomness of encrypted data, while the SHA-256 algorithm ensures data integrity and authenticity. Encryption algorithms are important for securing sensitive data, such as medical or military images.

Ge Liu, et al., (2021) Construction and Analysis of SHA-256 Compression Function Based On Chaos S-Box - A novel approach to constructing the SHA-256 compression function using a chaos S-box, which the authors argue offers improved performance and security. They evaluate the performance and security of their approach and compare it with existing solutions, finding that it offers improved performance and resistance to certain types of attacks.

Hoai Luan Pham,et al.,(2021) A High-Performance Multmen SHA-256 Accelerator for Society 5.0 – A multimemory-based approach to improve the processing speed and efficiency of SHA-256 accelerator, a cryptographic algorithm for data security. The paper is relevant to the concept of Society 5.0, which integrates advanced technologies to solve societal challenges. The proposed design is evaluated and compared with existing solutions, and it presents a novel approach that could have implications for data security in a Society 5.0 context.

Alfian Ma'arif et al., (2022) Blockchain Technology - An overview of blockchain technology, including its fundamental concepts and methodologies used in implementation. It explores potential application

in various fields and offers valuable insights into the future developments of blockchain technology.

BhumikaLall and Priyanka Vadhera, et al., (2014) Review Paper on Secure Hashing Algorithm and Its Variants - by provides a thorough review of the concept of hashing, including its need, function, and importance in data security. The paper examines different types of hashing algorithms, including SHA-1, SHA-2, and SHA-3, and their variants, highlighting the characteristics and differences of each. Additionally, the paper provides insights into potential vulnerabilities and attacks on hashing algorithms and explores applications of hashing in various fields, such as digital signatures and password protection.

Abdul Mobeen Khan, et al., (2022) Evolution and Analysis of Secure Hash Algorithm (Sha) Family - provides an overview of the evolution of the Secure Hash Algorithm (SHA) family, their characteristics and differences, vulnerabilities, and applications in various fields such as digital signatures, password protection, and blockchain technology.

Donghai Liu, et al., (2019) Art Chain: Blockchain-enabled Platform for Art Marketplace - Ablockchain-based platform called Art Chain for the art marketplace. The authors argue that the existing art market has issues with authenticity, provenance, and transparency, and that Blockchain technology can offer solutions to these problems. ArtChain is designed to provide secure and transparent transactions for art dealers, collectors, and artists. The paper describes the system architecture, data structure, and smart contract design of ArtChain.

3. Problem definition

The problem definition is that despite the benefits of higher education in achieving upward mobility and economic stability, first-generation college students face multiple barriers that limit their access to higher education. These barriers include limited opportunities for scholarships and financial aid, lack of support and resources, and unequal access to education.

As a result, many first-generation college students may be unable to pursue college degrees or achieve their academic and career goals, which not only affects the individual students but also contributes to social and economic inequality in the wider community. Therefore, there is a need to provide comprehensive support and financial assistance to first-generation college students to address these barriers and promote social and economic mobility.

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4. Existing System

The current student application and information dissemination system is manual and requires physical visits to the office for clarification and document submission. This results in low information spreading and long wait times for students. Hard copies of documents are required, resulting in a large amount of paperwork and the possibility of data loss in case of physical damage or natural disasters.

If a required certificate is not brought to counseling, the student must notify the officer and follow mandatory procedures which can be time-consuming. Improvements such as implementing an online system and clear guidelines for document submission could greatly improve efficiency and convenience for students.

5. Proposed System

The proposed system for student scholarship applications is an online portal where students can easily access scholarship information and apply for schemes. This system overcomes the drawbacks of the existing manual system by providing easy access to information and eliminating the need for physical visits to the office.

To apply for a scholarship, the student logs in to the portal and fills out the application form, uploading necessary documents along with it. After submitting the application, the student can review it and take a printout for future reference. The approval for the scholarship is given by the admin, providing easy and quick access to information and the status of the student.

To ensure the security of the system, a Blockchain model is proposed. Unlike traditional security systems, Blockchain technology uses cryptographic hashing to create a secure and tamper-proof growing list of records called blocks. This ensures the security of the data and protects it from external agents.

Overall, the proposed system is efficient, secure, and user-friendly, making it easier for students to access scholarship information and apply for schemes.

MERITS

- Reduce the time and computational complexity
- Easy to apply for short term period itself.
- Every day, any time we will be applied
- Security is high
- Easy to track the records
- Automated system

5.1 Proposed System of Architecture

The first graduate scholarship online web architecture is a system designed to provide a seamless and efficient way for first-time graduate
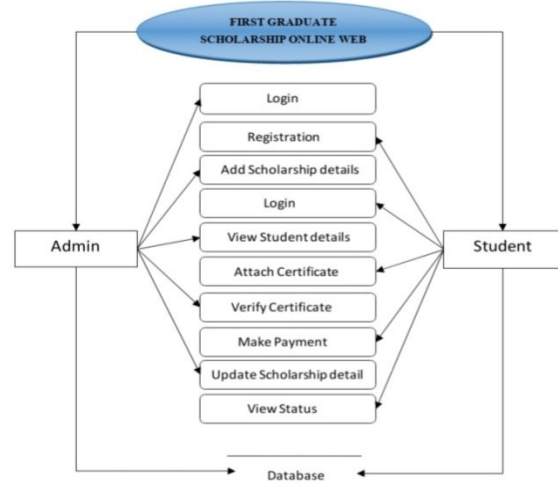
students to apply for scholarships. The system consists of a web application, application server, database, and payment gateway.

Fig.5.1 *proposed system of architecture*

The web application is the front-end for applicants to fill out and submit their scholarship application.The application server processes the applications, the database stores the data, and the payment gateway handles the scholarship award payments. The system is designed to be secure, reliable, and scalable, using advanced technologies to protect user data and provide a user-friendly experience. Overall, the system streamlines the scholarship application process and helps students receive the financial support they need to pursue their education.

6. Methodology

SHA-256 is a hashing algorithm that is commonly used in Blockchain networks to generate unique and secure hash values for blocks and transactions. In a Blockchain network that uses SHA-256, each block contains a block header that includes metadata such as the block number, timestamp, and previous block hash, as well as a list of transactions. The block header is hashed using SHA-256 to produce a block hash that serves as a unique identifier for the block.

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Miners in the network compete to solve a cryptographic puzzle by finding a nonce value that, when combined with the block header data, produces a block hash that meets a certain difficulty target. Once a miner finds a valid block hash, they broadcast the new block to the network, which is then added to the blockchain.

Similarly, SHA-256 is also used to generate unique hash values for each transaction in the network. When a new transaction is submitted to the network, it is hashed using SHA-256 to produce a transaction hash, which serves as a unique identifier for the transaction. The transaction hash is then included in the block that the transaction is added to, ensuring that each transaction can be easily identified and validated on the network.

Overall, the use of SHA-256 in a blockchain network provides a secure and efficient way to generate unique identifiers for blocks and transactions, enabling the network to maintain the integrity and immutability of the transaction records.

7. Modules Description

7.1. Admin

Login

When admin login into a computer system, his start using the system, usually by typing their name or identity code and a password.

Add Scholarship Details

Admin can add Details for Passport Size Photo, Signature, 10th certificate, Photo ID proof, Educational certificates, Income proof , Other significant documents. Each and every Details is add, delete, all are controlled by admin.

View Student Details

The admin can view the student details. How many students are apply to the scholarship, number of students only register for that application, all these information all check in admin side.

Verify Certificate

The admin verifying a certificate is the process of ensuring that a specific certificate is well-formed, valid, correctly signed, and trust worthy.

Update Scholarship Status

Admin will update on the site about the Scholarship status.

7.2 Student

Registration

In this module to student can register itself. Student Registered basic information of all details give to register it.

Login

When student logs in or logs on, start using the application, usually by typing a Username and a password.

Apply Scholarship

The Student very careful to apply the application must be filled correctly with the above mentioned details.

Attach Certificate

Student Check and verify the Correct certificate and attach it the web application.

Block Chain Security

Block chain network is initialized by the Block chain as a Service (BaaS) mode. This mode provides on-chain service through the Internet which means users do not need to consider the stability of the block chain itself or participate in the generation of blocks. This makes the security of block chain is depend on the whole network computational power of all participating nodes and we will and we will discuss it in security analysis. It also allows every authorized participant joins the network and gains the block chain service at any time.

Make Payment

These payments usually consist of the transfer of monetary funds from a admin to student. Student Pay the payment bank or debit or credit card account, into the admin bank account.

View Status

Whether the student has got confirmed the scholarship, scholarship Against Cancellation are check in this module

8. Analysis

     1. Analysis of First graduate scholarship online work and manual work secure level
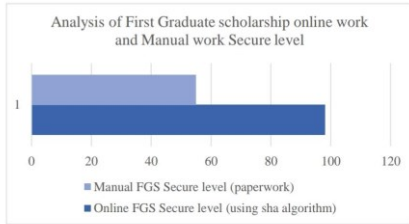

Fig.8.1 *secure level of manual and online work*

     Analysis of first graduate scholarship online work more than secure manual work because manual work is data are nit secure. The paperwork is missing a documents.

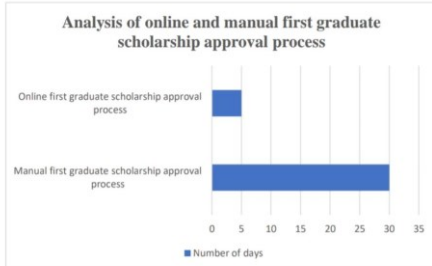   2. Analysis of first graduate scholarship online work and manual work approval process

Fig.8.2 *Approved Process Time*

     Analysis of first graduate scholarship online work and manual work… manual work is more than 30 days to taken a approval process sometimes that process also approval a two months but online scholarship process is 3 or 5 days only to approval the scholarship.

9. Results
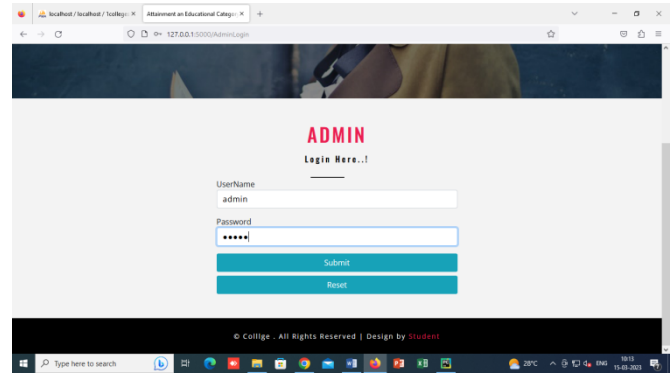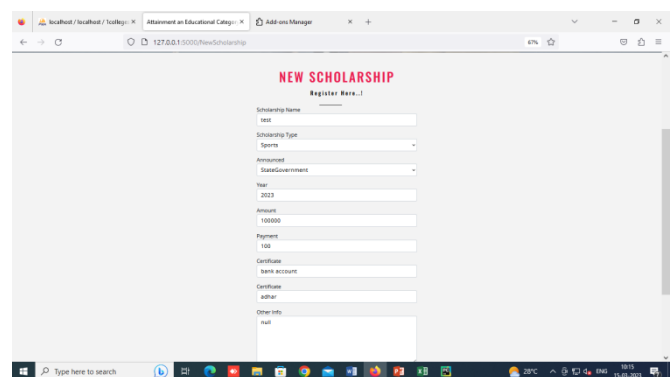

Fig.9.1 *Admin page*
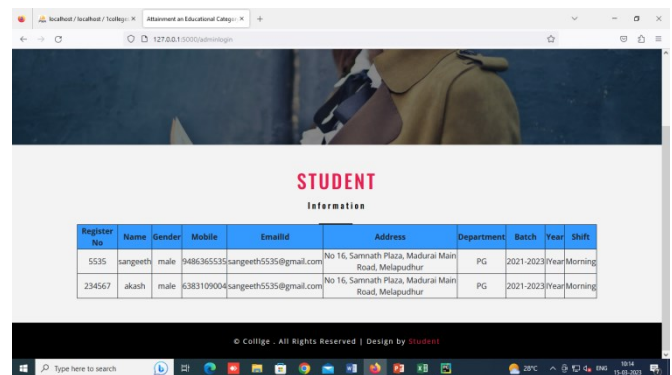
Fig.9.2 *Students Infromation*

Fig.9.3 *New Scholarship Register*

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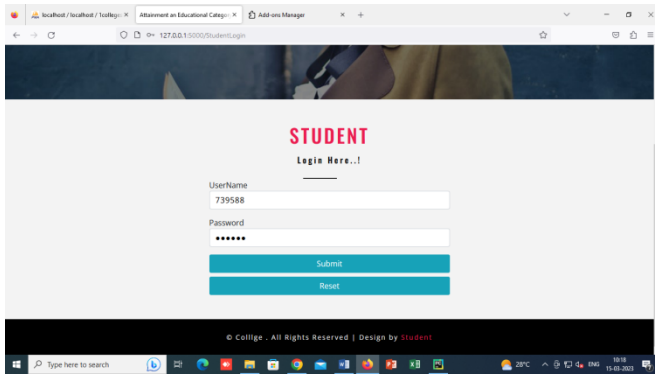
Fig.9.4 *Student Login Page*
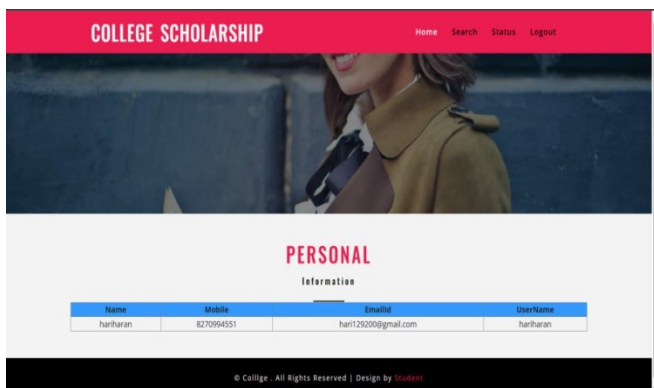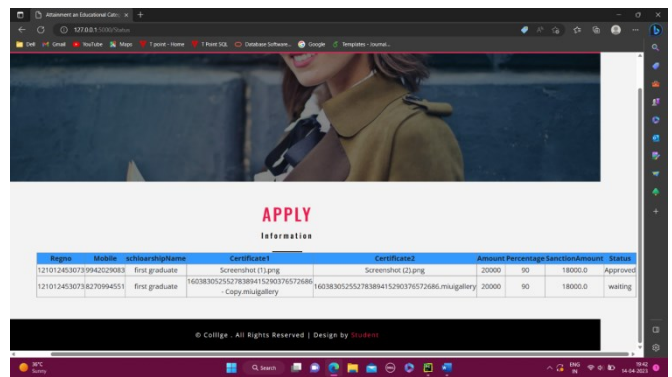
Fig.9.5 *Personal Infromation*
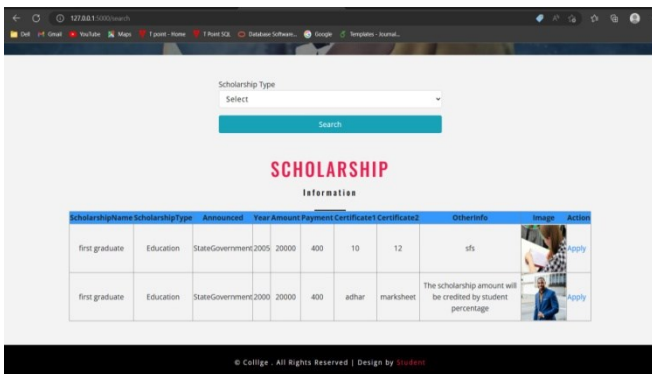
Fig.9.6 *Scholarship Information*

Fig.9.7 *Scholarship register*

Fig.9.8 *Apply Infromation*

Fig.9.9 *Scholarship approved process*

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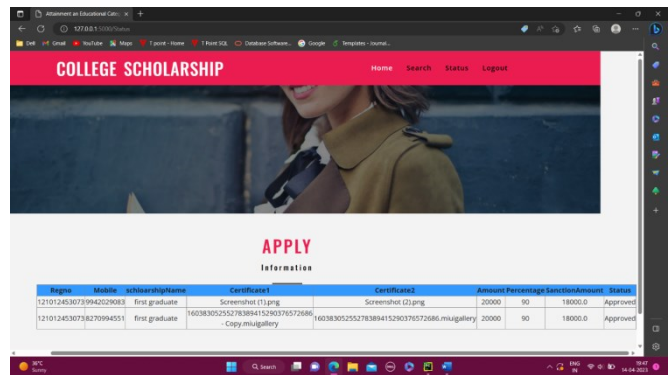
Fig.9.10 *Approved Messages*

10. Future Work

Future work for a web application in blockchain for first graduate scholarship applicants using SHA algorithm includes integrating with other blockchain technologies, expanding to other scholarship programs, improving the user interface, developing a mobile application, integrating with social media, implementing machine learning-based fraud detection, and collaborating with universities. These improvements could enhance functionality and security of the application, increase accessibility, and provide additional support and resources to scholarship recipients.

11. Conclusion

A web application for First Graduation Scholarship System is an innovative solution that utilizes blockchain technology and SHA algorithm to authenticate and store student data. It is designed specifically for first graduation students and streamlines the scholarship application process by allowing applicants to upload proof and photos directly to the application. By reducing manual work and increasing transparency, the application has the potential to improve the scholarship system and make it easier for eligible students to access financial support for their education.

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