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Crowd Funding Android App Using Block Chain

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Abstract **- This Crowdfunding has emerged as a vital financial support system for students in need of educational funding. However, traditional crowdfunding platforms suffer from lack of transparency, security concerns, and high transaction fees, which reduce donor confidence. To address these issues, this project proposes a Blockchain-Based Crowdfunding Platform that leverages SHA-256 hashing with a Hash Map-based blockchain to ensure tamper-proof, transparent, and decentralized transactions. The platform is implemented as an Android application integrated with Firebase for real-time data management.**

Students can create fundraising campaigns, while donors can contribute securely, with all transactions hashed and linked to previous transactions, ensuring data integrity and immutability. The platform also includes user authentication, a donation tracking system, document verification, and an intuitive dashboard. This approach provides a secure and verifiable crowdfunding ecosystem, reducing fraud and enhancing donor trust.

Keywords - Crowdfunding, Blockchain, SHA-256 Hashing, Hash Map, Secure Transactions, Transparency, Student Funding, Donor Confidence, Decentralized System, Android Application.

I. INTRODUCTION

Access to quality education is a fundamental right, yet millions of student's worldwide struggle due to financial limitations. Traditional scholarship programs and centralized crowdfunding platforms often lack transparency, security, and efficient fund allocation mechanisms. Many donors hesitate to contribute due to fraudulent funding requests and the inability to track fund utilization. Additionally, centralized databases used by existing platforms are prone to manipulation, leading to trust issues.

To solve these challenges, we introduce a blockchain-powered crowdfunding platform that uses SHA-256 hashing with a Hash Map-based blockchain to ensure secure, immutable, and tamper-proof transactions. Unlike traditional blockchain models that rely on complex smart contracts, our system leverages a lightweight hash-based approach, making it more efficient for mobile applications.

This Android-based application allows:

1. Students to create fundraising campaigns and request financial assistance.
2. Donors to browse student requests and make secure contributions.
3. Admins to verify students' needs and approve campaigns.

The system integrates Firebase Real-time Database for authentication, donation tracking, and student verification. Transactions are recorded in a linked chain of SHA-256 hashed blocks, ensuring data integrity and donor confidence. The proposed model enhances trust, security, and accessibility in educational crowdfunding, ensuring that financial aid reaches students efficiently and transparently.

LITERATURE REVIEW

Crowdfunding platforms have evolved significantly, yet challenges related to trust, transparency, and security persist. Several research papers highlight the role of blockchain technology in addressing these concerns by ensuring immutable transaction records and decentralized fund management. A study by J. Lee, M. Kim, and S. Park (2021) in IEEE Access proposed a smart contract-based blockchain crowdfunding model, which automated fund distribution and prevented data manipulation. However, their findings also indicated that high computational costs and transaction fees associated with smart contracts could be a barrier to scalability and efficiency.

To address transparency concerns, R. Gupta, A. Sharma, and K. Patel (2022) in IEEE Transactions on Blockchain analyzed fund tracking mechanisms in blockchain-powered crowdfunding platforms. Their research demonstrated that using a ledger-based transaction history significantly improved donor confidence. However, the study also identified scalability challenges in Ethereum-based crowdfunding models, where the increasing number of transactions led to higher storage and processing overhead. Our proposed system eliminates this limitation by using a SHA-256 Hash Map-based blockchain, which ensures low-cost, efficient, and tamper-proof transactions without relying on high-fee blockchain networks.

Another key challenge in crowdfunding is fraud prevention, as noted by M. Wong, S. Chen, and D. Zhou (2020) in the IEEE International Conference on FinTech. Their study found that identity verification and real-time donation tracking play a crucial role in building donor trust. However, many traditional crowdfunding platforms lack a robust verification mechanism, leading to fraudulent funding requests. Our project addresses this by implementing a document verification system using Firebase, ensuring that only genuine students can request funds while donors can transparently track transactions via blockchain hashes.

In summary, the existing research highlights the benefits of blockchain-powered crowdfunding while also exposing limitations related to scalability, transaction costs, and identity verification. Our project builds upon these findings by introducing a lightweight, hash-based blockchain system with SHA-256, ensuring secure, transparent, and cost-effective crowdfunding for students in need. This approach enhances donor confidence, reduces transaction overhead, and prevents fraud, making financial aid more accessible and trustworthy.Letter file.

III. EXISTING SYSTEM

Traditional crowdfunding platforms such as GoFundMe, Kickstarter, and Milaap provide a way for individuals and organizations to raise funds for various causes, including education. These platforms operate on centralized servers, where users create campaigns, donors contribute funds, and platform administrators oversee transactions. However, despite their widespread use, existing systems have several limitations and challenges that impact both students seeking financial aid and donors looking to contribute.

One major issue in traditional crowdfunding platforms is lack of transparency. Donors often have limited visibility into how the funds are being used, leading to skepticism and reduced trust. Since the transaction data is stored in centralized databases, there is always a risk of data manipulation, fund mismanagement, or fraudulent campaigns. Additionally, most existing platforms charge high service fees (ranging from 5% to 10%) on every donation, which reduces the actual amount received by students.

Another significant drawback is the absence of a robust verification system. Many platforms allow users to create funding requests without stringent identity verification, making it easier for scammers to exploit the system. This has led to numerous cases where fake campaigns have collected donations without any accountability. Moreover, donors do not have access to a tamper-proof transaction history, making it difficult to track whether their funds have been used for the intended purpose.

Lastly, traditional crowdfunding platforms rely on third-party payment gateways for processing transactions, which introduces additional processing fees and security vulnerabilities. The absence of decentralized, immutable transaction tracking means that donors must blindly trust the platform, rather than having a verifiable record of how their donations are utilized.

IV. PROPOSED SYSTEM

To overcome the transparency, security, and trust issues in traditional crowdfunding platforms, we propose a blockchain-based student crowdfunding system that ensures tamper-proof, verifiable, and decentralized financial transactions. Unlike existing centralized models, our system leverages SHA-256 hashing and a Hash Map-based blockchain structure to create an immutable ledger of donations. This approach eliminates data manipulation, fraud, and fund mismanagement, ensuring that every contribution reaches its intended recipient securely.

The system is designed as an Android application that allows students to create funding requests, donors to contribute securely, and administrators to verify student authenticity before approving campaigns. To enhance security and prevent fake fundraising attempts, students are required to submit verification documents, which are reviewed by the admin before being published. Firebase Authentication ensures that only registered and verified users can interact with the system, preventing unauthorized access and fraudulent activities.

One of the most critical improvements in the proposed system is the integration of blockchain technology using SHA-256 hashing. Every transaction—whether a donation, fund disbursement, or campaign update—is hashed and stored in a blockchain-linked Hash Map, ensuring that all financial records remain immutable and publicly verifiable. This eliminates the common issues found in traditional crowdfunding platforms, where transaction data is stored in centralized servers vulnerable to manipulation. By linking each transaction to the previous one via cryptographic hashing, the system guarantees that no records can be altered or deleted without invalidating the entire chain.

The transaction processing system is designed to be fast, lightweight, and cost-efficient, making it an ideal solution for mobile applications. Unlike Ethereum-based blockchain crowdfunding models, which involve high transaction fees and slow processing times, our Hash Map-based blockchain significantly reduces overhead costs while maintaining security and transparency. Additionally, the system provides real-time tracking of donations, allowing donors to see exactly how their contributions are being used.

To further enhance trust and usability, the system features a user-friendly mobile interface with modules for authentication, fundraising, donor contributions, and transaction history tracking. The admin dashboard provides tools to verify student requests, approve legitimate campaigns, and monitor platform activity. The integration of Firebase Realtime Database ensures secure data management, storing only verified user information while keeping the blockchain ledger separate for transaction integrity

V. METHODOLOGY

The Blockchain-Based Crowdfunding Android Application follows a structured development approach to ensure secure, transparent, and efficient donation processing. The methodology consists of several key phases:

1. Requirement Analysis & Research

This phase involved studying existing crowdfunding challenges like lack of transparency, fund misuse, and high transaction fees. Research was conducted on blockchain technology (SHA-256 hashing), Firebase, and Hash Map-based transaction management to design a secure and decentralized solution.

2. System Design & Architecture

The system integrates:

- Android App as the frontend interface.
- Firebase Authentication for user management.
- Blockchain (SHA-256 + Hash Map) for immutable transaction storage.
- Firebase Real-time Database for campaign storage and verification.

3. Blockchain & Firebase Integration

The blockchain module hashes each transaction using SHA-256, linking it to previous transactions in a Hash Map structure to prevent tampering. Firebase handles authentication, document verification, and real-time donation tracking.

4. Transaction Processing & Payment Gateway

- A payment gateway API allows donors to contribute.
- Blockchain validates transactions before funds are
- transferred.
- A real-time tracking system ensures donor transparency.

5. Testing & Security Enhancements

Rigorous unit, integration, and security testing was conducted to ensure data integrity, transaction security, and seamless performance.

6. Deployment & Future Enhancements

The system will be deployed on cloud servers, with future updates including AI-based fraud detection, multi-currency support, and analytics dashboards. styled.

VI. IMPLEMENTATION

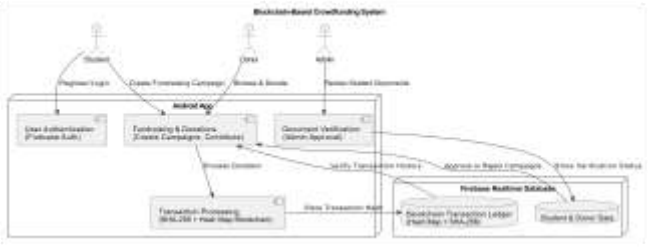


Fig 1: Block Diagram

The Blockchain-Based Crowdfunding Android Application was implemented using Android Studio (Java/XML) for the frontend and Firebase for authentication, document verification, and real-time database management. The blockchain module was built using SHA-256 hashing with a Hash Map-based ledger to ensure secure and immutable transaction records.

1. Authentication & User Management

- Firebase Authentication was integrated for secure login, registration, and password reset.
- Role-based access control was implemented for students, donors, and admins.

2. Blockchain & Transaction Processing

- Every donation transaction is hashed using SHA-256 and linked to the previous hash, forming an immutable chain.
- Transactions are stored in a Hash Map ledger, preventing data tampering.

3. Fundraising & Donation System

- Students create funding requests and submit verification documents.
- Admins approve requests before campaigns go live.
- Donors browse and contribute securely via the payment gateway.

4. Real-Time Fund Tracking & Security

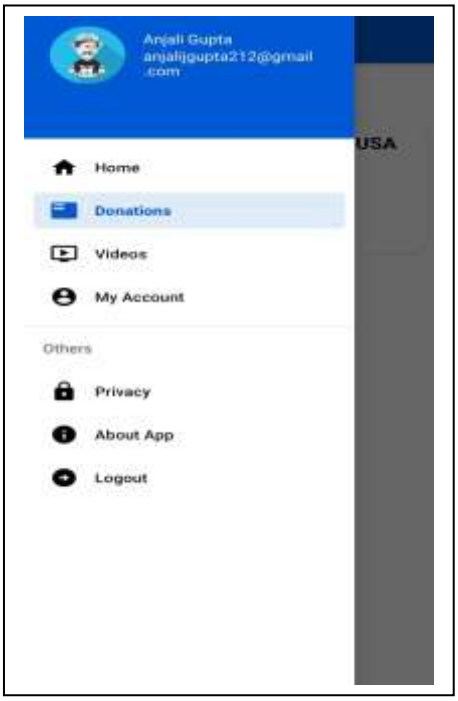
- Donations are tracked in real-time, ensuring full transparency.
- A tamper-proof blockchain ledger maintains fund integrity.

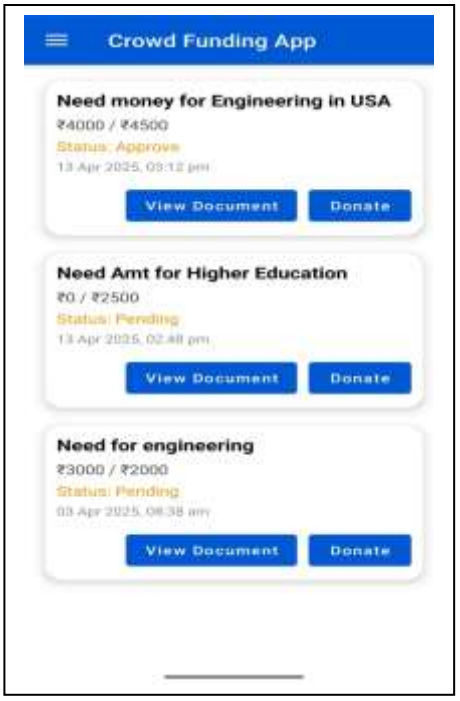
5. Testing & Deployment

- Unit testing, security validation, and integration testing were conducted.
- The system is ready for deployment with planned future enhancements like AI-based fraud detection and advanced analytics.

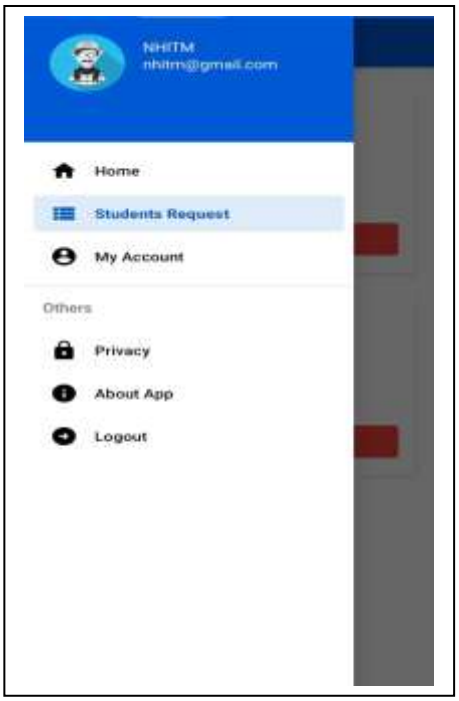
VII. RESULT

1. Crowd Funding App

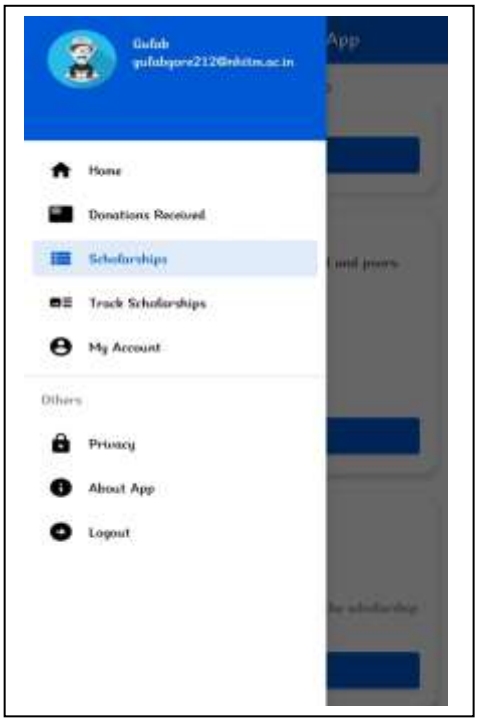


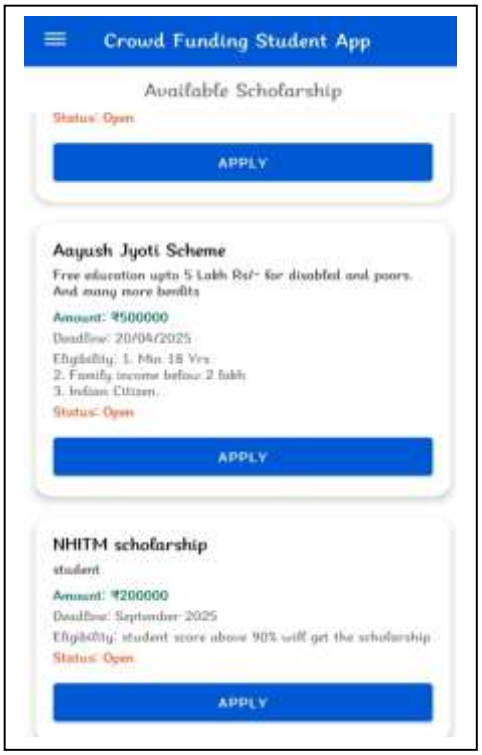


2. Institute App



3. Crowd Funding Student App





VII. CONCLUSION

The Blockchain-Based Crowdfunding Android Application successfully addresses the challenges of transparency, security, and trust in student fundraising. By integrating SHA-256 hashing with a Hash Map-based blockchain, the system ensures tamper-proof transaction storage, preventing fraud and unauthorized modifications. The use of Firebase for authentication and document verification further enhances security by allowing only genuine students to request financial assistance.

The implementation of real-time fund tracking and decentralized transaction processing builds donor confidence, ensuring that contributions are used for the intended purpose. Unlike traditional crowdfunding platforms that rely on centralized databases prone to data manipulation, this system provides an immutable ledger where every transaction is verifiable.

With successful testing and deployment, this project demonstrates the practical application of blockchain in secure financial transactions. Future enhancements, such as AI-based fraud detection, multi-currency support, and automated analytics, will further strengthen the system. Overall, the proposed solution revolutionizes educational crowdfunding by providing a secure, transparent, and efficient donation platform, empowering students in need while ensuring donors' trust.

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