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DRUG TRACEABILITY IN HEALTHCARESUPPLY CHAIN USING BLOCKCHAIN

[1]Rohit Kottawar, [2]Akshay Shinde, [3]Santoshi Pallaye , [4]Mahesh Yeole

[1,2,3,4] U.G Student Department of Computer Engineering, Shree Ramchandra College of Engineering, Pune, India.
[5] Professor Department of Computer Engineering, Shree Ramchandra College of Engineering, Pune, India.

Abstract: Drug traceability system is essentially important for public drug security and business of pharmaceutical companies, which aims to track or trace where the drug has been and where it has gone along the drug supply chain. Traditional centralized server-client technical solutions have been far from satisfying for their bad performances in data authenticity, privacy, system resilience and flexibility. We have proposed an entirely new blockchain system for drug traceability. This system is more secure and scalable than other alternatives on the market today. In addition, the proposed system is able to effectively prune its storage, resulting in a finally stable and usable blockchain storage solution.

I. INTRODUCTION

Information security is an important factor during transmitting secret information between two objects. As early as in ancient Greece there were attempts to hide a message in trusted media to deliver it across the enemy territory. Generally, we use cryptography for information hiding and sending secret messages in the form of text. In the modern world of digital communication, there are several techniques used for hiding information in any medium. One of such technique is steganography. In which digital media mainly digital images are used as a medium for hiding information and the information in the form text, digital image, video or audio file may be used as secret message. The word steganography derived from two Greek words: steganos means covered and graph means writing and often refers to secret writing or data hiding. With the development of machine learning, face recognition technology based on CNN (Convolutional Neural Network) has become the main method adopted in the field of face recognition security system securely access the confidential system. Information security plays a major role in any data transfer security can be obtained by information hiding that focuses on hiding the existence of secrete information. In this project we use to provide security and hide information.

II. PROBLEM STATEMENT

We Build and Implement Drug Traceability in healthcare supply chain using block chain.

III. PROJECT OBJECTIVE

The main objectives of this project are

- Blockchain technology enables creating a private permissioned network to trace and track events in the pharmaceutical supply chain and provides time stamped records of each transaction performed. Examples of events includes, execution and owner, time, location of transaction, and which stakeholders were involved.Requirement of the steganography system is that the Hidden message carried by stego-media should not be sensible to human beings.

IV. TOOLS AND TECHNIQUES USED DURING THE PROJECT

In this project we use to provide reliable information about the flow for stakeholders and patients, especially that of drug production origin for ant counterfeit purpose.

1. Ingredient Supplier
2. FDA
3. Manufacture
4. Distributor
5. Pharmacy
6. Repackager
7. Second Distributor

V. SOFTWARE & HARDWARE REQUIREMENTS

- Software Requirements:
  1. Operating System - WindowsXP/7/10
  2. Coding Language: Java
  3. Software - jdk 1.8.0
  4. Tool – Eclips
- Hardware Requirements:
  1. Processor – Intel i3 core
  2. Speed - 1.1 GHz
  3. Ram - 256 GB(min)
  4. Hard Disk – 20GB
  5. Key Board – Standard Windows Keyboard
  6. Mouse – Two or Three Button Mouse
  7. Monitor – SVGA

VI. Mathematical Model

Mathematical Model of hiding secret data (the embedding algorithm) and the steps for retrieving secret data (the extracting algorithm).

- Let us consider S as a system for Drug Traceability System. S= INPUT: Identify the inputs F= f1, f2, f3
- FN— F as set of functions to execute commands. I= i1, i2, i3—I sets of inputs to the function set O= o1, o2, o3.—O Set of outputs from the function sets, S= I, F, O I = Drug O = Output i.e.Supply chain,Security F = Functions implemented to get the output Space Complexity: The space complexity depends on Presentation and visualization of discovered patterns. More the storage of data more is the space complexity.
- Time Complexity: Check No. of patterns available in the data sets= n If (n1) then retrieving of information can be time consuming. So the time complexity of this algorithm is O (n^n). = Failures and Success conditions. Failures: 1. Huge database can lead to more time consumption to get the information. 2. Hardware failure. 3. Software failure. Success: 1.

Search the required information from available in Data sets. 2. User gets result very fast according to their.

VII. SYSTEM ARCHITECTURE

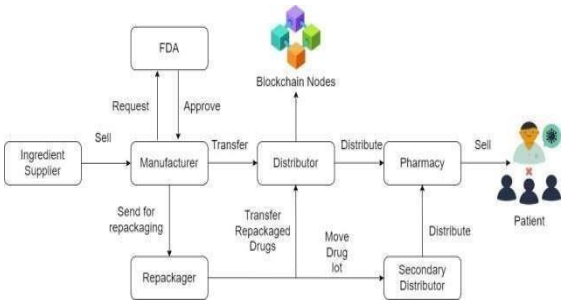


Fig. 1 System Architecture

VIII. CLASS DIAGRAM

Unified Modeling Language is a standard language for writing software blueprints. The UML may be used to visualize, specify, construct and document the artifacts of a software intensive system. UML is process independent, although optimally it should be used in process that is use case driven, architecture centric, iterative, and incremental. The Number of UML Diagram is availabl

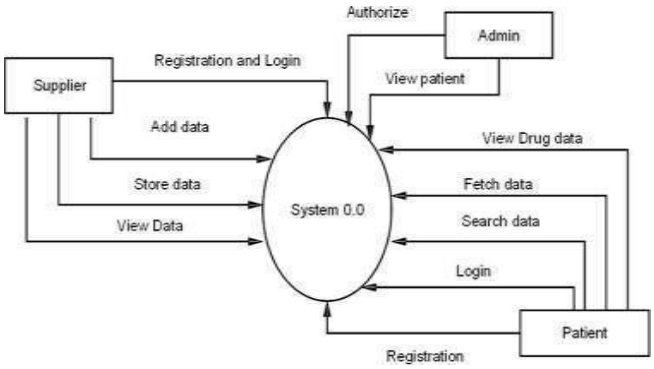


Fig. 2 DFD 0 Diagram

IX. COMPONENT DIAGRAM

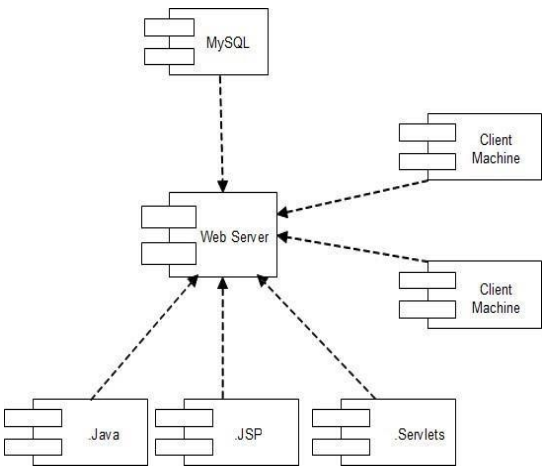


Fig. 3 Component Diagram

X. ACTIVITY DIAGRAM

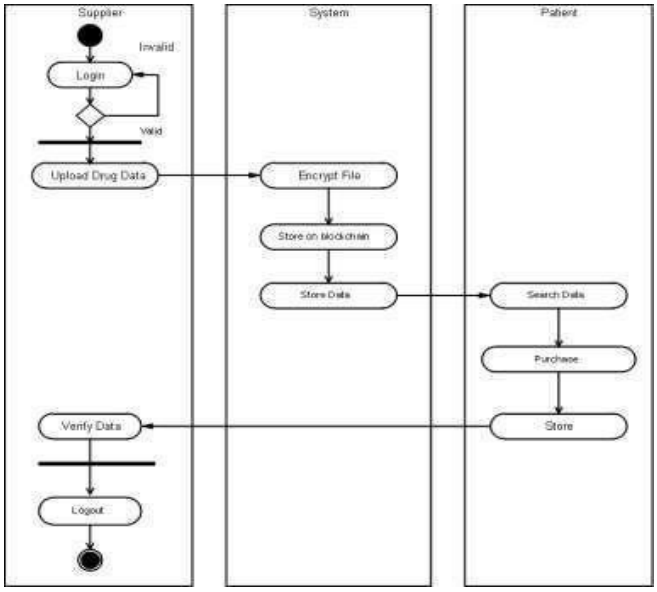


Fig. 3 Activity Diagram

XI. Deployment Diagram

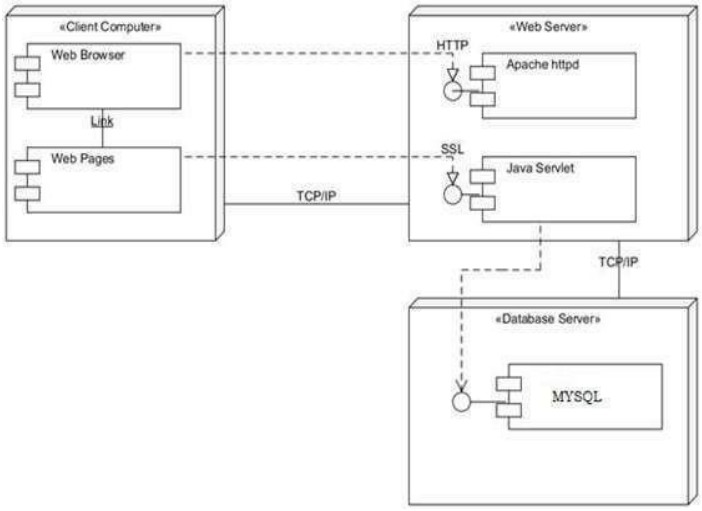


Fig. 4 Deployment Diagram

XII. USE-Case Diagram

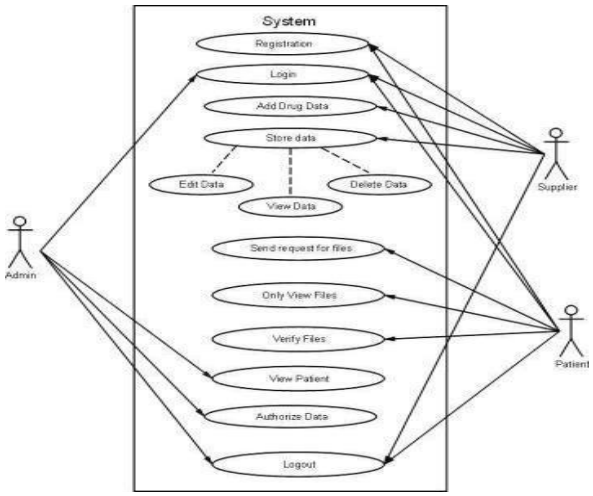
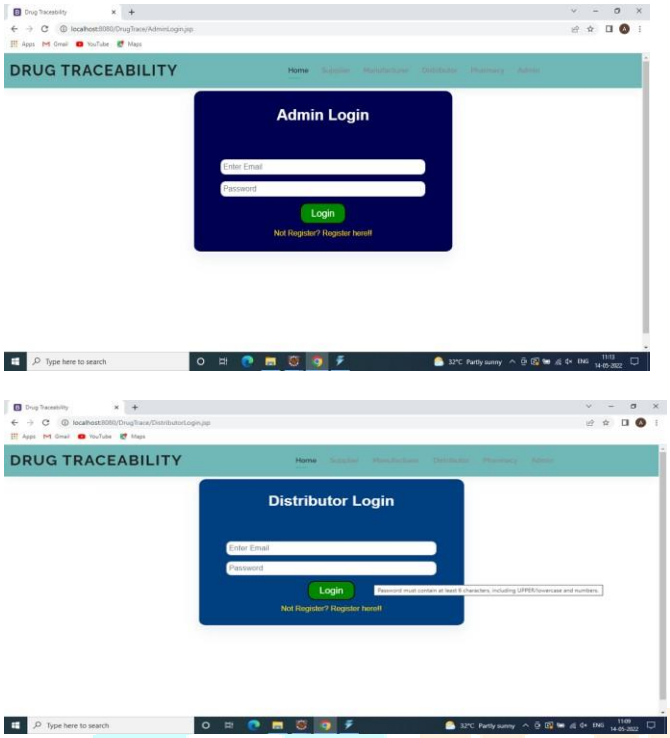
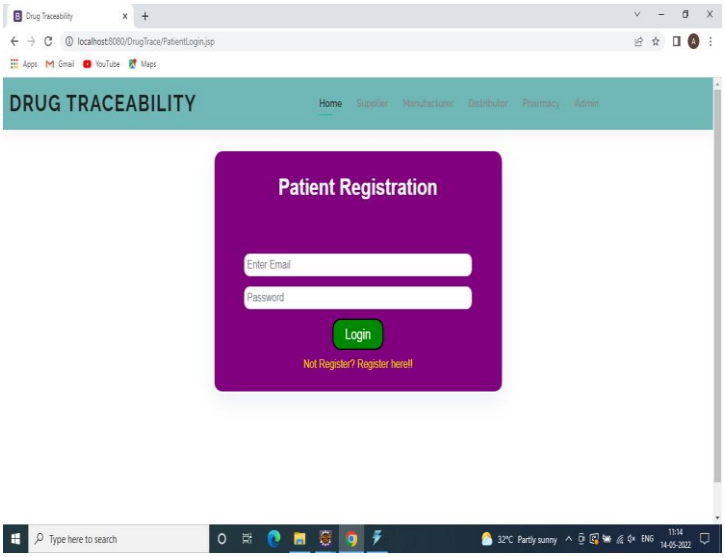


Fig. 5Use-Case Diagram

1) LOGIN PAGE





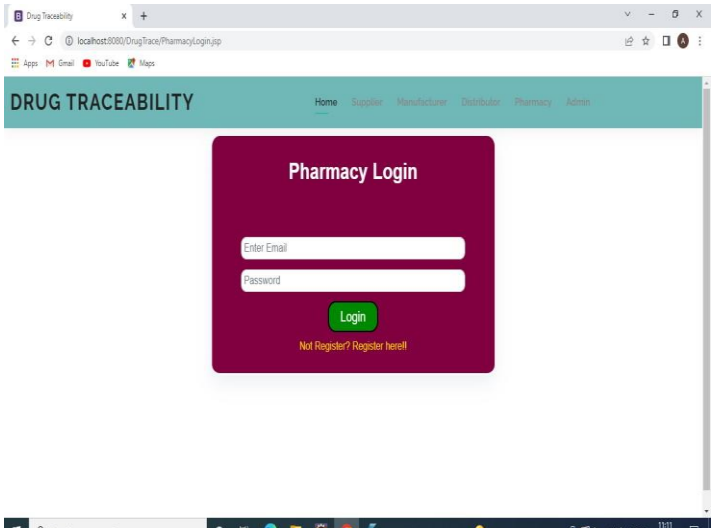
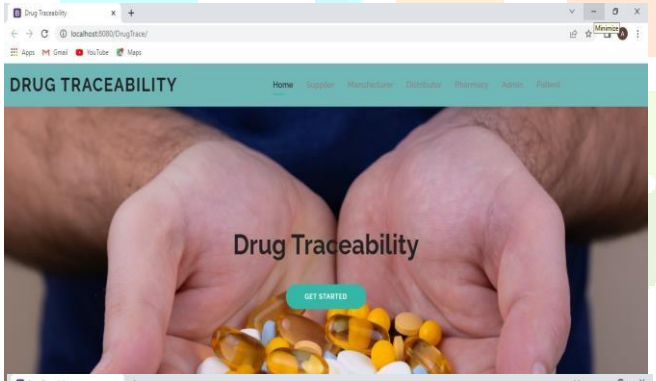
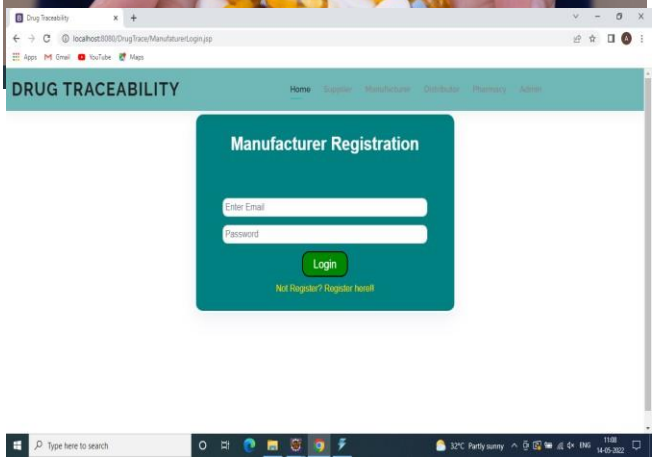
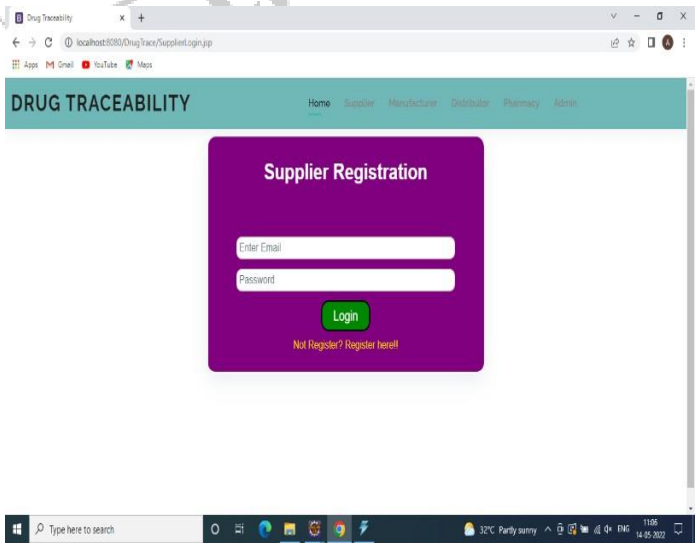


Fig. 6 Login Page

2) STEGANALYSIS







XIII. CONCLUSION

- In this system, we have investigated the challenge of drug traceability within pharmaceutical supply chains highlighting its significance especially to protect against counterfeit drugs.
- We have developed and evaluated a blockchain-based solution for the pharmaceutical supply chain to track and trace drugs in a decen- tralized manner. Specifically, our proposed solution leverages cryptographic fun-damentals underlying blockchain technology to achieve tamper-proof logs of events within the supply chain and utilizes smart contracts within Ethereum block chain to achieve automated recording of events that are accessible to all participating stakeholders
- We continue our efforts to enhance the effciency of pharmaceutical supply chains and envision to focus on extending the proposed system to achieve end to end transparency

XIV. GENERALIZE APPLICATIONS

- To avoid overhead Organization.
- Use this system to avoid duplicate file.
- To save memory.

XV. ACKNOWLEDGMENT

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