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Enhanced Fake Product Detection Using Blockchain Technology and QR Code Authentication For Secure Supply Chains

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Abstract: ***Counterfeiting significantly impacts product manufacturing, damaging brand reputation and profitability. Blockchain technology offers a secure solution for product authentication by creating a distributed and immutable ledger of product information. This project proposes a system leveraging Quick Response (QR) codes linked to a blockchain to combat counterfeiting. By scanning a product's QR code, users can instantly verify its authenticity against the blockchain record, eliminating reliance on third-party verification and receiving immediate notification of genuine or fake products.***

I. INTRODUCTION

The global development of a product or technology always comes with risk factors such as counterfeiting and duplication, which can affect the company's name, company revenue, and customer health. There are so many products that exist in the supply chain. To ensure that the product is real or fake. Because of counterfeit or fake products manufacturers facing the biggest problem and huge losses. To find the genuineness of the product we can use blockchain technology. Blockchain is an arrangement of recording information that makes it troublesome or hard to change, hack, or cheat the framework. A blockchain is essentially a computerized record of transactions that is duplicated and distributed across the entire network of PC systems on the blockchain.

OBJECTIVES

To design and develop a blockchain-based system for product authentication.
To integrate Quick Response (QR) codes with the blockchain to enable easy product verification.
To create a mechanism for storing unique product details and generating unique codes on the blockchain.

II. SYSTEM ANALYSIS

EXISTING SYSTEM

The worldwide improvement of an item or innovation consistently accompanies hazard factors, for example, forging and duplication. Forging items can influence the organization's name and the client's wellbeing. Presently days discovery of phony item is the greatest test. Fake items are causing a significant impact on the organization and the client's wellbeing. Hence, item creators are confronting enormous misfortune. India and different nations are battling such fake and fake items and difficult to access and change the data from it.

PROPOSED SYSTEM

In proposed a blockchain supply chain can help participant’s record price, date, location, quality, certification, and other relevant information to more effectively manage the supply chain. The availability of this information within blockchain can increase traceability of material supply chain, lower losses from counterfeit and gray market, improve visibility and compliance over outsourced contract manufacturing, and potentially enhance an Block chain

MODULES:

- Manufacture End Module
- Customer End Module
- Blockchain Technology Module

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- Verification Module
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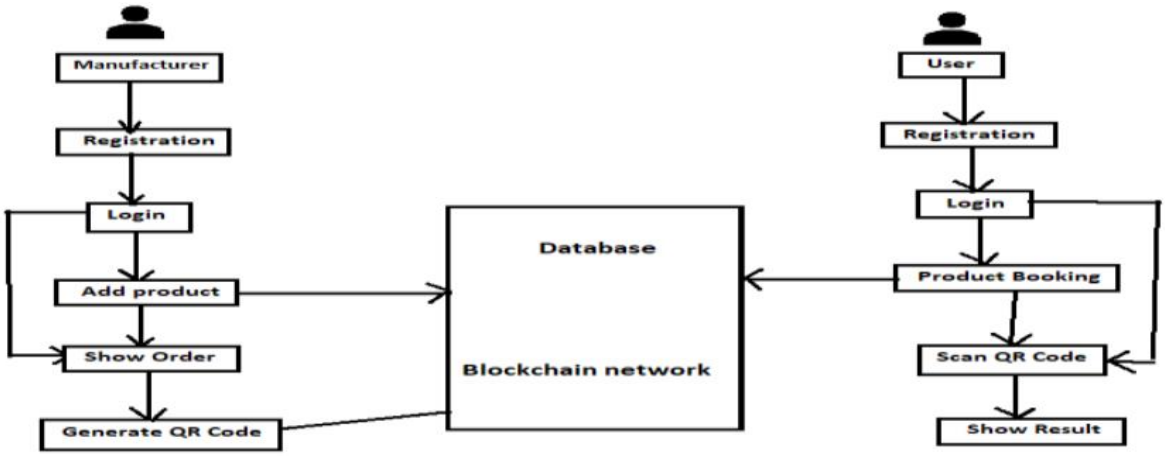
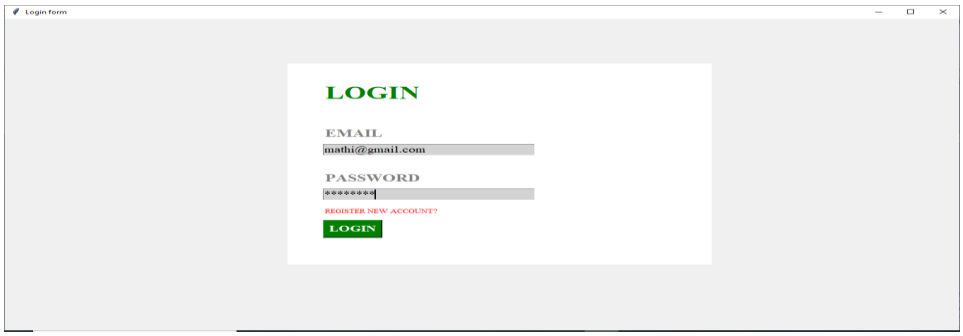
IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective. The implementation stage involves careful planning, investigation of the existing system and it's constraints on implementation, designing of methods to achieve changeover and evaluation of changeover methods.

ARCHITECTURE



RESULT & ANALYSIS



Login Page

Fake News Detection

FEATURE ENHANCEMENT

The future work of the system can be proof of code simplicity which can indirectly increase consumer's trust because of distributed applications. It can be difficult on the manufacturer side to add all the details of the products manufactured so instead of manually adding the products details, data can be extracted using company's API which can increase efficiency and manufacturer friendly.

CONCLUSION

Counterfeit products are growing exponentially with the enormous amount online. So, there is a strong need to detecting counterfeit products and blockchain technology is used to detect fake products. Furthermore, the information is encoded into a QR code. Customers or users scan the QR code and then they can detect the fake product. Digital information of products can be stored in the form of blocks in blockchain technology. The data can be stored in the firebase cloud. Thus, the proposed system is useful for the customer to detect fake products in the supply chain. Customers can scan QR codes assigned to a product and can get all the information like transaction history, current owner based on which end-user can check whether the product is genuine or not.

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