

DEVELOPMENT OF AN INTEGRATED SYSTEM BASED ON BLOCK CHAIN TECHNOLOGY IN THE EFFICACIOUS DETECTION OF FAKE PRODUCT

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ABSTRACT

As blockchain's popularity has grown, numerous applications have been developed using it in recent years. Because it can independently verify the integrity of transactional data and effectively addresses the problem of double spending, the cryptocurrency Bitcoin is a well-known illustration of a Blockchain application. Consequently, the data integrity of any blockchain application as its fundamental architecture is guaranteed. Decentralized blockchain technology customers rely on vendors to check the realness of their buys. We propose a decentralized Blockchain system with product anti-counterfeiting so that manufacturers can use it to deliver genuine goods without overseeing directly owned storefronts, significantly reducing the cost of product quality assurance.

INTRODUCTION

When developing technologies or products worldwide, there are always risks, such as duplication and counterfeiting; these factors can impact an organization's reputation, revenue, and customer satisfaction. The supply chain includes numerous products.

Blockchain is an information stockpiling framework that makes it harder or harder to change, hack, or cheat the framework. We can use blockchain technology to determine whether a product is real or fake or to verify its authenticity. A blockchain is a reproduced circulated record of exchanges that stumble into a whole organization of PCs on a blockchain. Each block of the chain contains several transactions, and each participant's records are updated whenever a new transaction is added to the blockchain. Distributed Ledger Technology (DLT) is the name of a decentralized database that is controlled by the number of participants.

A distributed ledger technology is a blockchain that records transactions by employing hashes and cryptographic signatures that cannot be changed. It utilizes the keccak-256 calculations. The SHA 3 family of algorithms includes Keccak 256, where SHA stands for Secure Hash Algorithm.

Each block header in a blockchain contains the hash of the past block header. The final hash value, which is always 256 bits regardless of the plaintext size, is represented by the meaning of 256 in the name. The hash function only works in one direction, and there is no way to read the hash's full text. As a result, it is only possible to alter even one blockchain block by first being discovered.

Each subsequent block must have a new version created when modified. As a result, blockchain technology aids in addressing the issue of counterfeit goods. A hash code is created for every item in the organization, and a string is made for every item exchange and its ongoing proprietor. Blocks will be used to store all transaction records on the blockchain. In the proposed framework, we relegate the created QR code to a particular item, which clients can, at long last, output and get all the data about this item.

We can determine the product's authenticity after scanning the QR code.

PROPOSED MODEL

Our framework empowers correspondence between the client and the item maker. We decentralize this help with a tricky agreement utilizing the Ethereum blockchain. ReactJS, Express, Bootstrap, IPFS, and the Ethereum Ecosystem will all be utilized in this decentralized application. Create a user-friendly graphical user interface (GUI) for the customer to view their information using ReactJS to develop our frontend for this application. The authenticity of goods and products is tracked through this blockchain-based system. A common centralized database is replaced by blockchain data storage to guarantee a product's authenticity and traceability.

It verifies the product's originality using a QR code; If the product's details, such as a description, name, manufacturer, company, and unique product id, are displayed by scanning the QR code, then the product is genuine. We can assume that the product data is not stored in the blockchain system because the product QR code does not reveal any details. In this way, we could reason that the thing is phoney.

SYSTEM DESIGN

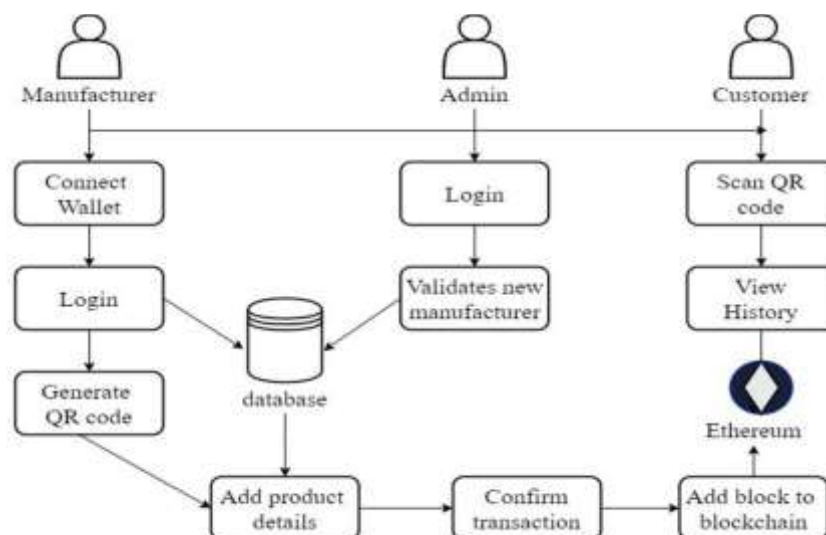


Fig. 1. Work Flow Diagram

The proposed solution would be a decentralized application (Dapp) built with the Ethereum Network as the primary blockchain for managing and storing all product-related transactions and records. The significant target of this proposed approach is to protect the item's creativity by helping the shopper distinguish fake merchandise available. The system uses blockchain to let customers see every detail about a product from the manufacturer to the customer. The Maker, Administrator, and Client jobs are the three jobs that make up this Blockchain-based framework for forestalling item falsifying. The proposed framework will have three modules-Client, MANUFACTURER AND Administrator. To begin logging in, a registration page must first be completed. The manufacturer uses his Ethereum wallet to add a block to the Ethereum blockchain, generates a QR code for the product, and adds any necessary information. Portis is observing as an administrator. The decentralized application's platform, Portis, is a wallet that stores the encrypted private keys required for blockchain transactions. Because every action occurs within the browser, it manages each transaction without requiring the installation of plugins from third parties. A customer can check the authenticity of a product by scanning the QR code that comes with each item. The client is adaptable to utilize any scanner to check the QR code. In this case, the customer—the user—will determine whether the product is genuine or counterfeit. After scanning the QR code, it will check to see if the product is in the blockchain. If it is, it will display the product's details, such as its name, price, and id, or we can say that the product is genuine elsewhere. It will demonstrate that the item is fake.

CONCLUSION

This system is effective due to its user-friendly graphical user interface, dependability, and data and system security. A decentralized application that ensures that the blockchain is not governed by an individual, organization, or government will be provided by this platform. Therefore, no third party can alter the data by entering the system. It also ensures the genuineness of the product so that customers can purchase genuine goods, assisting the manufacturer in maintaining its reputation as a genuine goods supplier. As a result, users will have access to a simple platform to verify the product's legitimacy through the proposed system.

REFERENCES

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