ANNEXURE - A

HMR INSTITUTE OF TECHNOLOGY & MANAGEMENT
Hamidpur, Delhi-110036
(An ISO 9001: 2008 certified, AICTE approved & GGSIP University affiliated institute)
E-mail: hmritmdirector@gmail.com, Phone: - 8130643674, 8130643690, 8287461931, 8287453693

Department of Computer Science
Synopsis of Minor Project

Date: 15th September 2023

Minor Project Title: Fake Product Identification Using Blockchain Technology

Name of Supervisor(s): Ms. Rekha Choudhary

Program: - B.Tech(CSE/IT)		**Year/Semester: - 7th Semester**	
S. No.	**Enrolment No.**	**Name**	**Signature**
1	08813302720	Yogesh Gupta	
2	07213302720	Shiv Kumar Rathore	
3	20113302720	Tushar Tomar	

Minor Project Summary:

Counterfeit products pose significant risks to consumers and businesses in today's global marketplace. To address this challenge, our project, "Fake Product Identification Using Blockchain Technology," aims to develop a robust solution that leverages blockchain technology to authenticate and track products throughout the supply chain. The primary objectives of this project are to create a secure and tamper-proof system for product identification and to enhance transparency and trust within the supply chain.

Our methodology involves implementing a private blockchain network to record essential product information, such as origin, manufacturing date, and distribution history. Each product will be assigned a unique QR code that consumers can scan using a mobile application to verify authenticity. Smart contracts will be integrated to automate the authentication and validation processes, ensuring real-time accuracy.

The project's anticipated outcomes include a secure system for product authentication, improved consumer confidence, enhanced supply chain transparency, and a reduction in counterfeit products in the market. By addressing these critical issues, our project aims to promote the adoption of blockchain technology in supply chain management and provide a practical solution for businesses to combat counterfeiting effectively.

In conclusion, this project has the potential to revolutionize how counterfeit products are identified and eliminated from the market, fostering trust among consumers and protecting brand reputations. This project signifies a significant step toward a safer and more transparent marketplace for all stakeholders.

Objectives:

1. **Develop a Secure Blockchain Infrastructure:** Create a private blockchain network that ensures data integrity, security, and immutability to prevent tampering or fraudulent activities within the system.

2. **Design a User-Friendly Mobile Application:** Develop an intuitive mobile application that allows consumers to easily scan product QR codes and access real-time information about product authenticity and origin.

3. **Implement Smart Contracts:** Integrate smart contracts into the blockchain network to automate the validation and verification of product transactions, ensuring accuracy and reducing the potential for human error.

4. **Establish a Product Database:** Build a comprehensive database within the blockchain containing detailed product information, including manufacturing data, distribution history, and authentication records.

5. **Implement QR Code Generation:** Generate and manage unique QR codes for each product, linking them to their corresponding blockchain records for easy access and verification.

6. **Enable Real-Time Authentication:** Ensure that consumers can instantly verify product authenticity by scanning QR codes, with the system providing immediate feedback.

7. **Test for Scalability:** Conduct tests to ensure that the blockchain solution can handle a growing volume of products and transactions as the system scales.

8. **Educational Outreach:** Develop educational materials and campaigns to raise awareness among consumers about the importance of product authentication and the use of the mobile application.

9. **Cost-Benefit Analysis:** Conduct a cost-benefit analysis to determine the economic feasibility and advantages of implementing the blockchain-based solution for businesses and stakeholders.

Research Paper Topic:

Blockchain-Based Anti-Counterfeiting Measures in Luxury Goods Industry

Base Paper Link:

https://www.itm-conferences.org/articles/itmconf/pdf/2022/04/itmconf_icacc2022_03015.pdf

Resource Requirement:

1. **Computers/Server Infrastructure:** Adequate hardware resources, such as servers or high-performance computers, to host the blockchain network and support software development and testing.

2. **Blockchain Platform and Development Tools:** Access to a suitable blockchain platform (e.g., Ethereum, Hyperledger Fabric) and the necessary development tools, including IDEs and testing frameworks.

3. **QR Code Generation Software:** Software for generating and managing unique QR codes for products as part of the product authentication process.

4. **Database Management System:** A database system to store non-blockchain data, such as user accounts and product information, that integrates seamlessly with the blockchain network.

Schedule of Minor Project Work Along with Research Paper:

- September : Project Initiation and Planning
    - Week 1: Project Kickoff
        - Define project goals and objectives.
        - Form project teams and assign roles.
        - Set up communication channels and tools.
    - Week 2-3: Research and Requirement Gathering
        - Research blockchain platforms and select the most suitable one.
        - Determine specific project requirements and features.
        - Define user stories and use cases.
    - Week 4: System Design
        - Design the architecture of the blockchain network.
        - Create a high-level system design.
        - Identify technical dependencies and challenges.

- October : Blockchain Development
    - Week 5-6: Blockchain Development
        - Set up the blockchain network infrastructure.
        - Develop and deploy smart contracts for product authentication.
        - Implement data storage on the blockchain.
    - Week 7-8: Integration
        - Integrate other necessary software components with the blockchain system.
        - Ensure data synchronization and communication within the system.

- November : Testing and Quality Assurance
    - Week 9-10: Testing and Quality Assurance
        - Conduct extensive testing of the entire system.
        - Perform security audits and vulnerability assessments.
        - Collect feedback and address issues.
    - Week 11-12: Documentation and Reporting
        - Prepare documentation for the system's architecture and functionality.
        - Generate reports on system performance and security measures.

- December : Finalization and Evaluation
    - Week 13-14: User Acceptance Testing
        - Collaborate with stakeholders to conduct user acceptance testing.
        - Make any necessary adjustments based on user feedback.
    - Week 15-16: Project Finalization
        - Prepare the final prototype for presentation.
        - Conduct a final evaluation of the system against project objectives.

Signature of Student **Signature of Supervisor(s)**

Signature of Minor Project Co-ordinator:

Co-ordinator Name: Ms. Rekha Choudhary

Approval by Project Committee

Member	Signature	Remark (Approved/Not Approved)

Member	Signature	Remark (Approved/Not Approved)