FAKE PRODUCT DETECTION USING BLOCK CHAIN TECHNOLOGY

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ABSTRACT

In recent years, Counterfeit products play an important role in product manufacturing industries. This affects the companies name, sales, and profit of the companies. Block chain technology is used to identification of real products and detects fake products. Block chain technology is the distributed, decentralized, and digital ledger that stores transactional information in the form of blocks in many databases which is connected with the chains. Block chain technology is secure technology therefore any block cannot be changed or hacked. By using Block chain technology, customers or users do not need to rely on third-party users for confirmation of product safety. In this project, with emerging trends in mobile and wireless technology, Quick Response (QR) codes provide a robust technique to fight the practice of counterfeiting the products. counterfeit products are detected using a QR code scanner, where a QR code of the product is linked to a Block chain. So this system may be used to store product details and generated unique code of that product as blocks in the database. It collects the unique code from the user and compares the code against entries in the Block chain database. If the code matches, it will give a notification to the customer, otherwise it will give the notification to the customer that the product is fake. Maintain reputation, trust in Product and proof of learning. Nowadays everyone has to show his/her document and QR Code to any other person for some purpose/job. After seeing the document 3rd person cannot validate the originality of the QR Code.
The same thing is applied for a Product registry, PAN card and Aadhaar card verification. The increased focus on relevance and employability may also push us in this direction, as we also need more transparency. We can solve this problem or get trust by using Block chain technology.
The digital currency Bit coin is probably the best known application of block chain and is even better known than the Block chain technology on which it is based [1].The block chain is a chain of blocks and blocks are immutable in a distributed environment, it which storage devices are not all connected to a common processor. It is a database of records/public ledger of all transaction
digital events that have been performed and information is shared within participating parties. Each entry in the system is verified by common consent of the participants in the system. Once information is entered in block chain it cannot be erased. It could provide a system that is transparent and secure. Blocks (Ordered Records) are added to block chain with time stamp and a link to a previous block.
Verifying a diploma/QR Code today takes a good amount of time and requires human resources or human resources to request confirmation of details from Company. A possible solution is Block chain; Block chain for education may be a new concept. By using this technology, No need for a central authority to validate QR Codes. Your college won't have to send you a copy of your transcript and prove to anyone you have your degree.
We are building a platform that will be open, accessible and one piece of software at a time and Customer can get Block chain-based products. Block chain-based Product Products are the digital QR Code and registered on the Ethereum Block chain that will be cryptographically signed and tamper proof). Another person can view the QR Code online, and no3rd party validation is required for these digital QR Codes.

1 INTRODUCTION

1.1 GENERAL CONCEPTS

Now a day, education has become essential part of life, still we need to maintain reputation and trust in Product. Everyone

has to show his/her Document and QR Code to any other person for some purpose/job. After seeing the document 3rd person cannot validate the originality of the QR Code.

Block chain-A Revolution Bigger Than the Internet

The Internet is entering the second era that's based on Block chain [2][3]-the Internet of Value, a new platform to change the world of business. Its solution to the age-old human problem of trust. It provides architecture for so-called trust less trust. It allows user to trust the outputs of the system without trusting any actor within it.

The pace with which this technology is evolving, it's making it difficult for different sectors/domains to keep, without the changes. The world is increasingly getting connected with the amalgamation of connected devices and solutions. So how do we fit in-For truly digitization process in Fintech / Banking and other sectors as well got to be seamless.

“Block chain technology” can be seen as a group of technologies, like a bag of bricks. From the bag, we can takeout brick sand put them together in different ways to create different results.

.2. LITERATURE SURVEY AND RELATED WORK

2.1 BLOCKCHAIN:

Since its 2008 appearance as a corner stone of the crypto currency Bit coin, the block chain technology gained wide spread attention as a modality to securely validate and store information without a trusted third party[6]. Block chain is a decentralized transaction and data management technology developed first for Bit coin crypto currency[7]. Block chain features a decentralized and in corruptible database that has high potential for adiverse range of uses[8].

A block chain, originally block chain, is a continuously growing list of records, called blocks, which are linked and secured using cryptography. Each block typically contains a cryptographic hash of the previous block, a time stamp and transaction data. By design, a block chain is in he rently resistant to modification of the data. It is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".

Block chain is a decentralized ledger used to securely exchange digital currency, perform deals and transactions [8]and managed by peer to peer networks. All nodes follow same protocol for inter-node communication and validating new blocks. Once data is validated in any block it cannot be altered by any block. To alter particular block data all subsequent block data should be altered that will result in collusion of the network and that transaction will be rejected by all nodes.

In 2008, Satoshi Nakamoto invented the block chain forth use of crypto currency and Bit coin was its 1stimplementation. Bit coin was the 1stpublic transaction ledger. The invention of this currency solved the double-spending problem without the need of a 3rdparty. After that other crypto currency were invented on same concept.

In short, a block chain is a distributed database that contains a list of records(data).Distributed means that instead of being stored on a central device somewhere, the entire database is actively synced and stored on a bunch of other devices. This is called a peer-to-peer network, much like how Napster was a peer-to-peer network for sharing music files

The main advantage this technology provides is its ability to exchange transactions without relying on trusted third party entities of any means. It can also provide data integrity, in-built authenticity and user transparency [9].

2.1.1 Blocks

A block contains set of valid transactions that are in hash form and make a Merkle Tree. Each block typically contains a hash pointer as a link to a previous block, a timestamp and transaction data. By design, block chains are in rently resistant to modification of the data [11]. This linking forms a block of chain. This process is iterative and that confirms that previous block is reliable and correct. In this way we can go back to genesis block.

2.1.2 Block time

In block chain block time refers to the time when network can create 1 more block in the chain. It time vary from block chain to block chain some block chain allows new block as frequently as every five seconds. This time also include the time in which data becomes verifiable. In crypto currency term shorter block time means faster transaction. In Ethereum Block chain Block time is approximate14~15seconds, while for Bitcoin is approx10 minutes.

2.1.3 Decentralization

Blocks are stored in different locations(nodes) so block chain eliminates a number of risks which comes if data is in single location/storage .In which we don’t thaveno central point of failure. Data stored on the block chain is generally considered in corruptible, while centralized data is more easily controlled, information and data manipulation are possible.

2.2 BLOCK CHAIN WORKING:

Block chain can be considered as the "Internet of value". On the Internet, anyone can write data and others can read it. In terms of crypto currency Keys fills the role of recording the transfer, which is traditionally carried out by banks. It also fills a second role, establishing trust and identity, because no one can edit a block chain. The major functions carried out by banks-verifying identities to prevent fraud and then recording legitimate transactions-can be carried out by a block chain more quickly and accurately.

Block orders in a block chain

Block chain can be considered as a book where, Blocks in a chain = pages in a book A book has number of pages and each page contains:

- The text: the information/data.
- Information about itself: Chapter number, Title or Page number which tells where we are in the book

Similarly, in a block wqx chain block, each block has

- The contents of the block, for Verify in Bit coin are it the Bit coin transactions and the miner incentive reward.
- Headers which contain the data about the block. It includes some technical information about the block, a reference to the previous block, and a fingerprint (hash) of the data contained in this block.

3 EXISTING SYSTEM

- Generate the electronic file of a paper QR Code.
- And calculate the hash value for it and store the hash value into the block.
- The system create a QR-code string code to affix to the paper QR Code.
- Used to verify the authenticity of the paper QR Code through. Mobile phone scanning,

Disadvantages of existing system:

- QR-code must be scanned with smart phone and internet connection is also required.
- Hyper ledger cannot use public block chain because of privacy and low scalability.

Hyper ledger preferred platform only for B2B business

4 PROPOSED WORK AND ALGORITHM

DIGITIAL QR CODE GENERATION:

If Customer have an option to give verify on web base portal, after completion of verify, results/QR Code is saved on Block chain. In this case other person can view the QR Code online and no 3rd party validation is required for these digital QR Codes.

We are proposing a web base portal for university/college/institution and Customer that will provide option to Company to get QR Code on block chain and minimize the option of fraud and duplicate education QR Code.

Block chain-based Product are registered on the Ethereum Block chain that will be secure and tamper proof as data cannot be erased/Rewrite on block chain server. Since a block chain is a permanent record of transactions that are distributed, every transaction can irrefutably be traced back to exactly when and where it happened. In addition, past transaction cannot be changed, while the present cant be hacked, because every transaction is verified by every single node in the network.

In this web-based portal, Company and admin(university/Institution)will have login access and other than Company and admin can view verify details and verify QR Code. It will have below two major parts,

- Company can select course, give verifys and after successful completion can get QR Code on block chain.
- Admin can manage Company, courses papers and question bank and can generate QR Code on block chain.

5 METHODOLOGIES

MODULES

User Interfaces:

User interface design which we use to this project is Anaconda and Python studio.

For server communication we develop an IDE using Anaconda.

Using Python studio we develop an Python application to share and scan the QR code. Testrpc is a Node.js based Ethereum client for testing and development.

It uses ethereumjs to simulate full client behavior and make developing Ethereum applications.

Block Creation:

A block is a container data structure. The average size of a block seems to be 1MB (source).

Here every QR Codes number will be created as a block.

For every block an hash code will generate for security.

Python Based Block chain code generation:

In this module, based on QR Code numbers Block code will generate.

While creating block chain code user can increase the count based on their needs.

The major advantage of this module user can share the Block chain code to another person in case of necessity.

When user scan the QR Code an OTP will be send to the registered mobile for verification.

verification

In this module user will upload the QR Codes like Products and so on.

Before upload ,those QR Codes will verified by the corresponding sector ,if we upload school QR Code, the QR Code number will check with corresponds school database server if that QR Code is verified after that it will stored on server otherwise it will discard.

NORMALIZATION

It is a process of converting a relation to a standard form. The process is used to handle the problems that can arise due to data redundancy i.e. repetition of data in the database, maintain data integrity as well as handling problems that can arise due to insertion, updating, deletion anomalies.

Decomposing is the process of splitting relations into multiple relations to eliminate anomalies and maintain anomalies and maintain data integrity. To do this we use normal forms or rules for structuring relation.

Insertion anomaly: Inability to add data to the database due to absence of other data.

Deletion anomaly: Unintended loss of data due to deletion of other data.

Update anomaly: Data inconsistency resulting from data redundancy and partial update

Normal Forms: These are the rules for structuring relations that eliminate anomalies.

6 RESULTS AND DISCUSSION

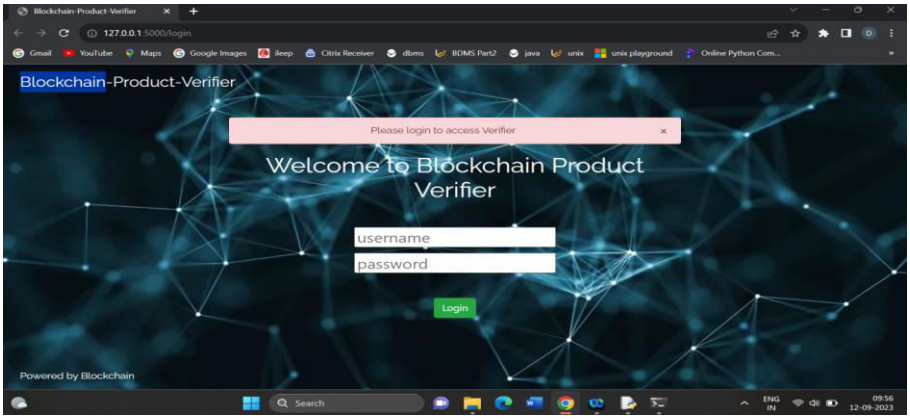

Fig 1: Login page to access verifier, we have to give username and password

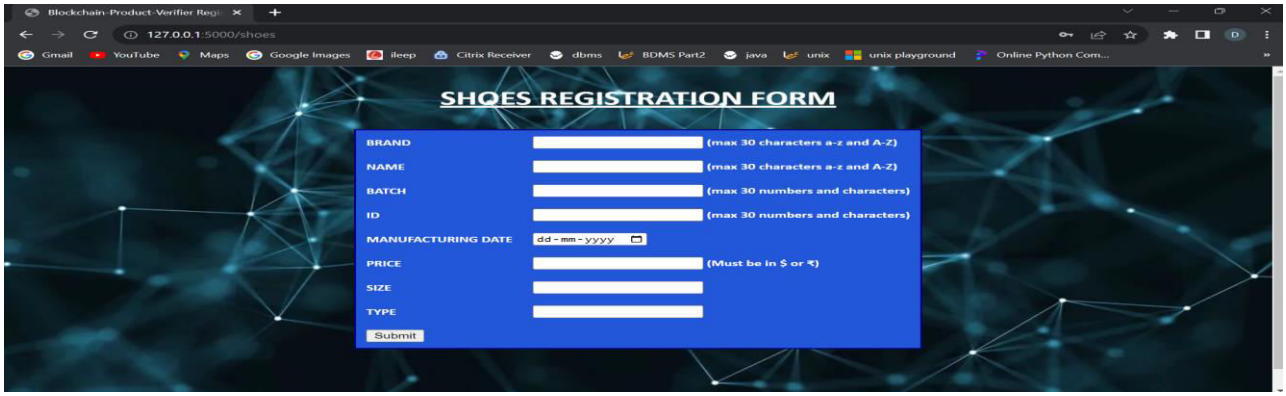

Fig 2: Registration form is open as shown below and fill up the details:

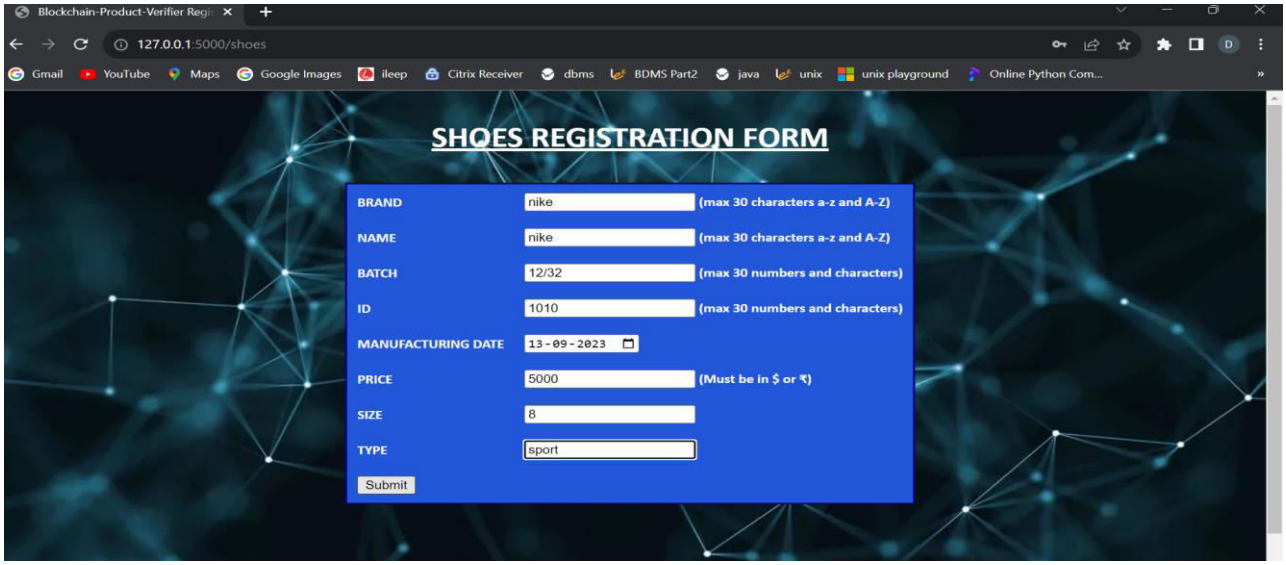

Fig 3: Fill the registration form with the details ;

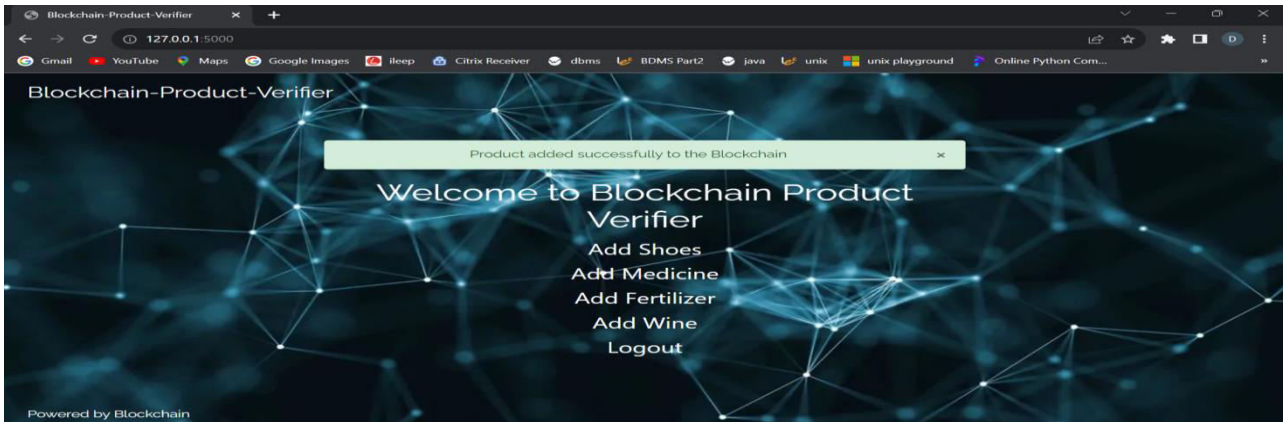

Fig 4: After adding the product to the block chain a QR Code is generated and it is verified by using

Fig 5: QR coder verifier as shown below and a link is generated.

Fig 6: After generating the link a code is generated as shown on below screen

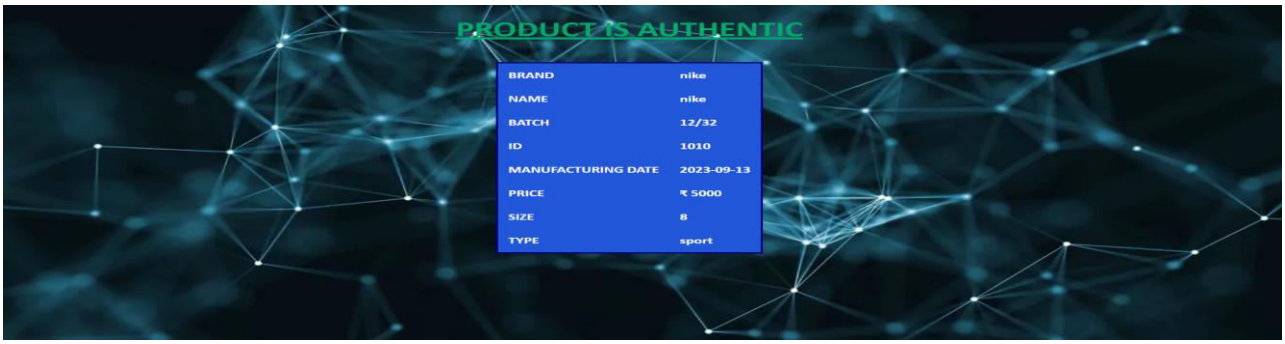

Fig 8: After verification the below screen is displayed; if the product is real

Fig 9: The below screen is displayed if the product is Fake product;

7.CONCLUSION AND FUTURE SCOPE

As of now we are using internet (which is decentralized online platform)to sharing information.
But when we transfer money; we are using old-fashioned, centralized financial establishments like banks. In other areas we are also using centralized system to share information (like education- where university has full control).
Block chain technology provides a way to eliminate this "middleman/central authority. It does this by filling three important roles– recording transactions, establishing identity and establishing contracts. Information security is one of the most important features of Block chain[6].
Block chain can be used to store any type of digital information(e.g. computer code) rather than crypto currency usages. Previous work in the field of the block chain, which is mainly focused on the crypto currency and its mining. In 2017,the block chain rose to a high level, Most of the attention has been on crypto currencies such as Bit coin and Ethereum as investors try to catch the next wave. Now it is going to different sector-Education, Product registry, Banking Share marking….
For truly digitization process in Banking and other sectors, we can use Block chain technology as a base. It will build trust and provide a way that someone can verify the other person documents in less time and validate the originality.
If we use block chain in Education/Product Registry/ID card verification/Banking sector, then it
will be a "1st step towards corruption free country."
FUTURE SCOPE :
Use of machine learning algorithms to identify patterns and analogies. Development of block chain increases the scalability and efficiency and also decentralized product verification mechanism is developed. Verify the authenticity of products and enabling the prompt identification of any fraudulent activity

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