Fake Product Identification Blockchain

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Proposal Synopsis

Abstract:

In recent years, Counterfeit products play an important role in product manufacturing industries. This affects the companies name, sales, and profit of the companies. Blockchain technology is used to identification of real products and detects fake products.

Blockchain technology is the distributed, decentralized, and digital ledger that stores transactional information in the form of blocks in many databases which is connected with the chains. Blockchain technology is secure technology therefore any block cannot be changed or hacked. By using Blockchain technology, customers or users do not need to rely on third-party users for confirmation of product safety.

In this project, with emerging trends in mobile and wireless technology, Quick Response (QR) codes provide a robust technique to fight the practice of counterfeiting the products. Counterfeit products are detected using a QR code scanner, where a QR code of the product is linked to a 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.

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. Each block in the chain contains multiple transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant’s record. The decentralized database managed by the number of participants is known as Distributed Ledger Technology (DLT). Blockchain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash.

Blockchain technology helps to solve the problem of counterfeiting a product. Blockchain technology is more secure. Once the product is stored on the network hash code is generated of that product and it is 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. In the proposed system we are assigning a generated QR code to a particular product and the end customer can scan that QR code to get all information about that product. After scanning the QR code we can identify that the product is real or fake.

Problem Statement:

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.

Pakistan and different nations are battling such fake and fake items. In the proposed framework, the framework produces QR codes utilizing Blockchain innovation. This innovation stores exchange records in blocks. These squares are secure and difficult to access and change the data from it. By utilizing a QR code we can recognize the fake item.

Objectives:

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

- To Design Anti Counterfeit System using Blockchain.
- To secure product details using a QR code.
- Provide security to the clients by offering data to client.

Features:

- Data Immutability.
- Peer-to-peer network construction.
- Auto Recoverable Content.
- Adding smart contract on products.
- Secure QR system to recognize the product through blockchain technology.
- The user will authenticate product by using the app.
- Implementation of Hashing.
- Company Dashboard (analysis).
- Fake Product feedback Form.
- Product report option.
- Fake product regional area analysis

Related Work:

Table 1: Related Work

Related Work	Weakness	Proposed Project Solution
Track and Trace approach [1]	Centralize database(RFID)	Decentralize system
Cryptographic approach[1]	Tag print cannot detect tag replication	NFC and QR tag
AI base FPI[2]	Easily detectable	Secure by blockchain

Proposed Methodology:

The **Agile method** will be used for developing the whole project.

First of all we will do requirement analysis through survey interviews and research and after that we do the planning phase on how to design and implement the gathered requirements according to the consumer needs and we will divide whole project into iterations. After planning phase is completed we will develop each iteration completely and review each iteration according to the plan and after that we perform unit testing. With completing each iteration we will perform integration testing leading to complete development and acceptance testing.

At the end of each iteration the working product will be reviewed by the supervisor and suggesting changes will be made before moving to next iteration.

Tools and Technology:

Mobile App:

- Android Studio - Android app
- NodeJs - Server Environment
- MySQL – Database

Blockchain:

- Ethereum - Blockchain Network
- Solidity - Smart Contracts
- Ganache - Create private Ethereum blockchain to run tests

Website:

- HTML - Markup language for creating web pages
- CSS - Style Sheet Language
- JavaScript - Scripting Language for web pages
- Bootstrap – Templating

Team Members:

Table 2: Team

Team Member Name	Tasks
Anns Shahzad (2019-CS-601)	Blockchain, App and web Development
M. Hassan Ijaz (2019-CS-617)	Blockchain, App and web Development
Abdul Subhan (2019-CS-646)	Blockchain, Design and Documentation

Data gathering Approach:

- Research.
- Interviews.
- Surveys.

Gantt chart:

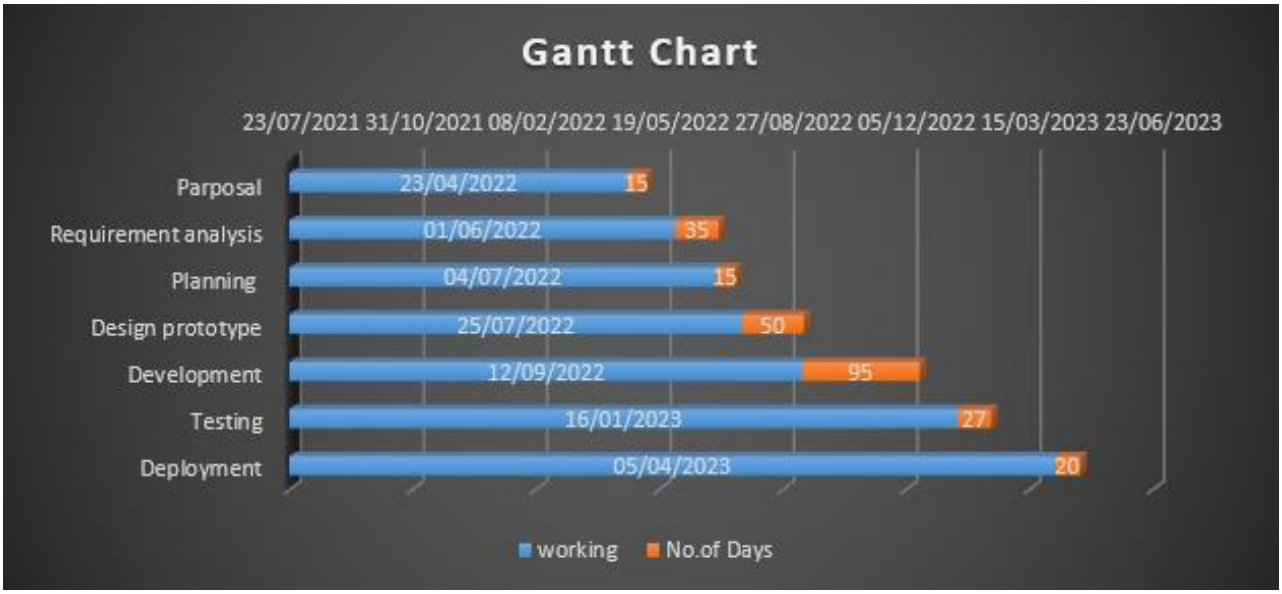

Figure 1: Gantt chart

References:

[1] Lamiya Simran proma, Pranto biswas. East West University Publishing 2021.

[2] singhal, Ishaan “Anti counterfeit product system”, December 2021, pagec no: 8