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Implementing Blockchain Technology in Online E-Commerce Applications

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Abstract_ To solve this issue, we are migrating the existing E-commerce application to Blockchain. In the existing E-commerce application, all customer and product details are stored and managed on a single centralised server. If this server crashed due to excessive requests or if it was hacked, other customers would not be able to use the services.

Blockchain considers each piece of data to be a block or transaction and associates each block storage with a distinct hash code. It also has built-in functionality for data encryption and immutability (data cannot be altered by unauthorised users).

after which new records are stored. Blockchain will check the hash code of earlier blocks, and if all nodes successfully check their blocks, the data is considered secure.

Another benefit of blockchain is that data is maintained across numerous servers and nodes, so users may still access data even if one node is offline.

1.INTRODUCTION

One of the world's most important industries is e-commerce. Online business stages require huge power and capacity to oversee a lot of information and different administrations. Despite the industry's current superior functioning, blockchain technology offers opportunities for further improvement. E-commerce companies can use blockchain to handle data more effectively. In a blockchain network, the platforms can organizely store information about users, products, orders, deliveries, manufacturers, sellers, and much more.

Blockchain is notable for its security includes that give the web based business area additional layers of safety. It encourages peer-to-peer transactions and reduces the number of intermediaries. We get a lot of new features, like faster transactions, fewer chargeback scams, checking customer reviews, and personalized product options. With recognizability, blockchain ensures start to finish item following to the clients. In the end, customers can verify the authenticity of the products and track their orders in real time.

E-commerce is a type of business that uses the internet to conduct sales and purchases. Through the exchange of goods and services between various organizations, it has taken control of numerous commerce industries. Secure websites are used for online payments and financial transactions in e-commerce. In any case, digital money has acquired upheaval business and monetary exchanges. The technology known as blockchain allows for decentralized currency-based transactions without the use of banks or other centralized entities like authorities. The process of creating a publicly accessible, immutable transaction record and the tracking system are the most promising aspects. Blockchain innovation is a disseminated record for different monetary and monetary exchanges that performs series of computations and makes a solid way for web based business

2.LITERATURE SURVEY

[1] We present a technique for Merkle tree traversal which requires only logarithmic space and time1. For a tree with N nodes, our algorithm computes sequential tree leaves and authentication path data in time Log2(N) and space less than 3Log2(N), where the units of computation are hash function evaluations or leaf value computations, and the units of space are the number of node values stored. Relative to this algorithm, we show our bounds to be necessary and sufficient. This result is an asymptotic improvement over all other previous results (for example, measuring cost = space time). We also prove that the complexity of our algorithm is optimal: There can exist no Merkle tree traversal algorithm which consumes both less than O(Log2(N)) space and less than O(Log2(N)) time. Our algorithm is especially of practical interest when space efficiency is required, and can also enhance other traversal algorithms which relax space constraints to gain speed.

[2] The fast advance of wireless

networking, communication, and mobile technology is making a big impact to daily life. The significant increase of mobile device users in the recent years causes a strong demand on secured wireless information services and reliable mobile commerce applications. Since wireless payment is a critical part of most wireless information services and mobile commerce applications, how to generate secured mobile payment systems becomes a hot research topic in both the ecommerce research community and wireless commerce industry. This paper proposes a peer-to-peer wireless payment system, known as P2P-Paid, to allow two mobile users to conduct wireless payment transactions over the Bluetooth communications. The system uses a 2-dimensional secured protocol, which not only supports the peer-to-peer (P2P) payment transactions between two mobile clients using Bluetooth communications, but also supports the related secured transactions between the payment server and mobile clients. This paper provides a system overview about system functional features, system architecture, and used technologies. Moreover, an integrated security solution for the P2P-Paid system is described. Our first phase implementation is reported and application examples are given to demonstrate the functions and feasibility of this system.

The bitcoin protocol can encompass the global financial transaction volume in all electronic payment systems today, without a single custodial third party holding funds or requiring participants to have anything more than a computer using a broadband connection. A decentralized system is proposed whereby transactions are sent over a network of micropayment channels (a.k.a. payment channels or transaction channels) whose transfer of value occurs block chain. If Bitcoin transactions can be signed with a new sighash type that addresses malleability, these transfers may occur between untrusted parties along the transfer route by contracts which, in the event of un- cooperative or hostile participants, are enforceable via broadcast over the bit coin block chain in the event of uncooperative or hostile participants, through a series of decrementing time locks..

3.PROPOSED SYSTEM

benefit of Each data point is considered a block or transaction in the blockchain, which has built-in functionality for data encryption and immutability (data cannot be changed by unauthorised users). Before storing new records, each block is associated with a unique hash code.

Blockchain will check the hash code of earlier blocks, and if all nodes successfully check their blocks, the data is considered secure. Since Blockchain cannot store images, we are storing product images inside an IPFS (interplanetary file storage) server, which will store the image and return a hash code that can be used to retrieve the image from IPFS. To implement this project, we used Blockchain Ethereum with Truffle to store E-commerce data.

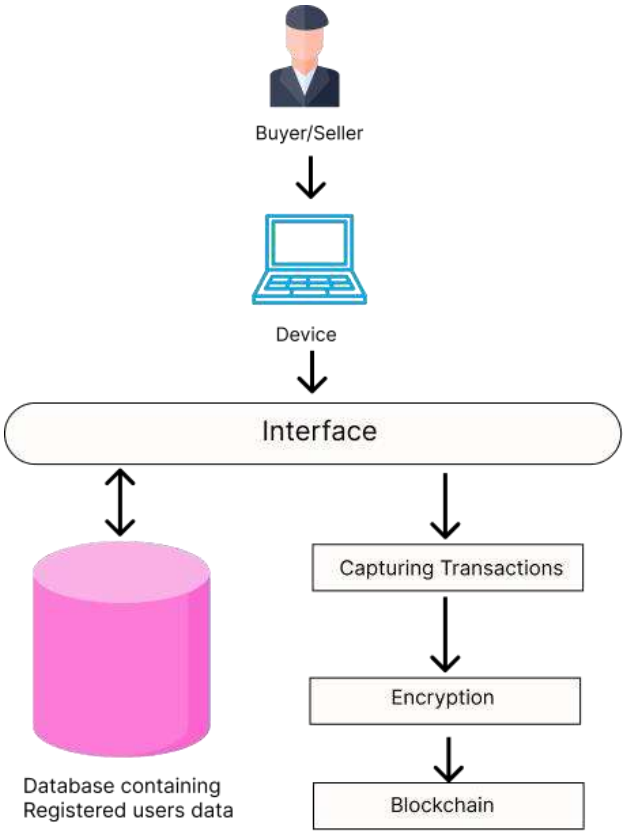

Figure.1: System Architecture diagram of Blockchain based E-commerce onlineapplication

3.1 IMPLEMETATION

- **Login:** Using this module product suppliers and consumers (customers) can login toapplication.
- **Signup:** Using this module both customers and suppliers can sign up with the application to get username and password.
- **Add Product:** Using this module supplier can add new product details with images inBlockchain.
- **Update quantity:** Using this module supplier can update quantity for the product inBlockchain
- **View Orders:** Using this module supplier can view orders from the customers.
- **Browse Products:** Using this module customers can search product and make an order.

4.RESULTS AND DISCUSSIONS

Here the newly registered login credentials of the sellers are activated by theadmin .

Figure 2 : Seller Account Activation

Hash Representation Of Transactions:

Here the hash representation of all the transactions processed are shown here.

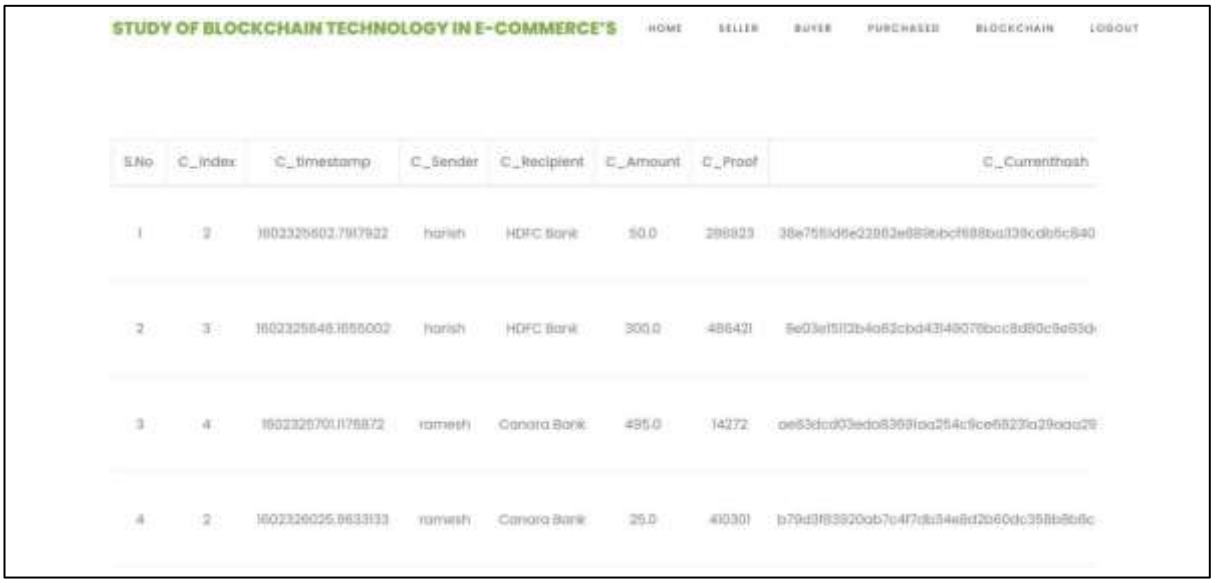

Figure 3: Hash Representation

Buyer Purchased page:

Here the details of purchased products is shown here.

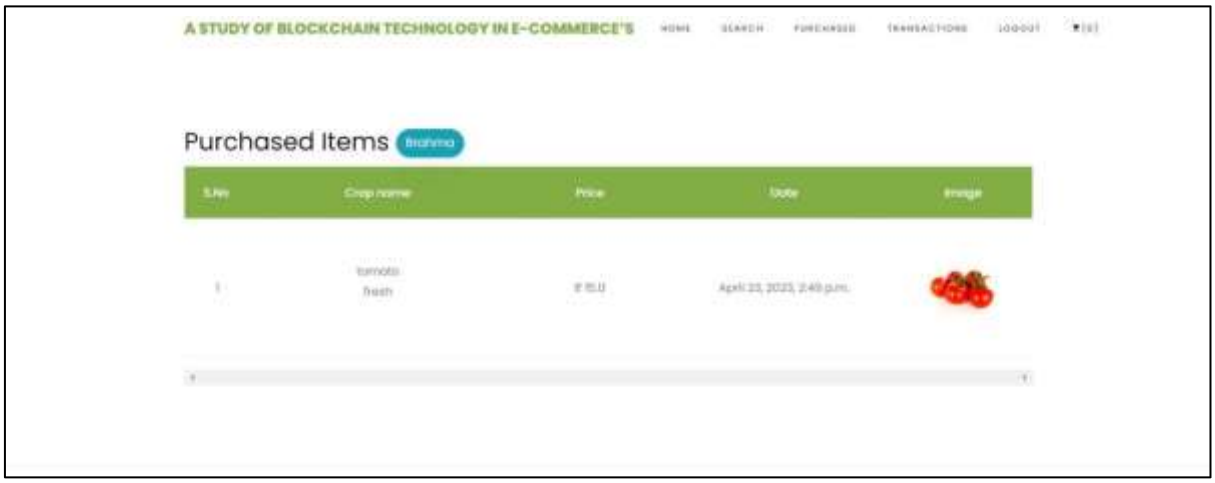

Figure 4: Purchased Items

5.CONCLUSION

In the current E-commerce application, all customer and product information is stored and managed on a single, centralised server. If this server crashed due to too many requests or if it was hacked, other customers would not be able to use the services. To solve this issue, we are migrating the E-commerce application to Blockchain, which will maintain data at multiple nodes/servers and allow customers to access data from other working nodes if one node is down. Since photos cannot be saved by Blockchain, we are storing product images on an IPFS (interplanetary file storage) server. This server will store the image and produce a hash code, and by providing that hash code, we can access the stored image.

FUTURE SCOPE

A kind of portal can be implemented by the government and its confederate bureaus to ensure amelioration in the field of farming and commerce of crops which will improve the prominence of the nation's farmers. This application can be more refined with increasing integration of blockchain in a spectrum of areas and constellating it into a single paramount portal for farmers. This can

be done by putting farmer's crop details to the blockchain, buyer's data to the blockchain and adding more features and services to the single portal and bringing all possible facilities for farmers of the nation under sui generis awning. Information integrity and precision issues can be solved using open, protected and trusted systems presumptuous; the infrastructure dispensation and footage connections are protected and suitably provided. The blockchain technology did not promise the information reliability in the footage. Thus realization in blockchain faces several boundaries that might require a vital authority or protected footage of confirmation.

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