

## E-Commerce Online Application using Blockchain Technology

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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

**Key Words:** Blockchain, E-commerce application, Migrating E-commerce, Hash Code.

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### 1. INTRODUCTION

Ecommerce is one of the leading industries around the world. Ecommerce platforms require tremendous power and storage to manage large amounts of data and other services. Even though the industry has superior functioning at present, there are ways to enhance it further, which is possible through blockchain technology. Blockchain can help e-commerce businesses to handle data more efficiently. The platforms can store information about users, products, orders, deliveries, manufacturers, sellers, and much more in an organized manner in a blockchain network. Blockchain is well-known for its security features that provide the ecommerce sector with extra layers of security. It cuts down the intermediaries and promotes peer-to-peer transactions. We get many added features like quick transactions, reduced chargeback frauds, customer reviews verification, personalized product offerings. With traceability, blockchain guarantees end-to-end product tracking to the customers. Ultimately, people can track their orders in real-time and also check the products' authenticity.

### 2. PROBLEM ANALYSIS

#### 2.1 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.

#### 2.2 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 Truffle to 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.\

*Login:* Using this module product suppliers and consumers (customers) can login to application.

*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 in Blockchain.

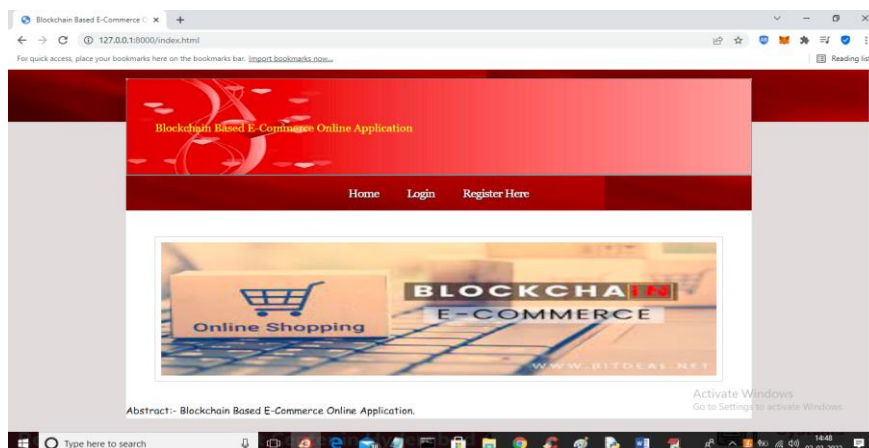
*Update quantity:* Using this module supplier can update quantity for the product in Blockchain

*View Orders:* Using this module supplier can view orders from the customers.

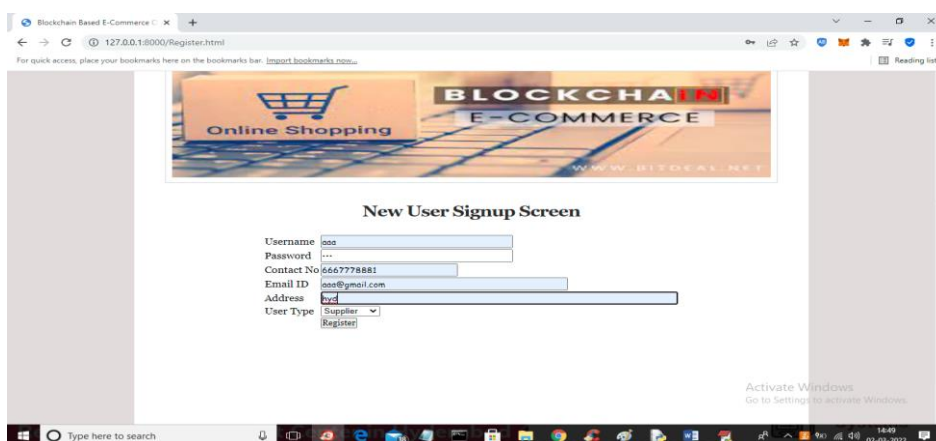
*Browse Products:* Using this module customers can search product and make an order.

### 3. RESULTS

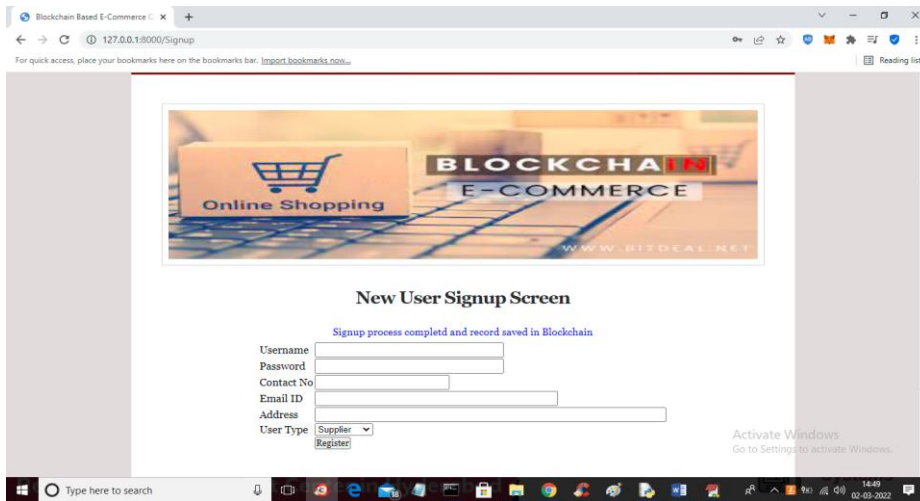
We can interact with the Blockchain by using Solidity code so we need to create solidity function for signup users, add products and book orders and then this solidity has to deploy on Ethereum Blockchain and by using WEB3 python package we can call this solidity contract.



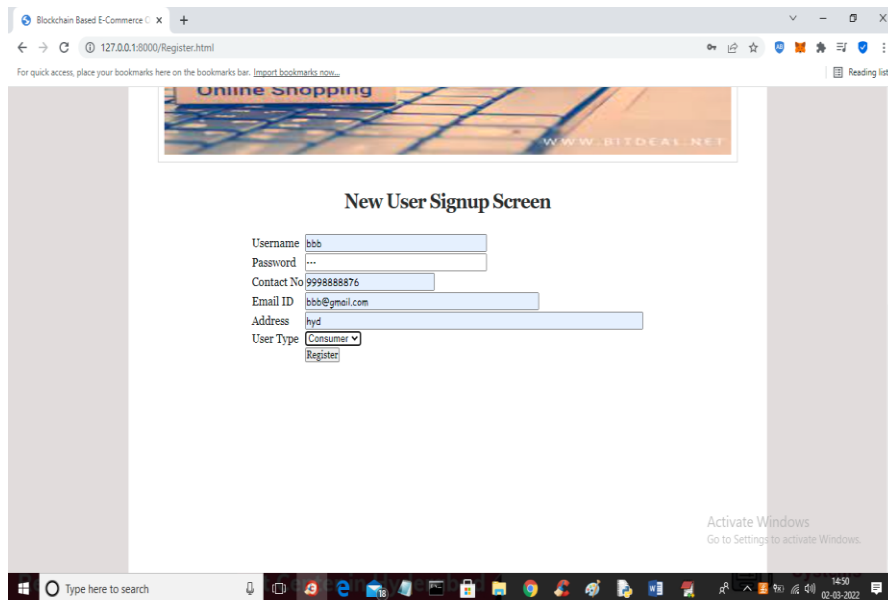
In above screen click on 'Register Here' link to signup two users such as consumer and supplier



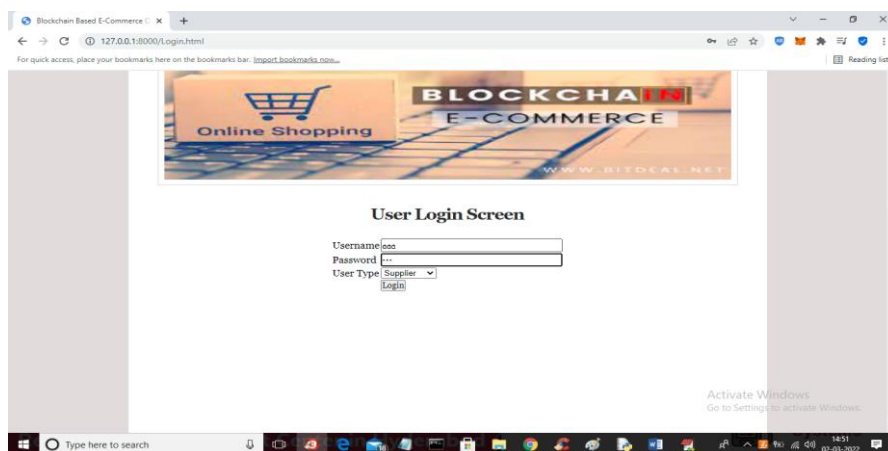
In above screen supplier is getting signup and then press Register button to get below screen



In above screen signup completed and now add consumer user



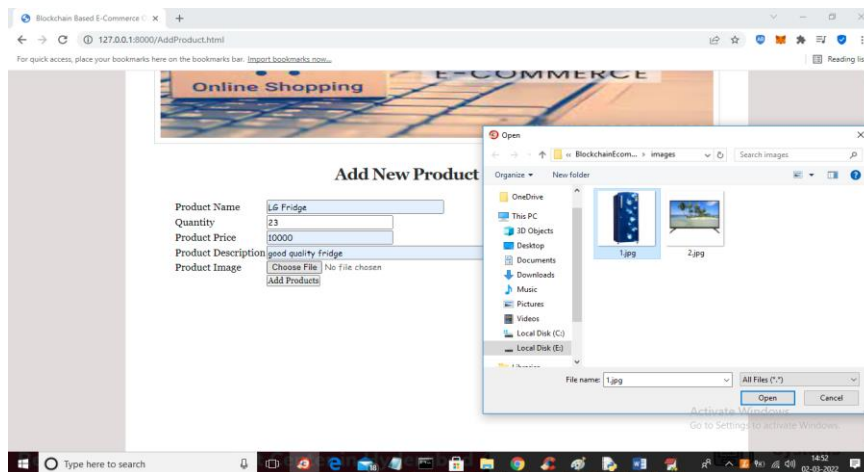
In above screen customer is registering and now click on 'Login' link to get below screen



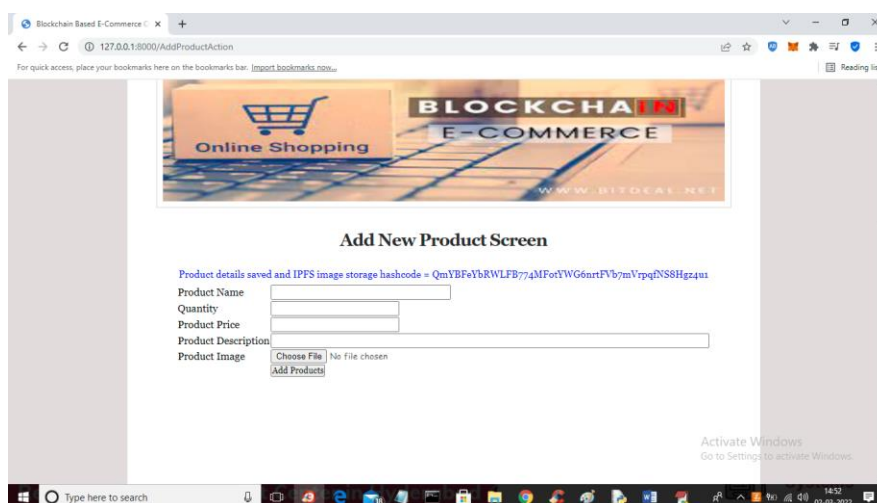
In above screen supplier is login and after login will get below screen



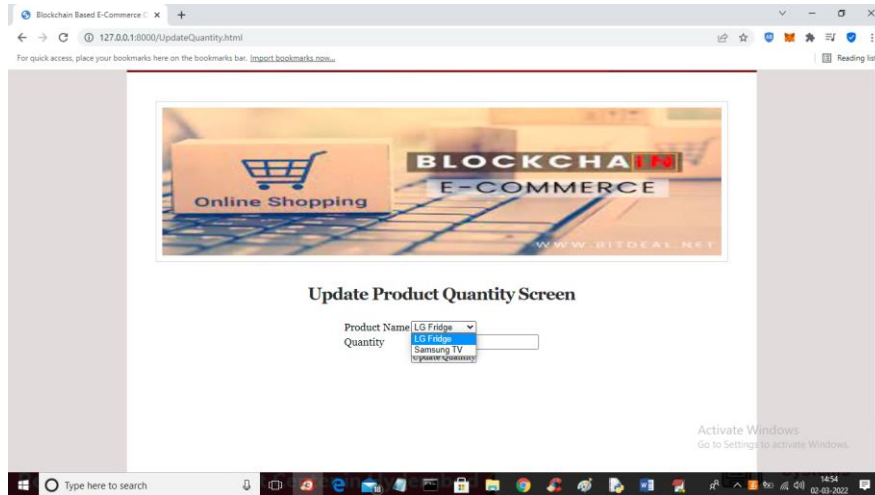
In above screen click on ‘Add New Products’ link to add new product details



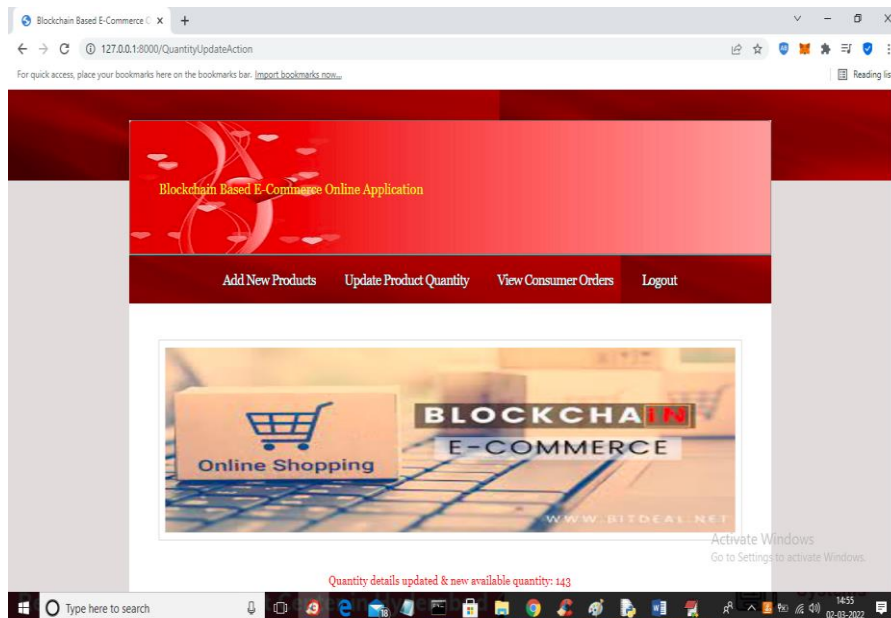
In above screen enter new product details with image and then click on ‘Add Products’ button to add details in Blockchain and get below output



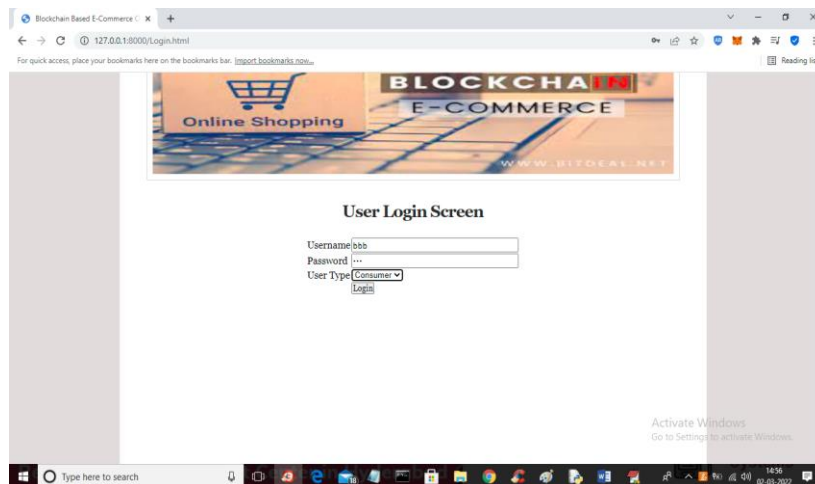
In above screen in blue colour text we can see product details added and we can see hashcode of image where image is stored in IPFS. Similarly you can add any number of projects. Now click on ‘Update Product Quantity’ link to update product quantity.



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’.

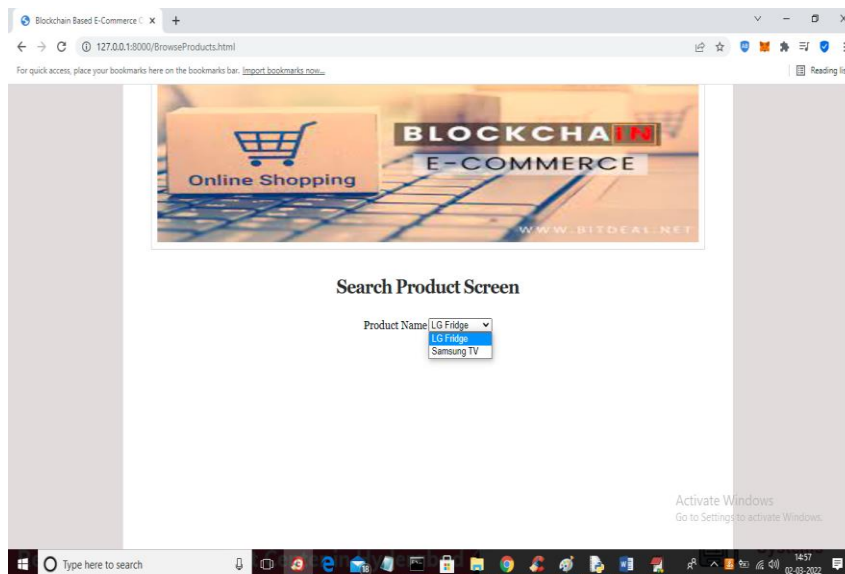




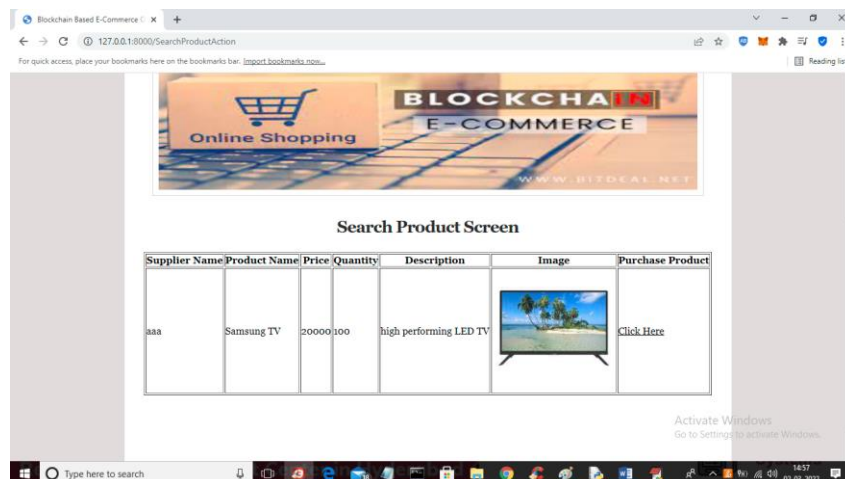
In above screen customer is login and after login will get below screen



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



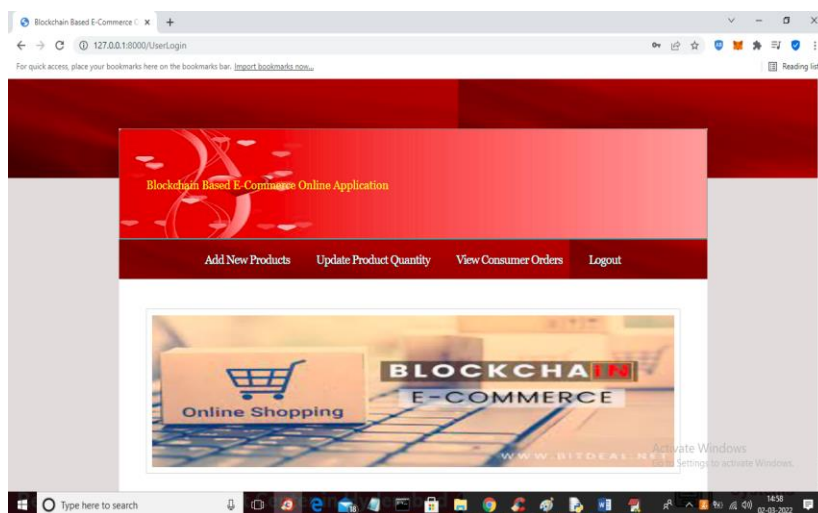
In above screen user can select desired product and press button to get below list of products



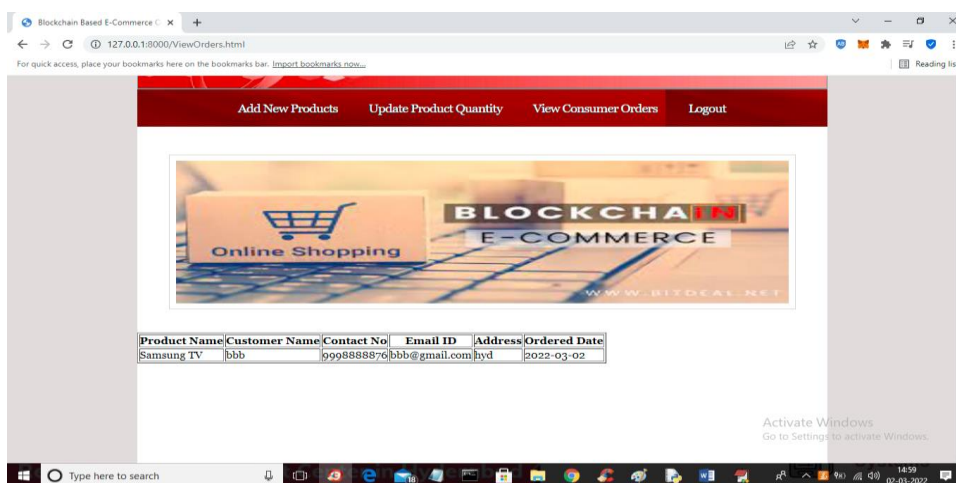
In above screen user can view list of products and then click on ‘Click Here’ link to make an order of this project



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

#### 4. CONCLUSION

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. We have used Blockchain Ethereum with Truffle to 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.

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