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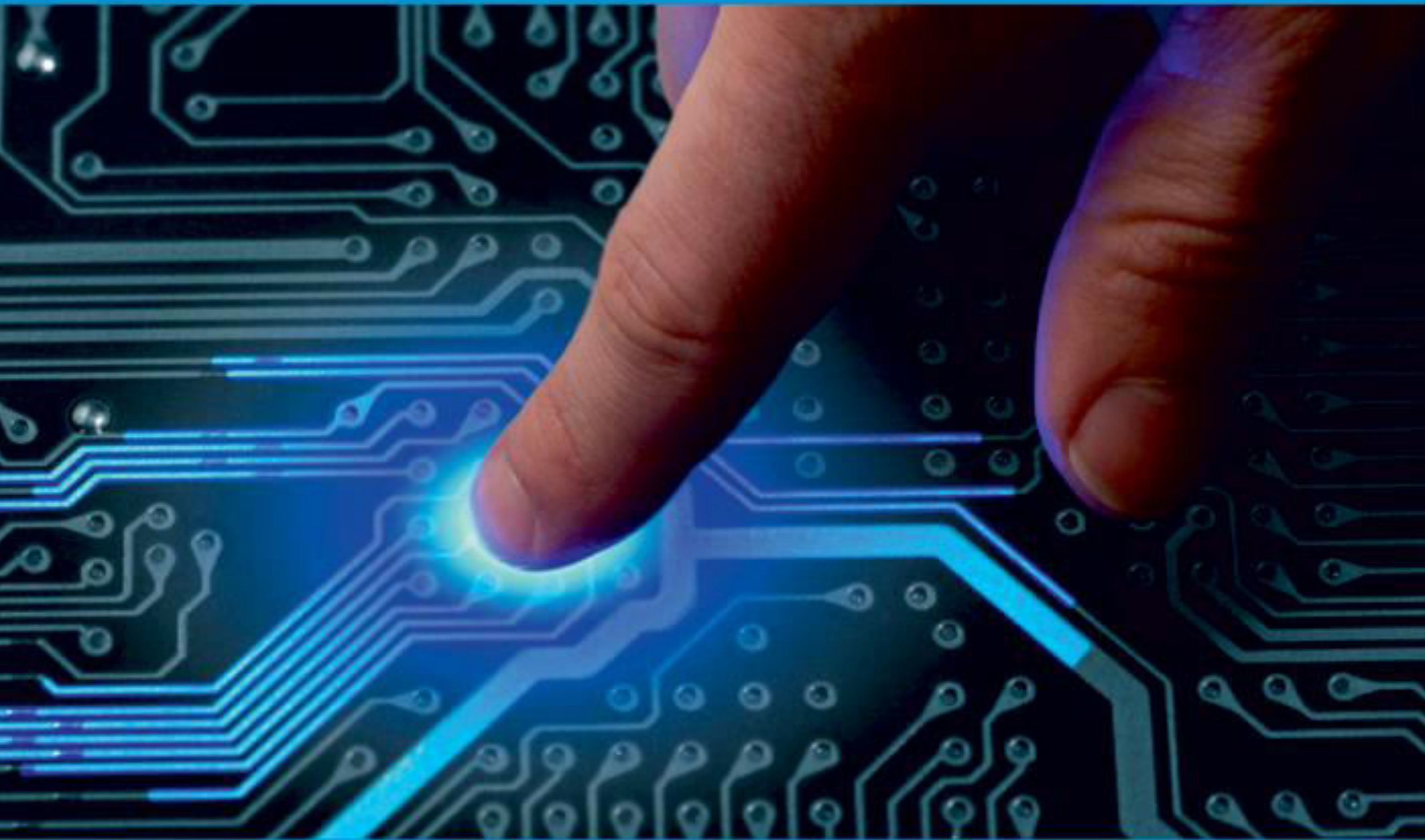

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Implementation of Public Ration Distribution Using Cryptographic Techniques

Dhiraj Khadase, Atharva Somnath Kamthe, Anushka Wable, Kiran Patil,

Prof. Mr.Gajanan Arsalwad

Dept. of IT Engineering, Trinity College of Engineering, Savitribai Phule Pune University, Pune, India

ABSTRACT: In this project, we will explore the development of a blockchain-based prototype tailored for a compact website. The motivation behind this endeavor stems from the prevalent issues of fraud and corruption within food supply schemes, particularly the inadequate distribution of resources to marginalized communities. Our primary objective is to establish a blockchain prototype designed to meticulously log and track all transactions. This prototype will manifest as a user-friendly, end-to-end web-based application, equipped with a comprehensive set of features and functionalities. It will facilitate diverse transactions among key stakeholders, including federal and state governments, district offices, ration shops, and clients, with each transaction being securely recorded within the system. This blockchain-powered solution ensures transparency in the public distribution system, enabling users to access and scrutinize transaction details. The project encompasses various components, all converging towards the paramount goal of enhancing security through the innovative blockchain concept.

KEYWORDS: ration, cryptography , java , etc

I. INTRODUCTION

The rising demand for increased transparency and accountability in the food supply sector underscores the necessity for addressing a lack of public trust. In India, the term "corruption" has become ubiquitous, encompassing a wide range of issues. A pivotal investigation, the India Corruption Study of 2005, conducted by Transparency International and the Delhi-based Centre for Media Studies, engaged 4,405 participants from 20 states. This study, released the same year, revealed that Indians paid a staggering sum of approximately 21,069 crore in bribes while utilizing 11 different government services. To date, this study remains the most comprehensive and up-to-date report on corruption in India.
This narrative delves into the issue of corruption within India's public distribution system (PDS), a network of ration stores designed to serve a segment of the country's population, slightly under 10%. Various indicators illuminate the pervasive nature of corruption in a system intended to provide subsidized food to the public. Over the preceding year, 1.5 crore families confessed to paying bribes, with corruption levels higher in states with elevated poverty rates, reaching up to 67%. A significant 60% of PDS households reported ration shortages, with out-of-stock scenarios surging to 80% in high-poverty states. An alarming 34% of individuals visiting ration offices had to make four or more attempts before receiving assistance, and nearly half of those surveyed resorted to bribery to secure a legitimate ration card.

Additionally, despite allegations of misconduct and corruption directed at Fair Price Owners, these individuals face constraints, including low profit margins, especially after the introduction of the targeted public distribution system (TPDS). Limited credit access impedes their ability to procure supplies from government storage facilities, and they lack control over grain quality. In some cases, they must pay bribes to ration officials to secure their supply quota from the Food Corporation of India (FCI), which is often inconsistent and tardy in delivery. The solution sought was a system that could operate without central authority intervention. One promising technology to implement these reforms and combat fraudulent and corrupt activities is the comprehensive recording and maintenance of all system transactions, ensuring transparency for all involved users.

The public distribution system functions as a vital food security and distribution system, governed by the Indian government's Ministry of Consumer Affairs and Public Distribution, with joint management by Indian state governments. This system facilitates the distribution of essential commodities such as rice and sugar through an extensive network of ration shops spread across India. The government oversees the supply chain, wherein any transaction of government-provided goods is meticulously recorded. Each transfer is documented, allowing anyone to

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verify the movement of specific items within the system, from government to end-users. Ultimately, this comprehensive approach promises to eliminate fraudulent activities within the system.

II. LITERATURE SURVEY

RFID-Based Exam Hall Maintenance System: This innovation streamlines exam hall management by using RFID technology, simplifying the process for students who often struggle to locate their designated exam halls and seating arrangements.

Online Ration Card System with RFID and Biometrics: This study introduces a smart ration card system, leveraging Radio Frequency Identification (RFID) technology to prevent ration fraud. It utilizes RFID tags and biometrics for user authentication, ensuring accurate and tamper-proof ration distribution.

Intelligent SMS-Based Remote Metering System: To address energy losses in electrical distribution networks, this research presents a tamper-proof and cost-effective remote metering system. It leverages technology to provide real-time data and monitoring capabilities, eliminating the need for manual intervention.

Implementation of ZigBee GSM-Based Home Security Monitoring and Control System: In response to evolving security needs, this work introduces a smart security system using Zigbee, GSM, and sensors to monitor and control home security remotely. It includes features like live video feeds and remote control for users.

RFID's Advantages and Disadvantages in Supply Chain Management: This study assesses the benefits and drawbacks of adopting Radio-Frequency Identification (RFID) in supply chain management. While RFID offers advantages like non-line-of-sight scanning and improved inventory management, it also presents challenges, including cost, standards, limited suppliers, and privacy concerns. Nevertheless, RFID holds the potential to revolutionize supply chain practices.

III. PROPOSED SYSTEM

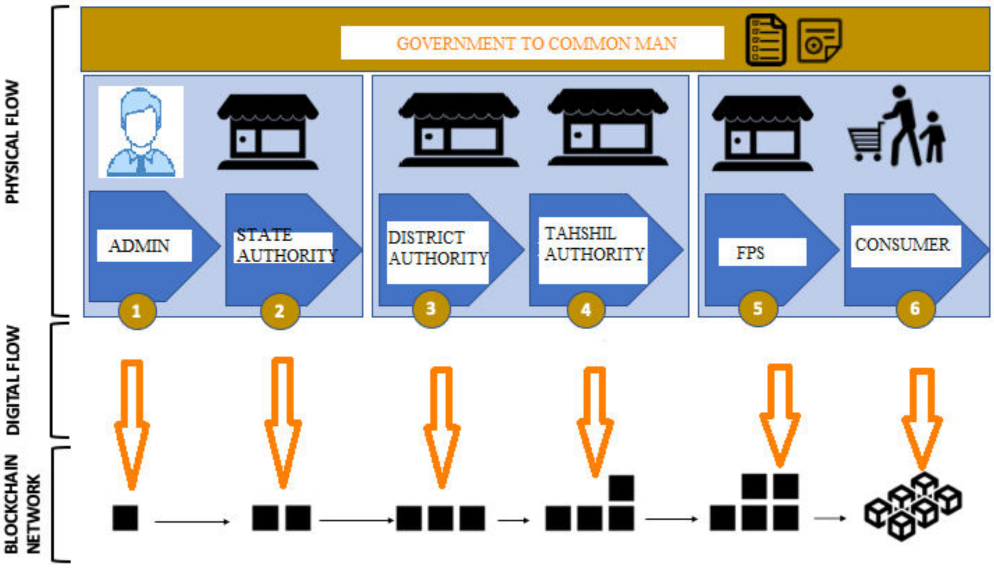

Fig: System Architecture

In this system, each transaction is systematically recorded by generating a unique hash value and storing it in a block. Every subsequent block is intricately linked to its predecessor, collectively forming a cohesive virtual blockchain. The hash value of the current block is computed using the data from the current block and the hash of the preceding block. Consequently, any attempt to tamper with one block necessitates the modification of the hash values for all subsequent blocks. This robust mechanism ensures the integrity and immutability of the transaction history. To further bolster data security and confidentiality, multiple redundant copies of the data are maintained across various servers. This redundancy serves as a safeguard, protecting against data loss and unauthorized access. Importantly, the entire process

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is conducted through an application interface, preserving the transparency of the Public Distribution System (PDS) and facilitating a trusted and accountable environment.

IV. ALGORITHM

SHA-256, which stands for Secure Hash Algorithm 256-bit, is a cryptographic hash function that adheres to the FIPS 182-2 standard. It operates as a Manipulation Detection Code (MDC) and is devoid of keys, making it a keyless hash function.

The process of applying SHA-256 to a message involves dividing the message into 512 bits, which equates to 16 blocks, each of these being 32 bits in size. These blocks then undergo 64 rounds of processing, which includes a series of complex operations to generate a 256-bit digest.

A cryptographic hash, often referred to as a digest, serves as a unique signature used to identify a text or data file. In the case of SHA-256, it produces a nearly-unique 256-bit (32-byte) signature. It's important to note that a cryptographic hash is not a form of encryption because it cannot be reversed to reveal the original text; it operates as a one-way cryptographic function. Furthermore, the output size of the hash remains fixed, regardless of the size of the source text.

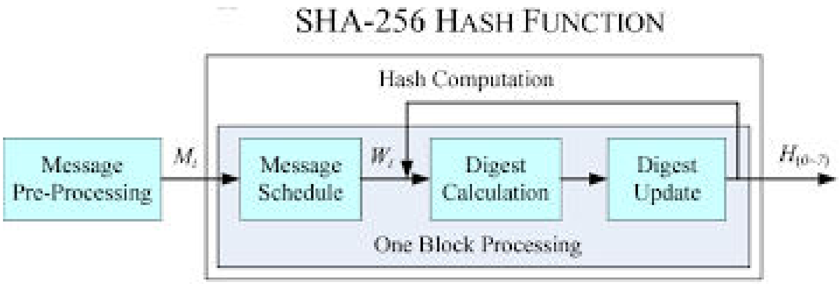

Figure 1. SHA-256 algorithm flow diagram

Fig: SHA 256

V. RESULTS

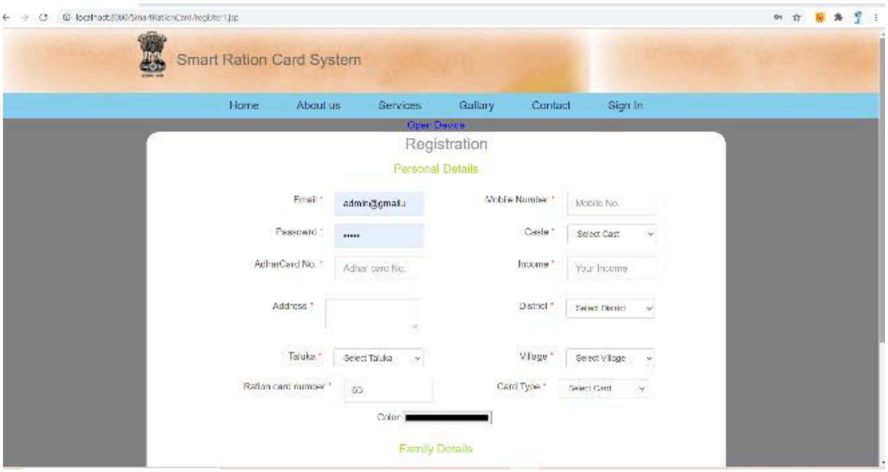

Fig: Results

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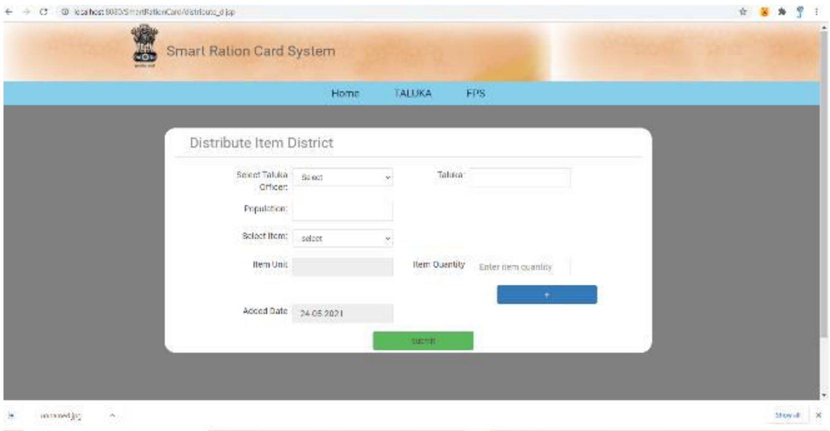

Fig: Results

VI. CONCLUSION

Thus we are going to implement a prototype web based software application in Java for application of BCT in PDS . We have will implement block chain features such as:
1. Decentralization
2. Visual Cryptography
3. Hash Algorithm
4. Encrypted Database. using java programming language. Thus it is possible to track PDS supply chain and so that ration will reach the common man without any corruption.

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