Implementation of Anti-Counterfeiting System Using Blockchain

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Abstract: *Lately, Counterfeit items assume a significant part in item producing businesses. This influences the organizations name, deals, and benefit of the organizations. Blockchain innovation is utilized to ID of genuine items and recognizes counterfeit items. Blockchain innovation is the disseminated, decentralized, and advanced record that stores conditional data as squares in numerous data sets which is associated with the chains. Blockchain innovation is secure innovation consequently any square can't be changed or hacked. By utilizing Blockchain innovation, clients or clients don't have to depend on outsider clients for affirmation of item security. In this paper, with arising patterns in portable and remote innovation, public key cryptography gives a powerful procedure to battle the act of duplicating the items and fake items are recognized utilizing a shared key. Manufacturer can use this framework to store product details as blocks in the data base. The key shared between the manufacturer to the seller. once the details of product are shared to the customer, he can verify the product by using the shared secret key so that it gives notification to the customer that product is genuine.*

Keywords: Block chain, public ledger, Anticounterfeit, Cryptography, Secret key.

1. INTRODUCTION:

The worldwide advancement of an item or innovation consistently accompanies hazard factors, for example, falsifying and duplication, which can influence the organization's name, organization income, and client wellbeing. There are such countless items that exist in the store network. To guarantee that the product is genuine or counterfeit [1]. As a result of fake or phony items makers dealing with the most serious issue and immense misfortunes. To discover the validity of the item we can utilize blockchain innovation.

Blockchain is a game plan of recording data that makes it problematic or difficult to change, hack, or cheat the structure. A blockchain is basically a modernized record of exchanges that is copied and disseminated across the whole organization of PC frameworks on the blockchain. Each square in the chain contains various exchanges, and each time another exchange happens on the blockchain, a record of that exchange is added to each member's record. The decentralized information base oversaw by the quantity of members is known as Distributed Ledger Technology (DLT). Blockchain is a sort of DLT where exchanges are recorded with a permanent cryptographic mark called a hash. Blockchain innovation assists with taking care of the issue of forging an item or document [2]. Blockchain innovation is safer. When the item is put away on the organization hash code is produced of that item and it is feasible to keep up with all exchange records of the item and its present proprietor as a chain will be made for that item exchanges. All the exchange records will be put away as squares in the blockchain. In the proposed framework we are generating a public key code to a specific item and the end client can use shared secret key to examine all data about the product. In the wake of examining the key we can distinguish that the product is genuine or counterfeit.

2. MOTIVATION

There lately, the spread of fake merchandise has gotten worldwide. There are many phony items in the current production network. As per the report, counterfeit item episodes have ascended over the most recent couple of years. It is important to have a framework for clients or clients to check the all subtleties of the item so clients can conclude that the item is genuine or counterfeit. In India right now, there is no such framework to identify counterfeit products. In this way, the arrangement includes a secret key that can help the end-client or clients to check and distinguish the validity of the product by utilizing a cell phone

3. LITERATURE SURVEY

Fake products are developing dramatically with the gigantic measure of on the web and bootleg market. Along with this, there is a solid need to address the difficulties of identifying fake products and planning fitting innovation to further develop location precision. This is one of the dynamic exploration regions to be investigated in the current world. In this paper talks about different methods for distinguishing fake items [3]. The brand protection and anticounterfeiting solution

for the wine industry based on smart tags and Cloud enabled technologies. The main idea behind smart tags is to utilize quick response codes and functional inks supported by the Cloud system and two-way communication between the winemaker and end-user [4][5]. The system designs a blockchain innovation and gives a hypothetical premise to wise quality administration of the production network dependent on blockchain innovation. Besides, it gives an establishment to foster speculations about data asset the board in conveyed, virtual associations. The counterfeiting of products can be eliminated using Ethereum smart contracts [6].

4. PROBLEM STATEMENT

The overall improvement of a thing or development reliably goes with danger factors, for instance, producing and duplication. Manufacturing things can impact the association's name and the customer's prosperity. As of now days revelation of fake thing is the best test. Counterfeit things are causing a critical effect on the association and the customer's prosperity. Consequently, thing makers are defying tremendous adversity.

India and various countries are doing combating such phony and phony things. In the proposed structure, the system produces secret key codes using Blockchain advancement. This advancement stores trade records in blocks. These squares are secure and hard to access and change the information from it. By using a secret key code, we can perceive the phony thing.

5. REQUIREMENT SPECIFICATION

5.1 ECLIPSE IDE FOR JAVA DEVELOPMENT

In computer programming Eclipse plays an important role. It is an integrated development environment (IDE) contains workspace [7] and huge extensible plug-in for designing the environment. It is usually written in java programming and basic use to develop java-based applications, also used to develop various applications of other programming languages like Ada, C, C++, C#, COBOL, PHP, Python etc. The initial eclipse codebase originated from IBM VisualAge. It is a software development tool kit contains various packages. Eclipse [8] was one of the IDEs to run under GNU Classpath.
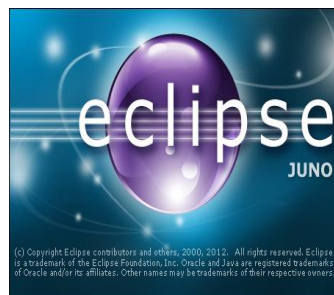

Fig1: Eclipse IDE

5.2 SQLYOG

SQLyog is a graphical user interface tool for RDBMS MYSQL and it is developed Webyog [9][10]. It can be distributed both as free software as well as paid versions. The important features of SQLyog includes

- It can perform various formatting options and intelligent code completion
- Data manipulation operations like INSERT, DELETE, UPDATE can be performed on Spreadsheet like interface.
- Visual Schema Designer and Query formatting can be done.

Fig 2: SQLyog

6. SYSTEM ARCHITECTURE

The system architecture for the Anti-counterfeiting system is shown in the below diagram
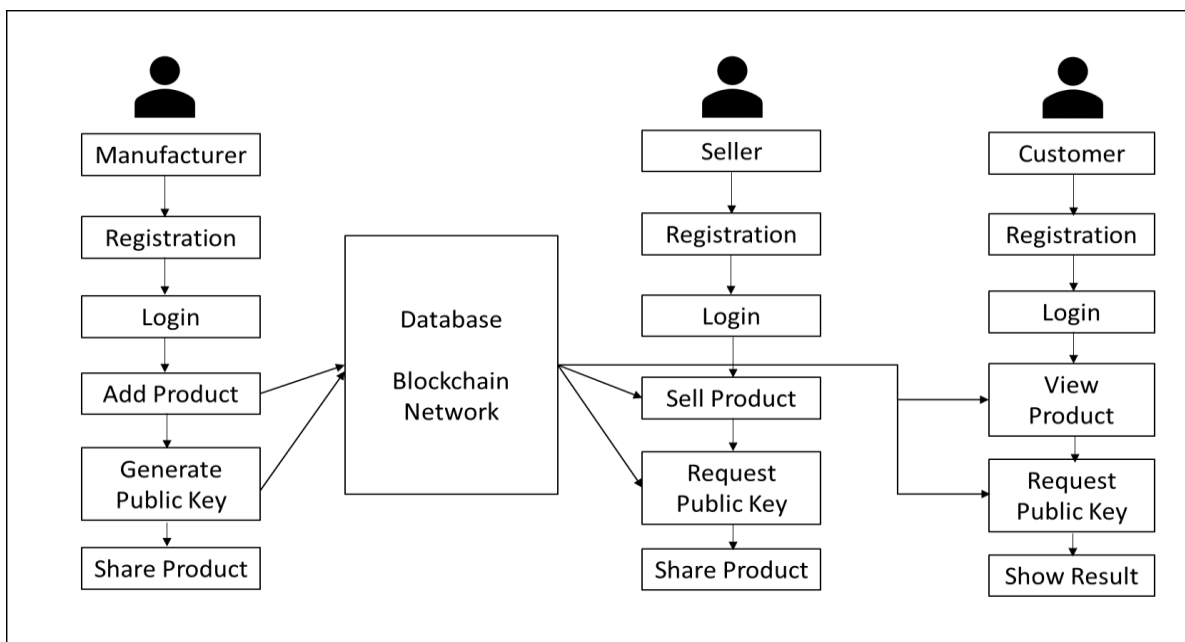

Fig 3: System Architecture

6.1 RELATED WORK

The primary objective is to assist individuals with distinguishing the product is a genuine product or a phony product. There is no efficient solution before to distinguish counterfeit products from original products. Blockchain system can be used to handle such issues. This paper describes a anti-counterfeiting system using blockchain. The proposed framework guarantees that the products purchased are genuine in day to-day life. The proposed framework comprises of four fundamental parts, Manufacturer's or alternately organization's android application, Seller or Distributor, Customer and Database.

The first application is the Manufacturers or organization side application in which we need to initially enlist/register ourselves. After enrolment login into the application, we have a few choices. One choice is to add a product where the producer can add the product subtleties. Another option is to share and view product details to seller and also public key for the product is generated and stored in the blockchain network database.

The second application is the Seller or Distributor side application in which we need initially register ourselves. After enrolment login into the application, we have a few choices. One choice is to view the product details shared by the manufacturer and can make request of public key, once he receives the public key, he can share the product to any customer.

The third application is the Customer application wherein we need to initially enroll in-application after that we can sign in to the application utilizing id and password. He can make request for secret key either to the seller or manufacturer. Once, the key is shared, there is an option to view products details like product name, manufactured date, expiry date, ingredients, quantity, transaction amount, transaction date, transaction time and certificate from the manufacturer.

The last application is the SQLyog database which is used to store the products details, user information and hash value. Once the manufacturer adds the product it will be stored as blocks in the blockchain network. Once the customer views the products by entering the secret key then the results are displayed as the product is genuine and also certificate from the manufacturer indicating product purchased is genuine.
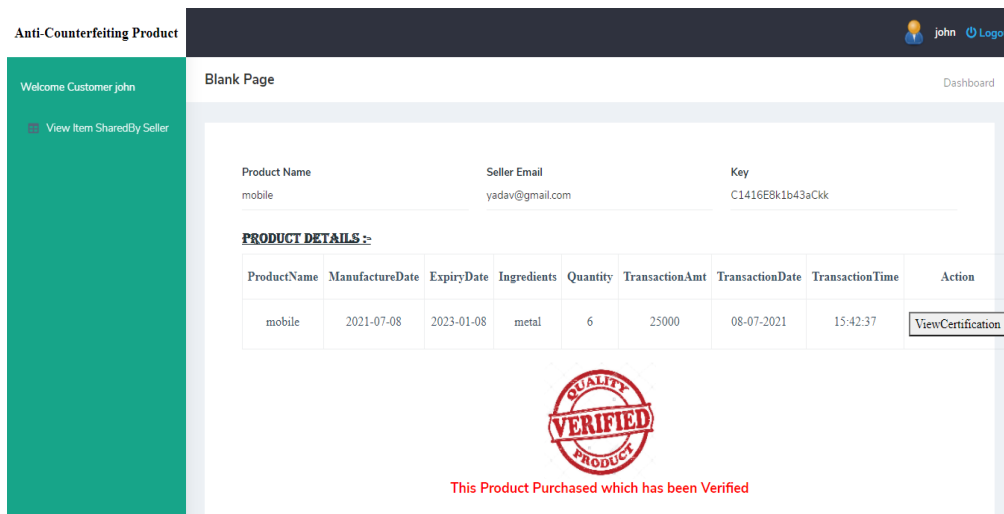
6.2 ALGORITHMS USED

SHA-1 ALGORITHM

In cryptography, SHA-1 (Secure Hash Algorithm 1) is a cryptographic hash work[11] which takes an information and produces a 160-bit (20-byte) hash esteem known as a message digest – normally delivered as a hexadecimal number, 40 digits in length. It was planned by the United States National Security Agency, and is a U.S. Government Information Processing Standard. SHA-1 works by taking care of a message as a bit line of length under 2 64 2^ {64} 264 pieces, and delivering a 160-bit hash esteem known as a message digest. Toward the finish of the execution, the calculation yields square of 16 words, where each word is comprised of 16 pieces, for an aggregate of 256 pieces[12].

7. RESULT

The continuous framework can be executed to check the product is a fake product or unique product. The producer utilizes the SHA-1 calculation to create a public key code in blockchain innovation. The created secret key code is examined by the customer to check given product is phony or genuine

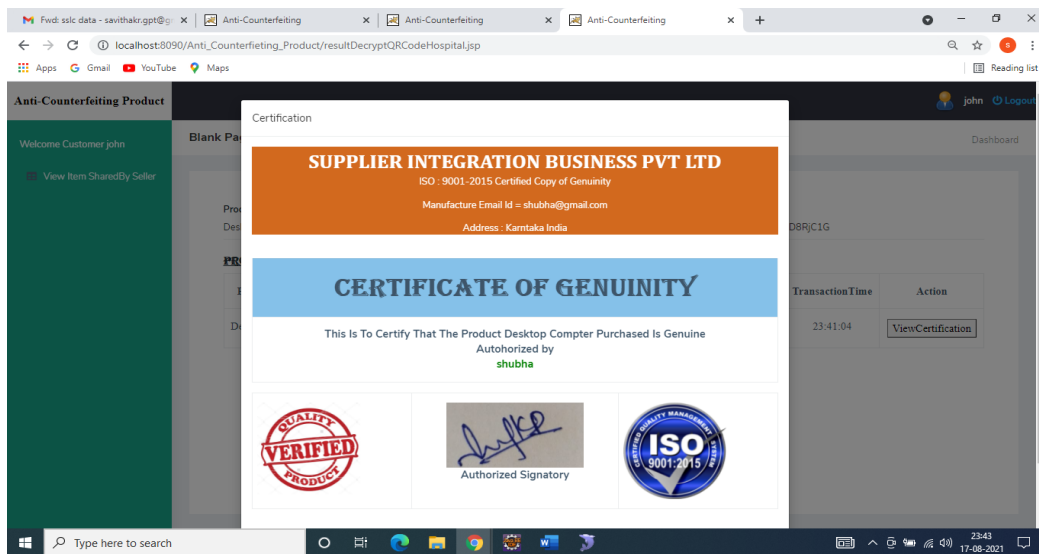Fig 4: Result shown on Customer Application

Fig 5: Result shown on Customer Application

8. CONCLUSION

Counterfeit products are developing dramatically with the colossal sum on the web. In this way, there is a solid need to distinguishing fake products and blockchain innovation is utilized to recognize counterfeit products. Moreover, the data is encoded into a block of code. Customers examine the product details using secret key code and afterward they can distinguish the phony item. Computerized data of items can be put away as squares in blockchain innovation. The information can be put in SQLyog database. Thus, the proposed framework is valuable for the client to identify counterfeit products in the production network. Customers can verify the product purchased using shared key and can get all the transaction history, current proprietor dependent on which end-customer can check if the product is certified.

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