



Sri Sai VidyaVikasShikshanaSamithi ®
SAI VIDYA INSTITUTE OF TECHNOLOGY
(Approved by AICTE, New Delhi, Affiliated to VTU, Recognized by Govt. of Karnataka)
Accredited by NBA, New Delhi (CSE, ECE, ISE, MECH & CIVIL)
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

RAJANUKUNTE, BANGALORE 560 064, KARNATAKA
Phone: 080-28468191/96/97/98 * E-mail: info@saividya.ac.in * URL www.saividya.ac.in

Project Synopsis

Project Reference Number: 46S_BE_1773

Title of the project: BLOCKCHAIN BASED FAKE PRODUCT IDENTIFICATION SYSTEM USING QUICK RESPONSE CODE FOR MAKE IN INDIA PRODUCTS

College: SAI VIDYA INSTITUTE OF TECHNOLOGY
Department: INFORMATION SCIENCE AND ENGINEERING

Students:

- 1) SRIRAKSHA.R.KOLGI (1VA19IS050)
- 2) TEJASWINI.B.K (1VA19IS054)
- 3) HRITHIK.G (1VA19IS022)
- 4) NABILA QADRI S A (1VA19IS032)

Guide:

- 1) Dr. VIJAYASHREE R BUDYAL

Keywords:

Counterfeit (Fake) product, Quick Response Code, Immutable, Blockchain.

Introduction:

The market for counterfeit goods is growing. In order to fight counterfeiting, which has many detrimental effects including product recalls, sales losses, and more blockchain can be used.

Blockchain offers a safe and reliable monitoring system from the creation or mining of raw materials all the way to the other end of the supply chain, which helps combat counterfeiting. Risk factors like counterfeiting and duplication are always present when a product is developed globally, and they can have an impact on the brand name, revenue, and customer happiness of the business. The sale and promotion of fake goods are expanding tremendously. RFID (Radio Frequency Identification) technology has been used in the supply chain for anti-counterfeiting tactics for more than a decade. Fake drugs are a big source of concern in the market. As a result, there is a significant necessity to detect phoney products that would otherwise harm society. Because of the untraceability, transparency, an assurance provided by the Blockchain, consumers may know the source of the obtained product without having to totally rely on trusted third parties. The supply chain management system has a huge selection of goods. Figuring out

whether the goods is real or a scam. Due to the enormous losses and problems that the producers of fake or stolen items are experiencing.

Objectives:

- 1) Control and performance have been improved: The proposed system uses Quick Response Code which improves the performance and control of the Blockchain system.
- 2) Simple to Use – A user may quickly view if a product scanned is real or fake in order to make a decision regarding the purchase of the product.
- 3) To ensure customer satisfaction by generating quick response code and identify whether product is real or fake.
- 4) To create a legitimate manufacture details in the database using Blockchain that includes:
 - (i) Product Id
 - (ii) Product Name
 - (iii) Brand
 - (iv) Price
 - (v) Product Type
 - (vi) Manufacturing date

Methodology:

This system has three major stakeholders, the admin, the manufacturer and the customer as shown in figure 1.

Admin

This system considers admin as one of the major stakeholders. In this paper, three types of products can be verified for. The products are shoes, medicines and watch. Can be extend for any other products. The admin has the authority to add any of these products into the blockchain network. The systems home page displays a button for admin which when clicked redirects to a login page. When the login credentials match, a page where the admin will have options to click on the button that redirects to respective pages to add shoe, medicine or watch details.

Manufacturer

The manufacturer is the main stakeholder of this system. Once a manufacturer is given a login id and password, which when entered in the login page and is appropriate redirects the page to respective product details add page. The manufacture's function includes adding the product details appropriately that will be stored in the blockchain network. The various information collected about the product is, brand, manufacturer name, id, manufacturing date, price, size and type. This is with respect to shoe. With different products, different categories will be listed for the manufacturer to enter the details. the data is entered as shown in the algorithm 1, and the data is hashed using the SHA-256 algorithm so that no one can hack the data to change it. The data that is hashed is saved in the blockchain network and hence the data now is very secure.

Customer

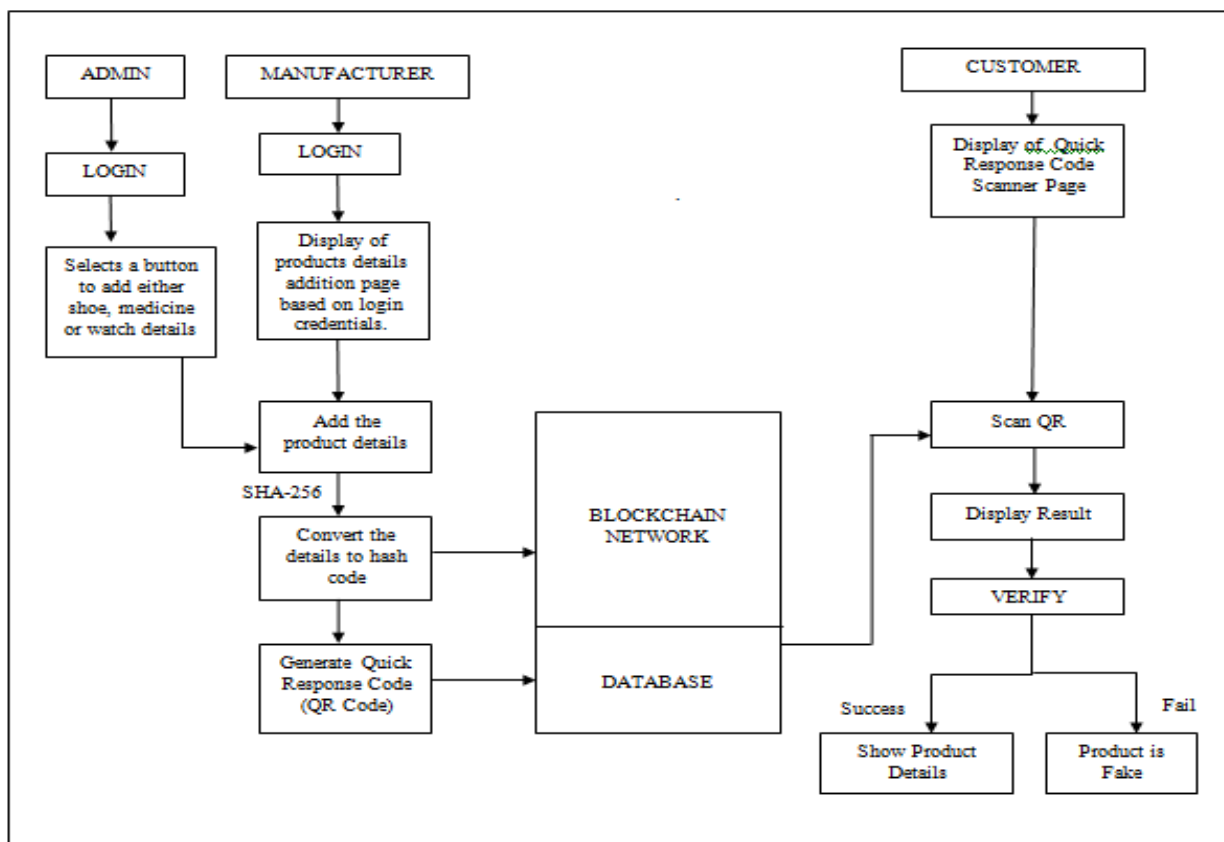
The customer plays a major role as he has to scan the QR code to know the product originality. This system displays three buttons on the homepage. One of the buttons is customer which when clicked redirects to a page that contains a QR code Scanner. When the customer clicks on upload

QR code button, it opens a folder that contains the QR codes generated by entering the product details. The customer has to select the correct QR code and upload in the page. The QR code will be scanned and the result will be displayed on the screen. The result will be a webpage link that contains the decoded hash code of the QR code. When the user copy's this URL and browses it on the web, it redirects to a page that confirms if that product was authentic or fake. This is the only page that does not require a login to access the QR code scanner as there will be many customers who would want to know a products authenticity.

SHA-256 Blockchain

The SHA-256 algorithm is an unkeyed cryptographic algorithm that takes the input and produces a 256 bit long hash code as a result as shown in figure 2. This paper proposes to use the SHA-256 algorithm to encode the entered product details either by the admin or the manufacturer. This algorithm ensures that the data that is of variable size is transformed into a fixed size 256 bit string.

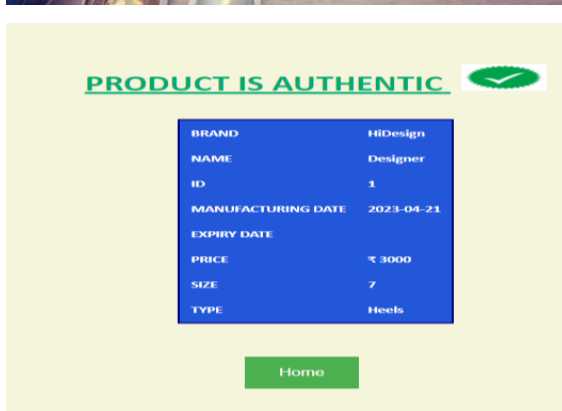
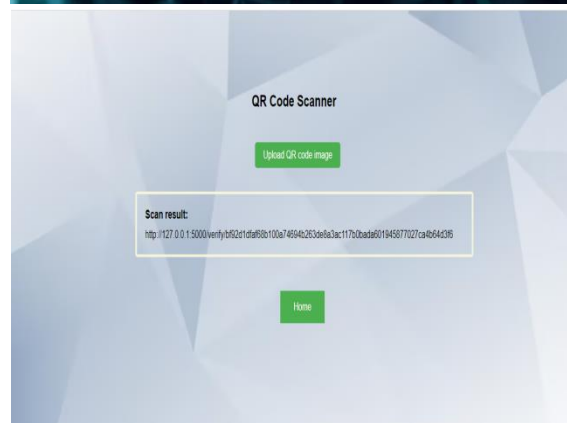
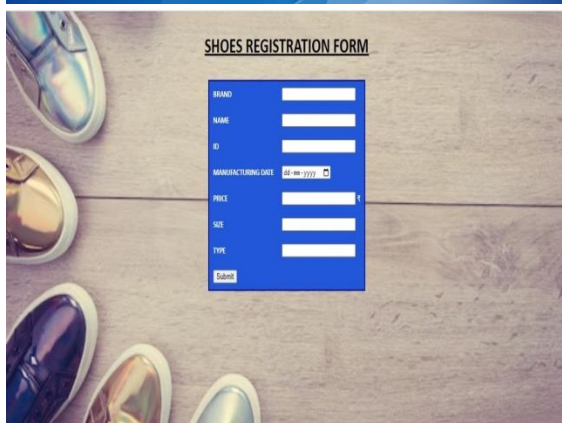
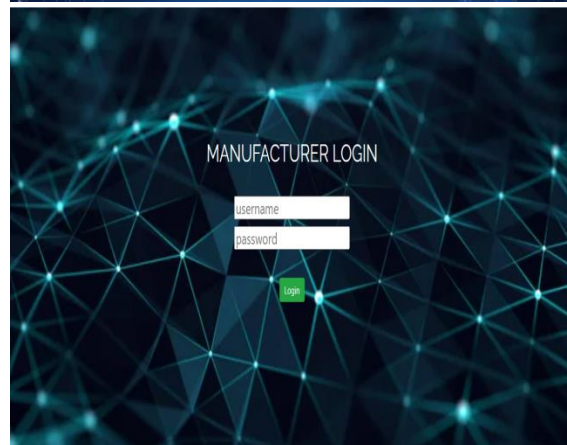
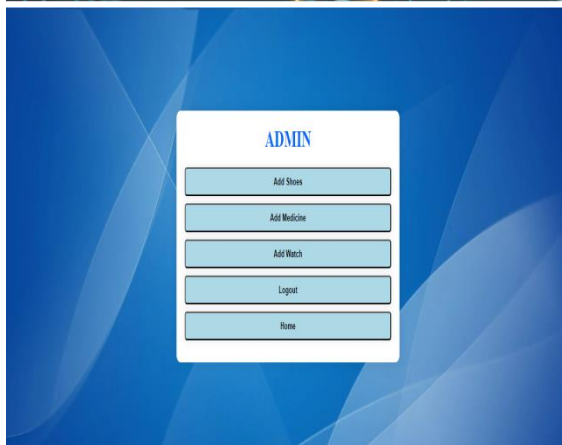
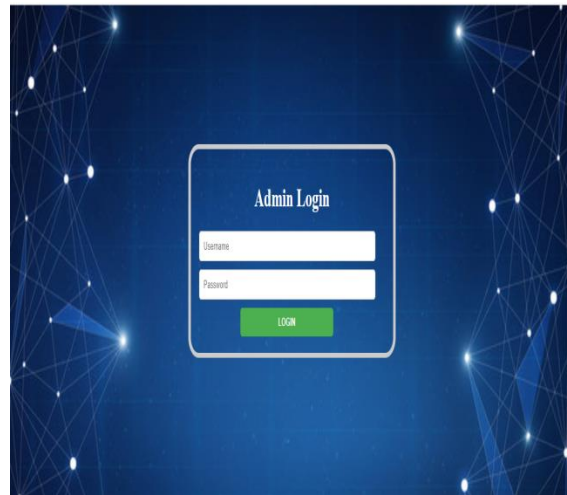
The SHA-256 algorithm converts the data into a complete unreadable format. This algorithm is used to verify the content of data that is to be kept as a secret. Users can verify that they have the genuine product by looking up the hash code, which can be made public. This algorithm is used in blockchain as it is highly impossible to reconstruct the initial or original data even by knowing the hashcode.



Results and conclusion:

The project shows a fully functional anti-counterfeit system that all the companies can adopt and start applying it to their products in order to be counterfeit free. Any company that wishes to have its product safe and non duplicate can use this system and get their products registered that

can help them to keep their products authentic. By doing this the efforts put by the company for creating the product will not go waste and it also give justice to the customers who pay money to buy the products.



Scope for future work:

The scope of this system is listed below:

- **System Architecture:** To describe the high-level system architecture, which includes the type of blockchain network, the algorithm used and the functionality of each stakeholder of the system.
- **QR Code Generation and Encoding:** Create a system for creating distinct QR codes for each product and encoding the necessary product information into the QR code. Make sure the QR codes are impenetrable and secure.
- **Blockchain Development and Integration:** Design and development of the blockchain infrastructure, including network configuration, integration of QR code scanning and verification capabilities with the blockchain network.
- **QR Code Scanning and Verification:** Create a web interface that allows consumers to scan QR codes and start the verification process. Implement the logic to retrieve and validate product information based on the scanned QR code from the blockchain.

The future work is to implement an OTP.