

Fake Product Identification using BLOCKCHAIN.

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

YELAHANKA, BENGALURU – 560064



Department of Computer Science and Engineering

PROJECT BASED LEARNING (PBL)

Project Report

“FAKE PRODUCT IDENTIFICATION USING BLOCKCHAIN”

Web Technology and its Application – 18CS63

VI Semester, 6A CSE

Submitted By

Bhavana N S

USN: 1BY20CS038

Brundaja D N

USN: 1BY20CS041

B C Narendra

USN: 1BY21CS402

Chethan Kumar N

USN: 1BY21CS405

Under the Guidance of

Dr. Nagabhushan S V
Associate Professor

2022-2023

Fake Product Identification using BLOCKCHAIN.**INSTITUTE VISION**

To emerge as one of the finest technical institutions of higher learning, to develop engineering professionals who are technically competent, ethical and environment friendly for betterment of the society.

INSTITUTE MISSION

Accomplish stimulating learning environment through high quality academic instruction, innovation and industry-institute interface.

DEPARTMENT VISION

To develop technical professionals acquainted with recent trends and technologies of computer science to serve as valuable resource for the nation/society.

DEPARTMENT MISSION

Facilitating and exposing the students to various learning opportunities through dedicated academic teaching, guidance and monitoring.

PROGRAM EDUCATIONAL OBJECTIVES

1. Lead a successful career by designing, analyzing and solving various problems in the field of Computer Science & Engineering.
2. Pursue higher studies for enduring edification.
3. Exhibit professional and team building attitude along with effective communication.
4. Identify and provide solutions for sustainable environmental development.

Fake Product Identification using BLOCKCHAIN.**Program Specific Outcomes (PSOs):**

1. Analyze the problem and identify computing requirements appropriate to its solution.
2. Apply design and development principles in the construction of software systems of varying complexity.

Web Technology and its Applications 18CS63 - Course Outcomes (Cos)

CO	✓ Illustrate the Semantic Structure of HTML and CSS and Design Client-Side programs using JavaScript and Server-Side programs using PHP.
	✓ Examine JavaScript frameworks such as jQuery and Backbone

Project to Program Outcomes (PO) Mapping**Project Name: FAKE PRODUCT IDENTIFICATION USING BLOCKCHAIN**

COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Web technology and its application					✓	✓		✓	✓	✓		✓

Program outcomes (POs):

PO1	Engineering knowledge: Apply the knowledge of Mathematics, Science, Engineering fundamentals and an engineering specialization to the solution of complex engineering problems
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex Engineering problems reaching substantiated conclusions using first principles of mathematics, Natural sciences and engineering sciences
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that

Fake Product Identification using BLOCKCHAIN.

	meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the Information to provide valid conclusions
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern Engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for Sustainable development
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
PO10	Communication: Communicate effectively on complex engineering activities with the engineering Community and with society at large, such as, being able to comprehend and write effective reports And

Fake Product Identification using BLOCKCHAIN.

	design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a member and Leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Project to Program Specific Outcomes (PSO) Mapping

Program Specific Outcomes (PSOs):	
PSO1	Analyze the problem and identify computing requirements appropriate to its solution.
PSO2	Apply design and development principles in the construction of software systems of varying complexity.

Project Name: Fake product identification using blockchain

COURSE	PSO1	PSO2
Web technology and its application	✓	✓

ABSTRACT:

Blockchain innovations have acquired interest in the course of the most recent years. One of the most talked about issues is currency exchange, but its application is not limited only to Digital currency. so it has the potential to influence different business sectors. Blockchain technology has brought greater transparency and ease in large transactions. We can detect counterfeit goods using blockchain technology. The question that arises when buying any item in today's world is whether it is fake or not. And the lack of these things has been shown a huge impact on economic progress. Therefore, in order to curb all counterfeit goods, it is important to bring transparency about the goods to the notice of the consumers.

The growing presence of counterfeit and unsafe products in the world is a cause for concern and blockchain technology has taken the next step towards its complete annihilation. Not only the use of technology will reduce the production of counterfeit goods, but everyone needs to be aware of this. By producing and packaging the right items each of those items needs to be given a digital code with its own identity. The software implementation process in which the product code is scanned using this application and then verify if the given product is counterfeit or not.

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

Fake Product Identification using BLOCKCHAIN.

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

MOTIVATION:

- ❖ In recent years, the spread of counterfeit goods has become global. There are many fake products in the current supply chain.
- ❖ According to the report, fake product incidents have risen in the last few years. It is necessary to have a system for customers or users to check the all details of the product so that users can decide that the product is real or fake.
- ❖ In India currently, there is no such system to detect counterfeit products. So, the solution involves a simple QR code-based identification that can help the end-user or customers to scan and identify the genuineness of the product by using a smartphone.

EXISTING SYSTEM:

- Data trading has become a popular research topic in recent years. This forum uses a recurring auction method to achieve greater efficiency in order to improve self-interest behavior among users.
- Login methods are used to achieve WSN accountability. This is a response to invaders of energy theft in the space of smart clouds.
- Shingling and MinHashing have long been used to obtain a copy of the text to obtain the same text.
- This method is used for word-based similarities.

LIMITATIONS OF EXISTING SYSTEM:

- Unscrupulous buyers may illegally sell data sets purchased from others.
- The previous method is used to monitor the seller's side but it is not appropriate to identify the broker.
- Heavy monitoring system cannot survive because it leads to poor user experience.

PROPOSED SYSTEM:

As counterfeiting products are increasing widely in the world, we need to develop a full-fledged application system that will help us to identify these counterfeiting products. In this paper, the proposed system is that it will store the supply chain of the product and keep the history of ownership of the products. So that when the customers buy this product they will see the complete information about the product and decide whether the product is authenticated or not. We will use QR

Fake Product Identification using BLOCKCHAIN.

codes to verify the products and add information about the product. And for storing the data of the product we need to use a system that does not allow anyone to change the existing data, this can be achieved by blockchain technology. **So in this proposed system, we are using blockchain, and QR codes to detect fake products.**

SYSTEM REQUIREMENT SPECIFICATIONS

FUNCTIONAL REQUIREMENTS:

A functional requirement defines a function of a system or its component. Where a function is described as a specification of behavior between inputs and outputs.

- System must be automatically connecting to Wallet.
- System should be able to scan the QR code.
- System Should be able to generate the QR code.
- System Should show error message if the uploaded image is not QR code.
- Auto update of scanned location of the QR code.
- Storing all these details in blockchain nodes.

NON-FUNCTIONAL REQUIREMENTS:

Software requirement can be non-functional and also be a performance requirement. Nonfunctional requirements are the characteristics or attributes of the system that can judge its operation.

Fake Product Identification using BLOCKCHAIN.

The nonfunctional requirements are divided into usability, reliability, performance, Supportability and safety.

- **Usability** ->The system must be easy to learn for manufacturers , retailers , distributors and mainly for consumers.
- **Reliability**-> The reliability of the device essentially depends on the software tools such as metamask, remix IDE, Ganache used for the system development.
- **Performance**-> The system shall allow the system administrator to add additional features. The system needs to be cost-effective to maintain.
- **Safety**->In case of malfunction, scanning from the manufacturers side should be stopped , and also it must be notified to others that it is not working.

PROPOSED METHODOLOGY:

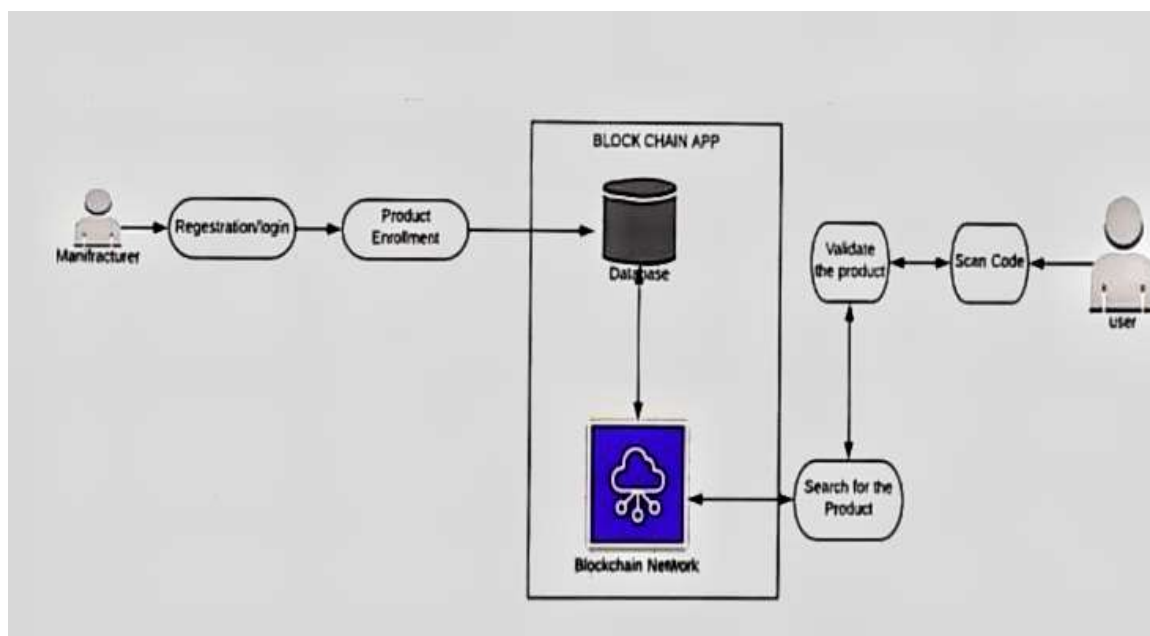
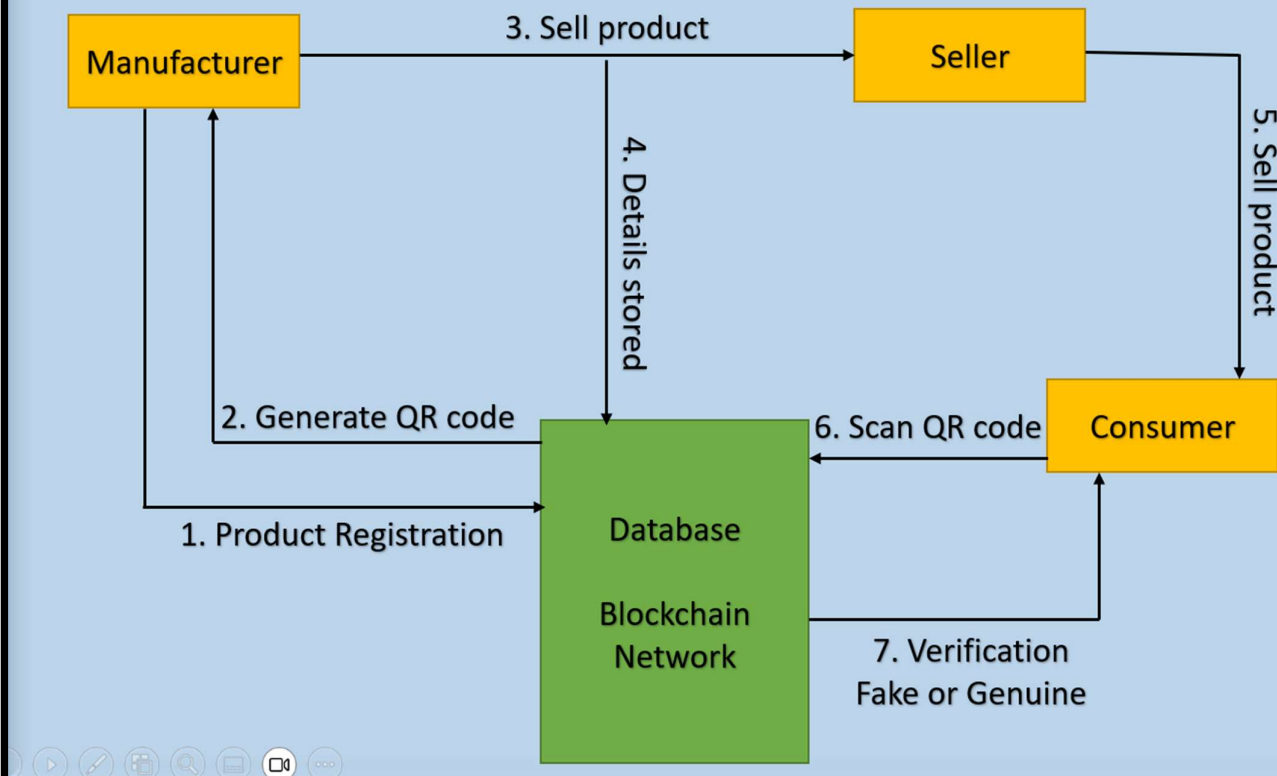


Figure : Block Diagram of Fake Product Identification

Fake Product Identification using BLOCKCHAIN.

Business runs on information. The faster it's received and the more accurate it is, the better. Blockchain is ideal for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger that can be accessed only by permissioned network members. A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end to end, giving you greater confidence, as well as new efficiencies and opportunities. After the product is recorded in a network it will create a smart contract and a unique QR code of the product in which the details of the product is mentioned in an encrypted text form. The manufacturer will ship the product to the distributor and status is set as shipped; it will not change the ownership of the product until a request from both parties is approved to buy and sell the product. Once the consumers receive the product the Buyers can scan QR code allocated to the item and verify the authenticity.

SYSTEM ARCHITECTURE/DESIGN:**SYSTEM ARCHITECTURE:**

8

IMPLEMENTATION:**HARDWARE REQUIREMENTS:**

Operating Systems: Windows 7 or above.

Hard disk : 20GB

RAM :4GB and above.

Processor: i3 and Above

SOFTWARE REQUIREMENTS:

Tools : Xampp

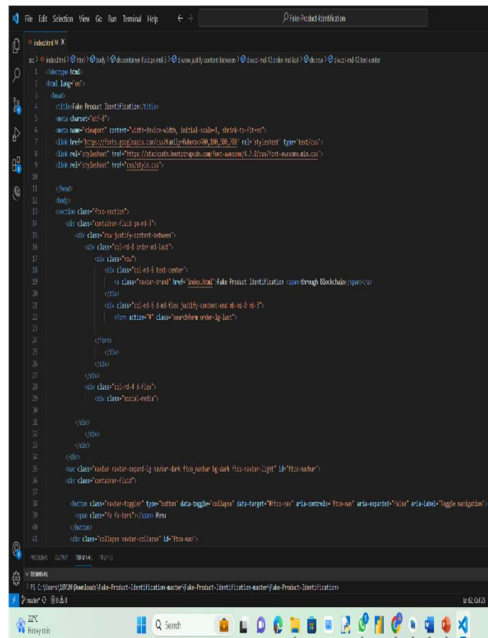
Language : Solidity

Fake Product Identification using BLOCKCHAIN.

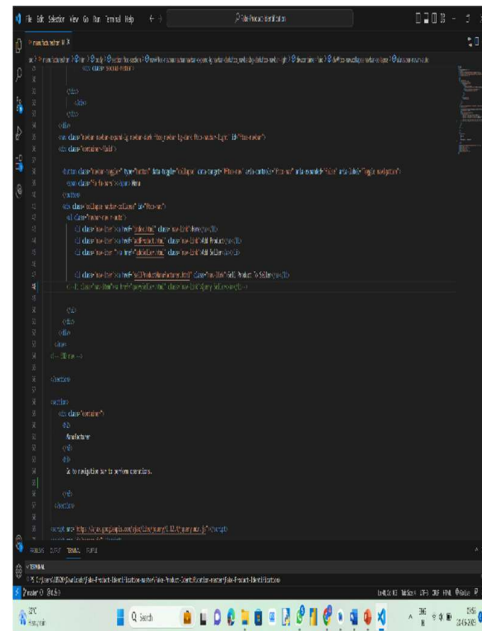
Front end : HTML, CSS, JavaScript

IDE's : Visual Studio

MetaMask wallet Ganache (personal blockchain).

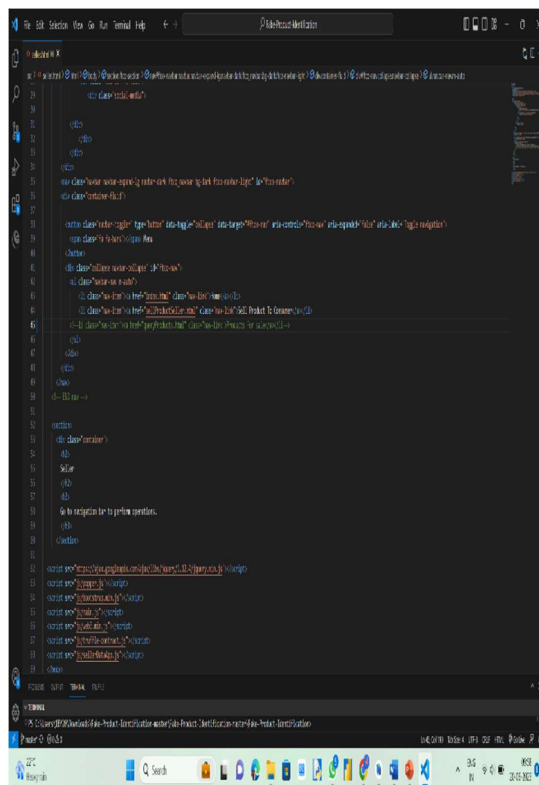


Index.html

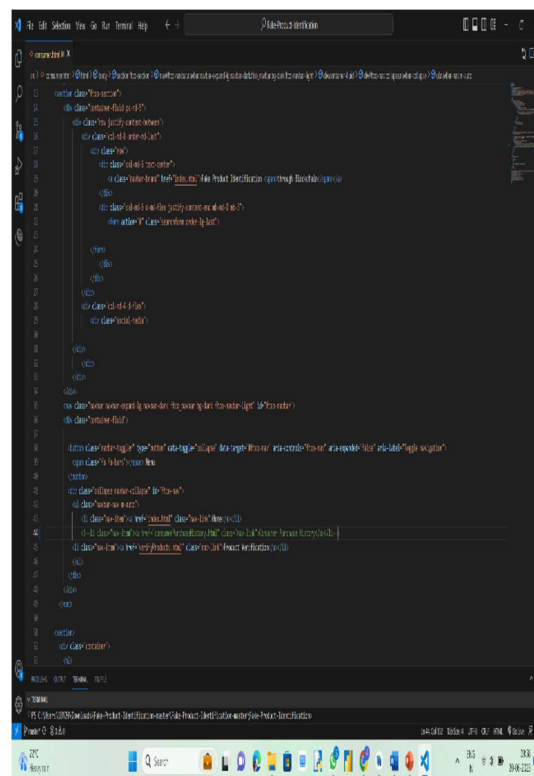


Manufacturer.html

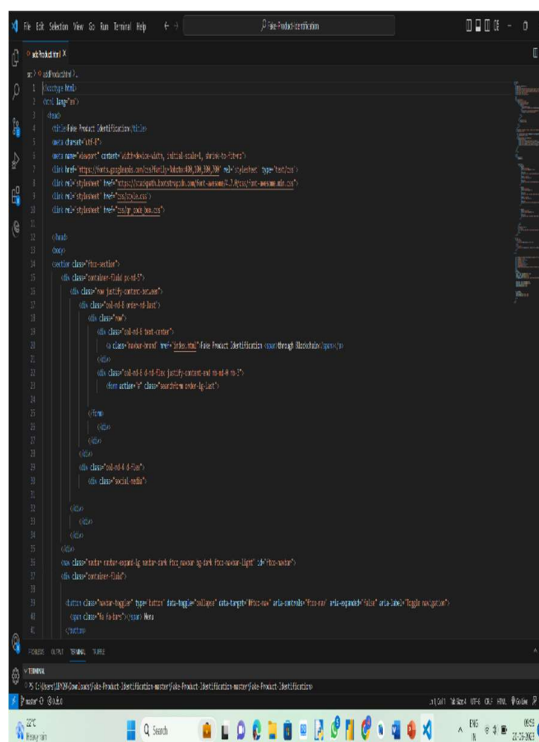
Fake Product Identification using BLOCKCHAIN.



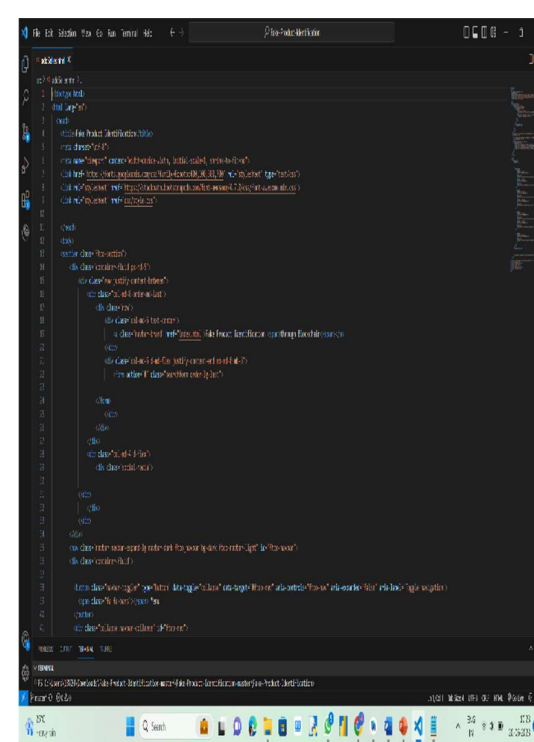
Seller.html



Consumer.html



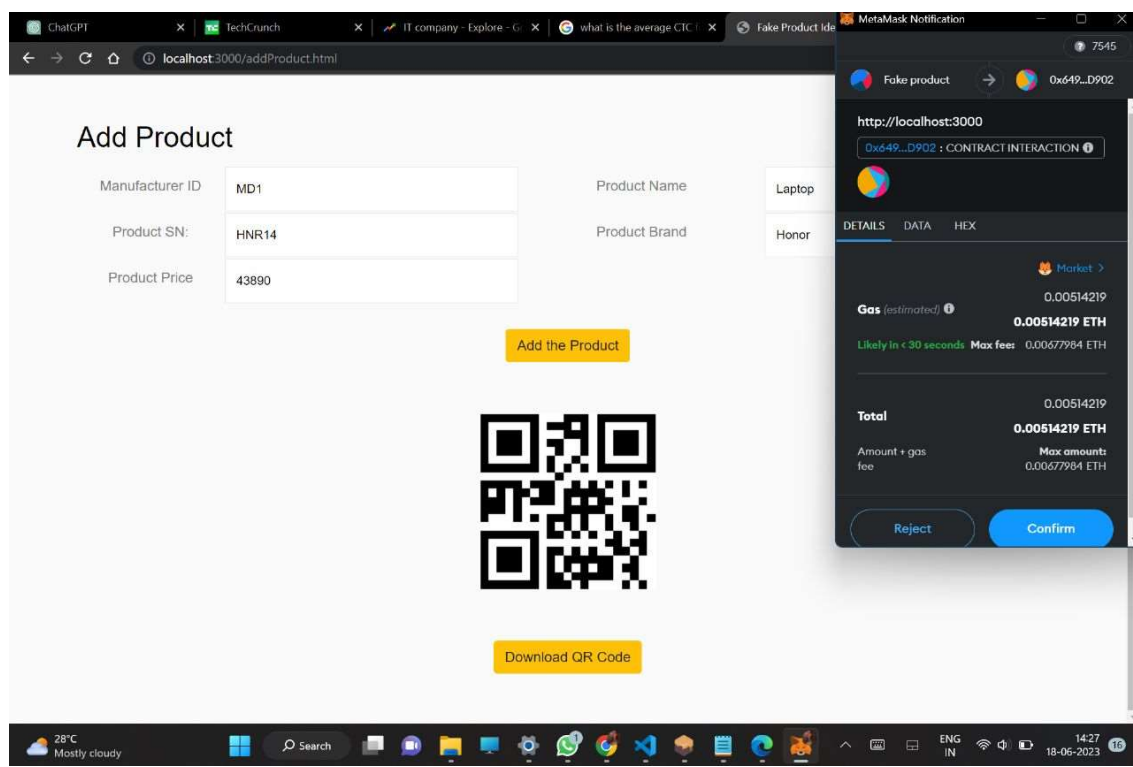
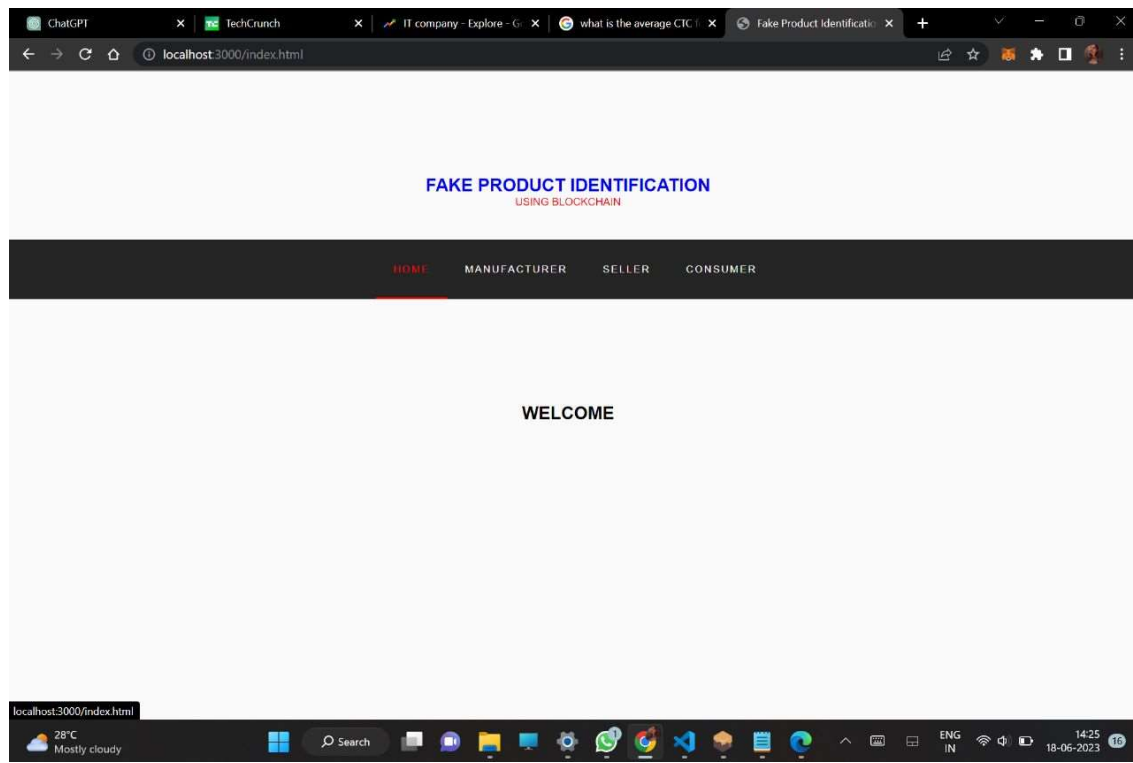
AddProduct.html



AddSeller.html

Fake Product Identification using BLOCKCHAIN.

VALIDATION/RESULT:



Fake Product Identification using BLOCKCHAIN.

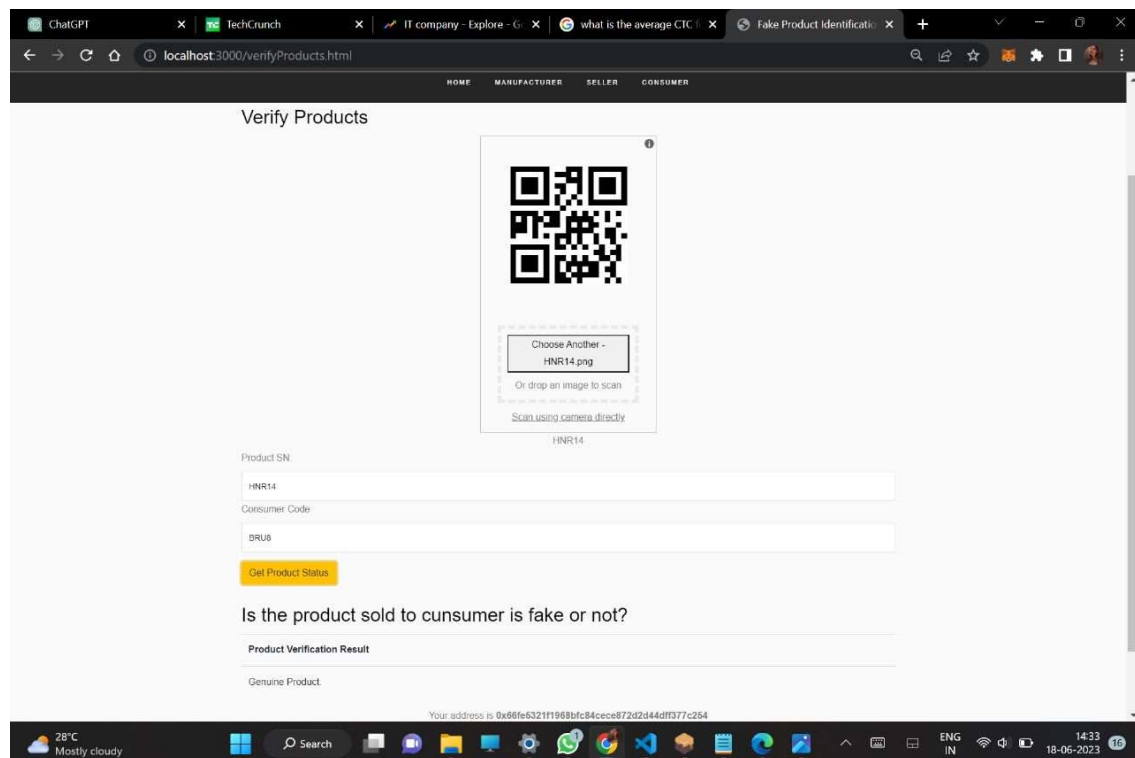
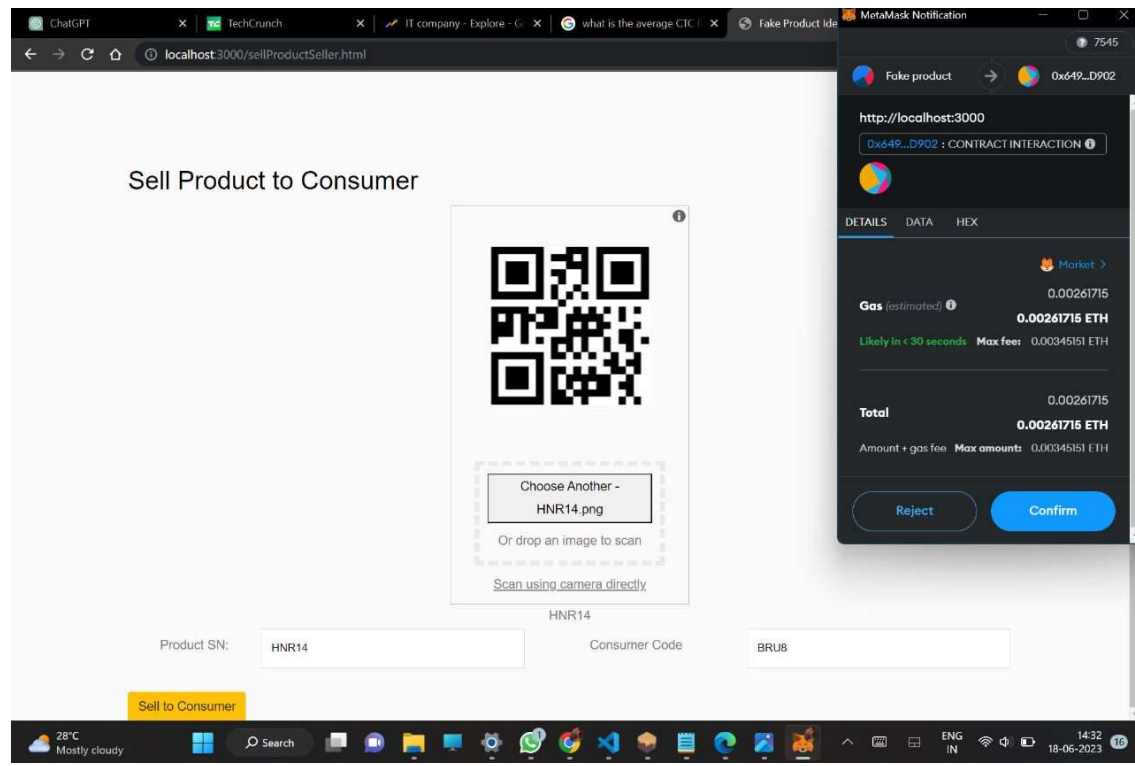
The screenshot shows a web browser at `localhost:3000/addSeller.html` displaying the 'FAKE PRODUCT IDENTIFICATION THROUGH BLOCKCHAIN' application. The 'Add Seller' form is active, with the following details:

Field	Value
Seller Name	Lakshmi
Seller Code	LK1
Seller Manager	Shobha
Manufacturer ID	MD1
Seller Brand	Honor
Seller Phone Number	9036388228
Seller Address	Yelahanka

An orange 'Add the Seller' button is at the bottom left. A MetaMask notification overlay is visible on the right, showing transaction details for 'Fake prod...' with a gas fee of 0.00549472 ETH and a total of 0.00549472 ETH. The notification includes 'Reject' and 'Confirm' buttons.

The screenshot shows a web browser at `localhost:3000/sellProductManufacturer.html` displaying the 'Sell Product to Seller' form. A QR code is shown for scanning, with options to 'Choose Another - HNR14.png', 'Or drop an image to scan', or 'Scan using camera directly'. Below the QR code, the 'Product SN' is 'HNR14' and the 'Seller Code' is 'LK1'. An orange 'Sell to Seller' button is at the bottom left. A MetaMask notification overlay is visible on the right, showing transaction details for 'Fake product' with a gas fee of 0.00210873 ETH and a total of 0.00210873 ETH. The notification includes 'Reject' and 'Confirm' buttons.

Fake Product Identification using BLOCKCHAIN.



FUTURE SCOPE AND 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.
- ✓ QR code is not hackable but information in it can be copied or known to generate similarly QR code as well as print out of QR codeworks well to scan and retrieve information so in order to overcome this secure graphic QR code can be used that if when QR code is photocopied then it will lose information due to the ink smearing

REFERENCES:

1. Muhammad Nasir Mumtaz Bhutta, Amir A. Khwaja, Adnan Nadeem, Hafiz Farooq Ahmad , Muhammad Khurram Khan, Moataz A. Hanif, Houbing Song, Majed Alshamari , and Yue Cao , “A Survey on Blockchain Technology: Evolution, Architecture and Security”, IEEE special section on intelligent big data analytics for internet of things, services and people,2021, pp. 61048 – 61073.
2. Rishabh Sushil Bhatnagar, Sneha Manoj Jha , Shrey Surendra Singh, Rajkumar Shende “Product Traceability using Blockchain”, 2020 2nd International Conference on Advances in Computing, Communication Control and Networking (ICACCCN).
3. Online:<https://www.geeksforgeeks.org/blockchain-technology-introduction/>