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Medicine Supply Chain using Blockchain

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Abstract: *This paper presents a Blockchain-Powered Medicine Supply Chain System aims to improve and enhance transparency, security, and authenticity in pharmaceutical products. This system was developed on a local device using Java and Java Servlet/JSP as the front-end, and JDBC for database connectivity, with MySQL data storage. It applies blockchain technology's decentralized and immutable structure to create a trusted network among diverse stakeholders within the supply chain. This means that in a peer-to-peer blockchain model in which the nodes are connected for the registration of each transaction, no record can be altered or tampered with. It actually scans the QR codes and verifies the product at every level within the supply chain in real time. That way, only authenticated drugs can have a transaction completed while preventing counterfeit drugs from reaching consumers. Its decentralized blockchain network further helps mitigate the issues with the possibility of data tampering or a single point of failure, hence making the system secure against multiple security threats. The system further uses cryptographic methods, such as digital signing and double encryption, to ensure integrity and anonymity to users. This paper discusses technology, system design, and how this blockchain solution offers an efficient supply chain toward the demands of the pharmaceutical industry for safe dispensation of drugs for which consumers eventually gain confidence in later stages.*

Keywords: Blockchain, Medicine Supply Chain, Java, Java Servlet, JSP, JDBC, MySQL, Decentralization, Product Validation, QR Code, Peer-to-Peer Blockchain, Double Encryption, Transparency, Security

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