Unreal Product Detection Using Distributed Ledger Technology

Abstract:

   In these years, fake products play a major role in product manufacturing factories. This affects the companies name, sales, and income of the companies. Distributed Ledger is used to identification of real products and detects fake products.
Blockchain is the distributed, decentralized, and techno notebook that stores transactional info in the form of blocks in many databases are connected with the chains.

Distributed ledger is secure therefore any block cannot be changed or hacked. By using distributed ledger, users do not need to rely on third-party users for confirmation of product safety. In this project, unreal products are detected using a QR code scanner, where a QR code of the product is linked to blockchain.
 So this system may be used to store product details and generated unique code of that product as blocks in the database.
It collects the unique code from the user and compares the code against entries in the Blockchain database.

   If the code matches, it will give a notification to the customer, otherwise it will give the notification to the customer that the product is fake.

1. 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 supplement chain. To ensure that the product is real or fake. Because of fake products of manufacturers facing the biggest problem and huge losses.
 To find the geniousness of the product we can use distributed ledger technology. possible to maintain all transaction records of the product and its current owner as a chain will be created for that product transactions.
All the transaction records will be stored in the form of blocks in the blockchain. After scanning the QR code we can identify that the product is real or fake.

1.2 OBJECTIVE The idea of this project came into existence because of the increase in the unreal products. The objectives of this project are:

1.To Design Anti Counterfeit System using Blockchain.

2.To secure product details using a QR code.

3. Provide security to the clients by offering data to client.

2.REQUIREMENT SPECIFICATION

2.1 REACT.JS

Declarative

React makes it painless to create interactive UIs. Design simple views for each state in your application, and React will efficiently update and render just the right components when your data changes. Declarative views make your code more predictable and easier to debug.

Component-Based

Build encapsulated components that manage their own state, then compose them to make complex UIs. Since component logic is written in JavaScript instead of templates, you can easily pass rich data through your app and keep state out of the DOM.

Learn Once, Write Anywhere

We don't make assumptions about the rest of your technology stack, so you can develop new features in React without rewriting existing code. React can also render on the server using Node and power mobile apps using React Native.

2.2 METAMASK
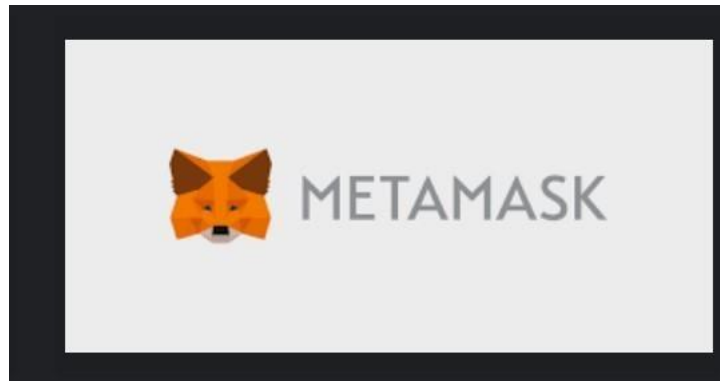
MetaMask is a cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications.
MetaMask is developed by ConsenSys Software Inc., a blockchain software company focusing on Ethereum-based tools and infrastructure.

2.3 REMIX IDE
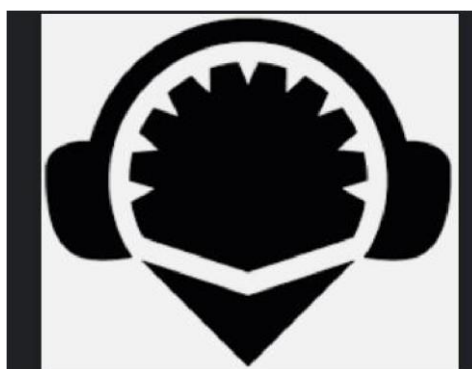
Remix IDE is an open source web and desktop application. It fosters a fast development cycle and has a rich set of plugins with intuitive GUIs.
Remix is used for the entire journey of contract development with Solidity language as well as a playground for learning and teaching Ethereum.

3. ALGORITHM

SHA-256 ALGORITHM:

The SHA-256 algorithm is one flavor of SHA-2 (Secure Hash Algorithm 2), which was created by the National Security Agency in 2001 as a successor to SHA-1.

SHA-256 is a patented cryptographic hash function that outputs a value that is 256 bits long.

Sha-256 algorithm is used in blockchain to get a constant hash of 256 bits every time. This algorithm, Is also part of encryption technology. So, now let's see how this algorithm works:

- In the figure you can see the prototype of algorithm. In this there is some data called IV which is of 256 bits. Now the input we get will be in the very large. So, be break it in size of 512 bits.
- As the input will always be not a perfect multiple of 512 bits, So, some part of input will be left.
- To this left input we do a padding concatenate the input with 10 bits before it. Now our input is perfect multiple, so we can proceed further.
- Now 512-bit input is added with 256 bits IV to get total of 768 bit. These 768 bits is passed through compression function 'c' to get an output of 256 bit only.
- This output 256 bit is again merged with 512 bits input from block B2.
- Again, the total is passed through the compression function to yield a 256-bit output. This loop goes on fill the last block (block n).
- Again, a compressing function starts and gives final 256bits output, what we call it as hash of input data.

4. RESULT

This real-time system can be implemented to check the received product is a counterfeit product or original product. The manufacturer uses the SHA-256 algorithm to

generate a QR code in blockchain technology. The generated QR code is scanned by the user to check given product is fake or real.

5.CONCLUSION

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 database.

6. REFERENCE

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