BLOCKCHAIN BASED E-COMMERCE ONLINE APPLICATION
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Abstract

In existing E-commerce application all customers and product details will be stored
and managed in single centralized server and if this server crashed due to too many requests
and or if server is hacked then services will not be available to other customers and to overcome
from this problem we are migrating E-commerce application to Blockchain which will maintain
data at multiple nodes/servers and if one node down then customers can get data from other
working nodes. Another advantage of Blockchain has inbuilt support for data encryption and
immutable (data cannot be alter by unauthorized users) and it will consider each data as
block/transaction and associate each block storage with unique hash code and before storing
new records Blockchain will verify hash code of previous blocks and if all nodes blocks
verification successful then data is consider as secured. To implement this project we have used
Blockchain Ethereum with Truffleto store E-commerce data and Blockchain cannot store
images so we are storing products images inside IPFS (interplanetary file storage) server and
this server will store image and returned hash code of stored image and by giving that hash
code we can retrieve images from IPFS.

INTRODUCTION

The increasing spread of information and communication technologies, specifically the Internet; the global business community has been able to move towards electronic commerce [1]. It is providing many new features such as the possibility of providing all goods on electronic platforms, providing detailed information of goods, about the products offered [2]. It has become a good environment for competition by traders to reach the satisfaction of consumers which measure the extent of consumer satisfaction by tracking the feedback of consumers [3]. The growth of the e-commerce economy is expected to become the fastest growing trading format at this time. The consumer-to-consumer (C2C) method means of exchanging products and services between each other. Through an online market maker such as eBay, where consumer prepares the product for the market, it puts the product into auction or for sale. Moreover, the market makers providea search engine and product display capabilities so that traditional transactions between consumers can be reduced to one another [4]. Thereby making it easier for consumers to explore goods, pay the price, and then deliver goods. Despite the great proliferation of electronic commerce, it has its drawbacks. The most concern isthe centrality of market platforms and the size of the companies [5]. This has become a hindrance to creating new investment opportunities, putting obstacles for novice investors so that only central platforms should be dealt with.

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Sellers are often required to pay high commission fees, but they do not have multiple options if they want to reach a large audience because the ecommerce platforms have good confidence. Furthermore, fees can reach 20% in some cases [6]. There is also a credit card or payment processor fee needed for approval. For example, a fee is usually charged at about 3%; all these additions must be included in the price and transferred to the consumer [7]. Some electronic platforms determine the buyer-seller connection. Traders are struggling to build a long-term relationship with consumers. Communication is often restricted or falls within strict criteria. It is therefore necessary to find an alternative environment that provides effective ecommerce thereby eliminating the centralization of large companies that restrict trade between consumers [8]. This research attempts to link the concept of Blockchain and its technologies to eliminate centralization in business dealings. Blockchain is one of the options to electronic commerce, which based on buying and selling among consumers. Blockchain has become an important technology to resolve the ideal to provide confidence without the need for a third party centrally supervising the processes between the seller and the buyer, in order to verify the accuracy of data and information [9]. In addition to playing an important role in converting many of the traditional operations central to digital operations decentralized, without the needfor any party such as a bank, company, or government [10]. It is a mechanism based on the principle of the record of the consumers in this way, where all records distributed are to all participants (all for all). Recently, the Blockchain technique and some digital computing concepts were combined such as the Bitcoin digital currency [11].

Existing system:

In existing E-commerce application all customers and product details will be stored and managed in single centralized server and if this server crashed due to too many requests and or if server is hacked then services will not be available to other customers and to overcome from this problem we are migrating E-commerce application to Blockchain which will maintain data at multiple nodes/servers and if one node down then customers can get data from other working nodes.

Proposed system:

Advantage of Blockchain has inbuilt support for data encryption and immutable (data cannot be alter by unauthorized users) and it will consider each data as block/transaction and associate each block storage with unique hash code and before storing new records Blockchain will verify hash code of previous blocks and if all nodes blocks verification successful then data is consider as secured. To implement this project we have used Blockchain Ethereum with Truffleto store E-commerce data and Blockchain cannot store images so we are storing products images inside IPFS (interplanetary file storage) server and this server will store image and returned hash code of stored image and by giving that hash code we can retrieve images from IPFS.

**To implement this project we have designed following modules**

1) Login: using this module product suppliers and consumers (customers) can login to application
2) Signup: using this module both customers and suppliers can signup with the application to get username and password
3) Add Product: using this module supplier can add new product details with images in Blockchain
4) Update quantity: using this module supplier can update quantity for the product in Blockchain
5) View Orders: using this module supplier can view orders from the customers
6) Browse Products: using this module customers can search product and make an order
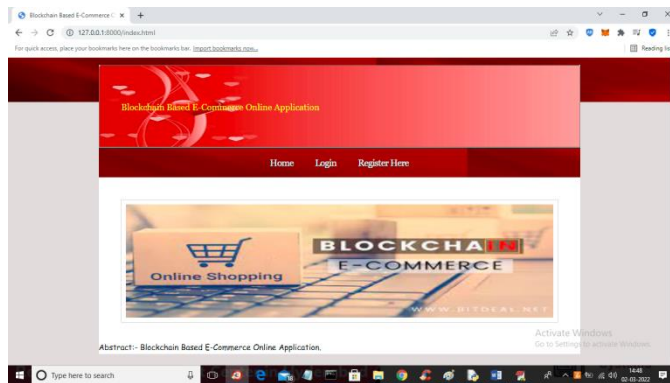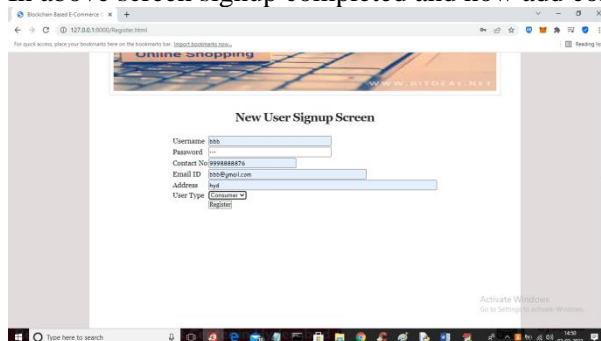
In above screen click on 'Register Here' link to signup two users such as consumer and supplier
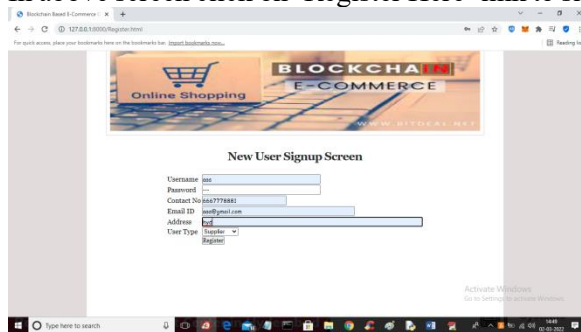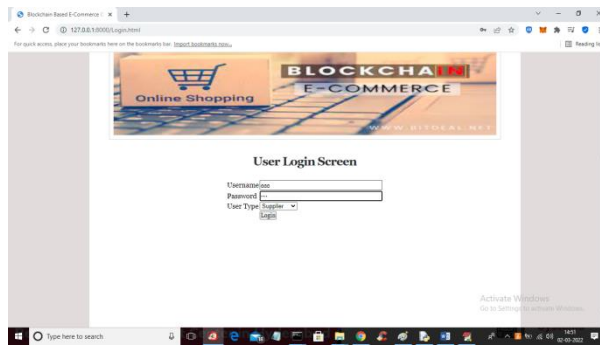

In above screen supplier is getting signup and then press Register button to get below screen
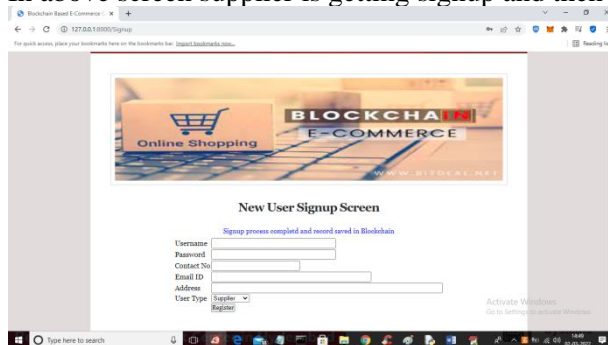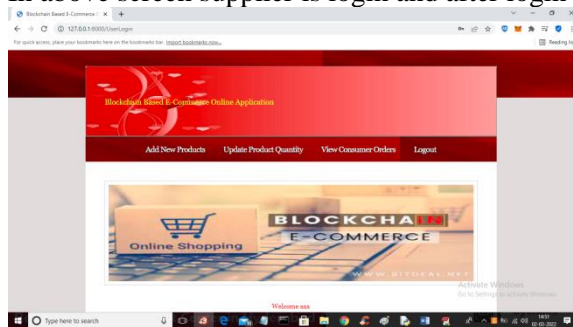

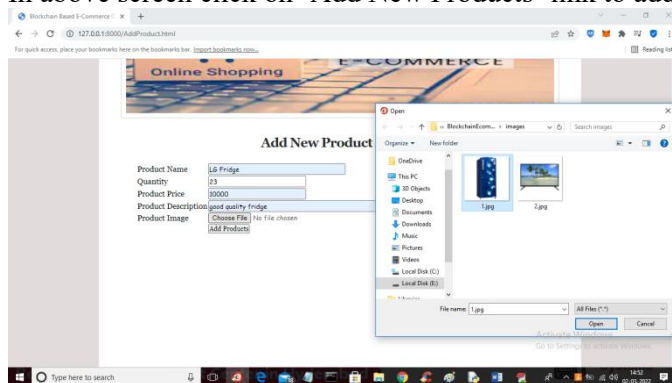In above screen signup completed and now add consumer user

In above screen customer is registering and now click on 'Login' link to get below screen
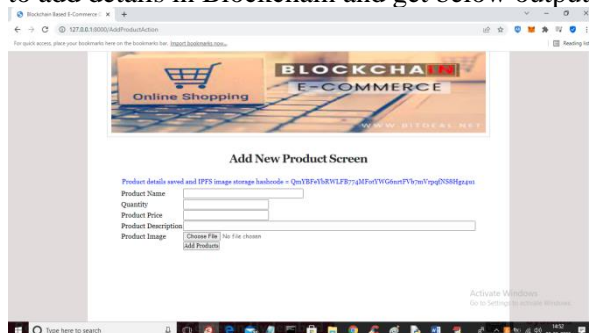
In above screen supplier is login and after login will get below screen

In above screen click on 'Add New Products' link to add new product details

In above screen enter new product details with image and then click on 'Add Products' button to add details in Blockchain and get below output

In above screen in blue colour text we can see product details added and we can see hashcode of image where image is stored in IPFS. Similarly you can add any number of projects. Now click on 'Update Product Quantity' link to update product quantity
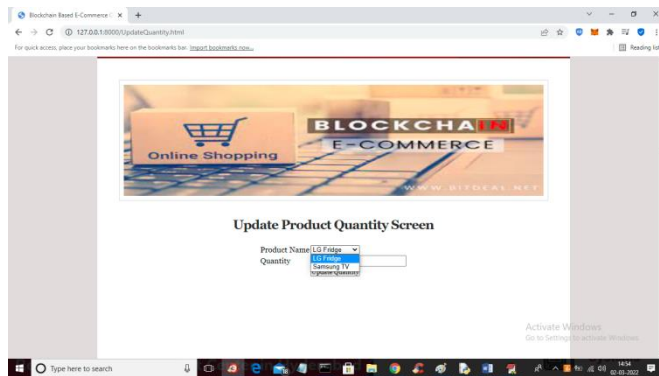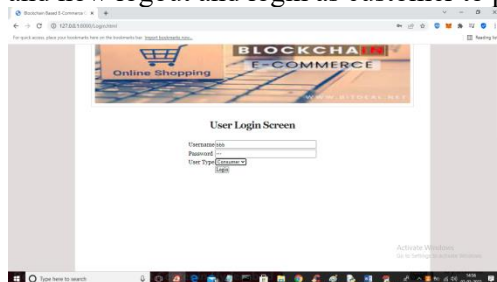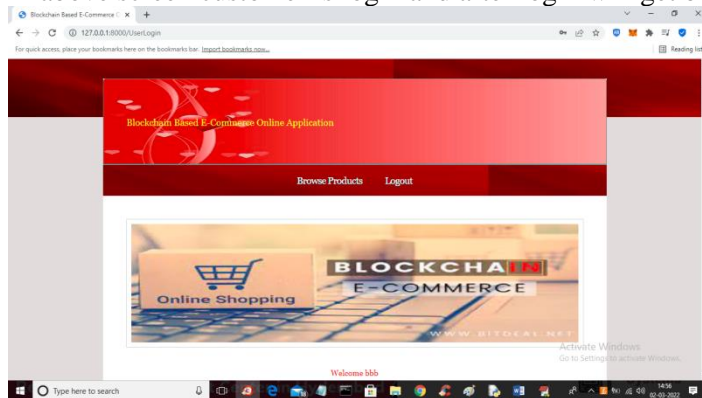
In above screen select any product name and enter new quantity and press button to get below output
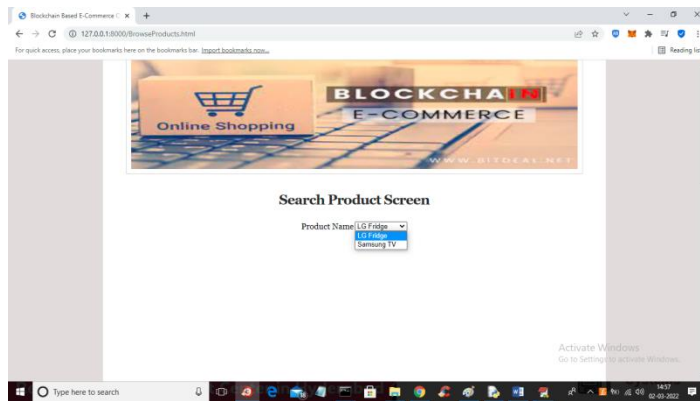

In above screen in red colour we can see quantity is updated and we can see available quantity and now logout and login as customer to purchase products'
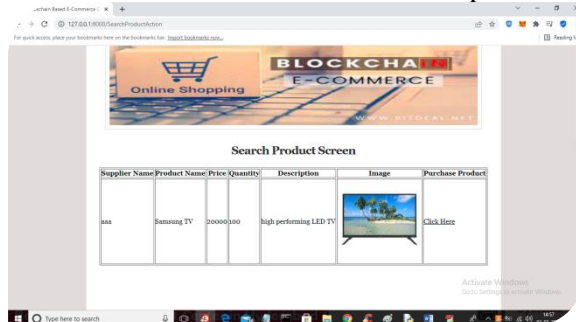

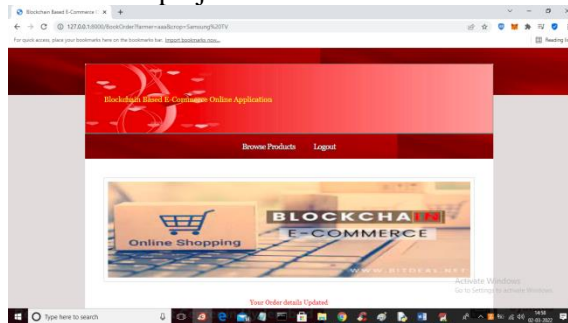In above screen customer is login and after login will get below screen

In above screen click on 'Browse Products' link to get list of products

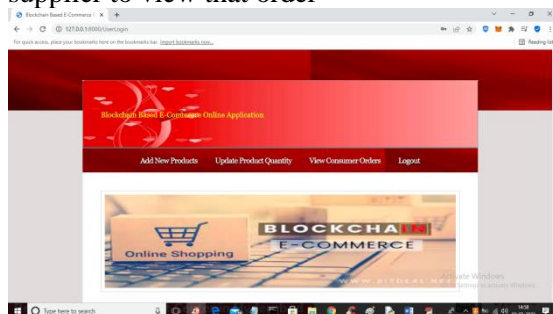In above screen user can select desired product and press button to get below list of products
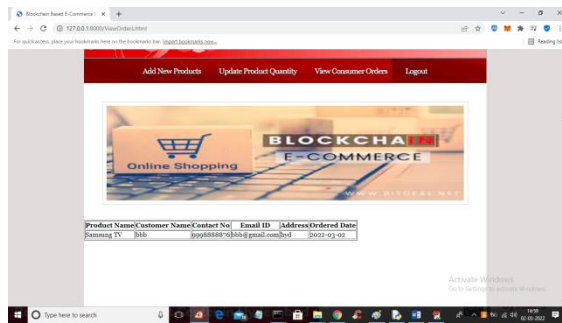

In above screen user can view list of products and then click on 'Click Here' link to make an order of this project

In above screen in red colour text we can see order is updated and now logout and login as supplier to view that order

In above screen click on 'View Consumer Orders' link to get below order details

In above screen supplier can see customer contact number and address and complete product delivery

Similarly you can add products and make purchase any number of times

CONCLUSION

The technology of Blockchain and its application to the consumer-to-consumertrade is considered as a significant progress in e-commerce. It creates an environment of trust and credibility in trade transactions by tracking and distributing consumer records as well as, enabling everyone to see the progress of business transactions. As well as reading the feedback of consumers who wish to sell their needs. In this model, three smart contracts are connected to business processes between consumers (buy, sell, and transfer, details of goods, feedback,and evaluation); blockchain revolution is expected to be a successful or parallel alternative to the traditional process. It encourages small traders to carry out their operations without commercial platform interventions. The proposed model combines the idea of a C2C and a blockchain technology in order to reach an effective trading environment for the success of this type of trade and to mitigate worriesbetween consumers. The model tried to create an environment of trust and credibility among consumers through the possibility of tracking their records, and giving the consumer the freedom to make decisions in dealing with the consumers of others by tracking their rates and feedback, depending on previous business transactions. It is expected to increase the commercial operations of the sale and purchase between consumers, and find alternative ways of payment through either installation or swap, and this is the result of confidence resulting from the model proposal.

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