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A STUDY OF BLOCK CHAIN TECHNOLOGY IN FARMER'S PORTAL

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ABSTRACT

Everyone who uses the service contributes to and keeps a copy of the transaction record stored on the blockchain. Cattle ranches, stocks, and agreements may be reliably tracked with this reliable data, even if collecting it can be prohibitively costly at times. Blockchain technology helps build trustworthy food supply chains by tracing its origins, which in turn builds confidence between consumers and producers. Using data-driven technologies to improve agricultural productivity is made easier by this dependable technique of storing information. When paired with smart contracts, changes to data stored on the blockchain have the potential to prompt parties to compensate each other in a timely manner. This article takes a look at the potential academic and practical applications of blockchain technology in the following areas: agricultural commodities procurement, smart farming, insurance for farmers, and food supply networks. Next, we'll go over some of the challenges that smallholder farmers have when trying to keep tabs on their financial dealings and build the necessary infrastructure to use blockchain technology in the food and agriculture industries.

CHAPTER-1

INTRODUCTION

Presenting the Latest Advocates for better farming practices and fresh ideas are calling for a more transparent and accountable agricultural market. Many innovative products have just hit the market, and blockchain technology is only one of them. Unlike current monopolistic and centralised agricultural administration methods, blockchain provides a decentralised information framework to exchange and retrieve data. In this manner, it can handle a plethora of major issues with current systems. I. The ease with which hackers can compromise the main system and

compromise information honesty. II. The risk that expert changes to the centralised data source might compromise information security. III. The fact that supply chain monitoring systems rely too much on the main source, which creates a single factor failure concern. IV. The high costs associated with relying on a third party to validate and monitor deals. In response to these issues, distributed databases that use cutting-edge file encryption have gained popularity in recent years. Among the most well-known new approaches to fixing the dependencies that have arisen since Bitcoin's start in 2008, blockchain technology ranks high [1].

Blockchain technology incorporates several complex computational and cryptographic techniques into a distributed data structure to build an electronic trust system in a trusted environment [2]. In particular, the hash function—a mathematical way for producing unique IDs—is used as the critical component for data verification. To guarantee data integrity, hash values may be added to a saved chain style to verify any manipulation of the preserved data. Verifying the identity of individuals linked to stored purchases is one use of electronic trademarks. With an agreement method in place to involve all nodes in the computer system, there is less danger of details being governed by minority attackers.

Among the several agricultural systems that can benefit from blockchain implementations are supply chain [3] and IoT based systems [4]. Food safety and security [5], food quality monitoring and management [7], food waste reduction [8], accurate functional detail examination [9], and assistance to small-scale farmers [10] through agreement exchanges and transactions that reduce economic prices [11] are some examples of these uses. These applications may be readily built and assessed by using pre-existing blockchain platforms. The ability to satisfy unique needs, depending on the launch challenges of these apps, is made possible by attaching alternative computational and cryptographic approaches.

This research takes a close look at blockchain-based agricultural applications, as well as recent developments in the promotion of blockchain technologies. Our basic introduction to blockchain innovation, description of the data storage space environment, and examination of the most significant platforms now available are all necessary prerequisites before delving into the inner workings of these apps. In keeping with that, we provide a comprehensive review of several blockchain applications in agricultural practices. Following the research, we need to look at the

ways in which the present difficulties in implementing the systems might be addressed, as well as the potential presented by the new technology that is just starting to emerge. Also, there's a picture that shows how blockchain technology may be improved to create a much more trustworthy and dependable food supply chain in the future.

We base our assessment on preexisting compositions. We have used a thorough approach to look for literary works. The systematic approach requires us to first collect all relevant research articles by searching Google Scholar and several electronic databases, such as Open Athens, IEEE Xplore, and Scientific Research Direct, for appropriate styles. Several keywords were used to collect relevant job opportunities, including information stability, traceability, provenance, and IPFS with blockchain. Agricultural applications, supply chain management, blockchain for the web of things, and blockchain for the internet of things were other pertinent phrases. Use all of these keyword phrases in different combinations to assure the completion of an information event. We must undertake a comprehensive literature review in order to answer the following three important research questions: (1) How can blockchain technology now often be put to use in farming-related tasks? (2) Which problems do these blockchain applications claim to solve most effectively when they first come out? Also, what are some possible ways to overcome these obstacles? Thirdly, how can we improve blockchain technology to build a more reliable and efficient food supply chain in the future? A blockchain-based COVID-19 pandemic supply chain solution to improve source allowance during emergency circumstance monitoring, including unanticipated incidents, is an impressive piece of work for the following reasons: (i) it analyses blockchain's current and future uses in farming; (ii) it lays out our suitable blockchain architecture for the agriculture field based on an image of blockchain's technical components; (iii) it provides a better understanding of the key challenges in different n Notwithstanding the proliferation of new blockchain research publications in the last several years [12]–[21], our work continues to provide extensive research in the agricultural environment. We are able to put our knowledge to use in this job by suggesting the best strategies and methods for specific agricultural situations, which encompasses both academic and practical aspects. The organisation of this article is designed to follow these guidelines: The computational and cryptographic equations of modern blockchain technology are detailed in Location II. Area III's most current blockchain applications are categorised and examined. Section IV addresses the testimony and

goes into the pros and cons of combining blockchain technology with other new developments. Furthermore, we provide a visual representation of the particular blockchain implementation in a practical context in Location V, which is an improvement. Section VI concludes the article and offers further job-related advice.

CHAPTER-2

LITERTAURE SUREVY

TITTLE :

Every user of the service adds to and maintains their own copy of the blockchain's record of transactions. Even though collecting this reliable data might be expensive at times, cattle ranches, stocks, and arrangements can be reliably monitored with it. By tracing its roots, blockchain technology aids in the development of trustworthy food supply chains, which in turn fosters trust between producers and buyers. Using this trustworthy method of data storage, data-driven innovations may be more easily implemented to boost agricultural output. Modifications to data stored on the blockchain, in conjunction with smart contracts, may encourage parties to promptly settle their differences. Agricultural commodities purchasing, smart farming, farmer insurance, and food supply networks are some of the areas that this article examines in terms of the possible academic and practical uses of blockchain technology. First, we'll take a look at some of the challenges smallholder farmers have when trying to maintain financial records and build the infrastructure to use blockchain technology in agriculture and food production.

The First Stage

Presenting Cutting-Edge A more transparent and accountable agricultural market is what advocates for new and improved farming methods are requesting. Blockchain technology is only one of several novel items that have just entered the market. The distributed ledger technology (blockchain) offers an alternative to the current monopolistic and centralised methods of farm management. This way, it can handle a plethora of serious issues with existing systems. I. Cyberpunks may easily compromise information honesty and put the main system at risk. II. The risk that technical updates to the consolidated data repository might compromise data integrity

and availability. Thirdly, there is a concern of a single component failing since supply chain monitoring systems depend too much on the main source. Fourthly, there are substantial expenses associated with using a third party to verify and monitor proposals. A solution to these issues is the rise in popularity of distributed databases that use strong file encryption. Among the most well-liked new methods for handling the dependencies that have emerged since Bitcoin's inception in 2008, blockchain technology ranks highly. [1]

A distributed ledger system that uses advanced computational and cryptographic methods to build a reliable electronic system in an honest setting is the result of blockchain technology [2]. The hash function, a mathematical tool for producing unique identifiers, is used as the critical component for data validation. Adding hash values to a conserved chain style verifies any modification to the stored information, which ensures data stability. Electronic hallmarks have many uses, one of which is confirming the identification of individuals associated with stored acquisitions. The risk of information control by minority attackers is significantly reduced when an agreement procedure is implemented to incorporate all nodes in the computer system.

Supply chain [3] and Internet of Things [4] based systems are only two of many agricultural systems that might use blockchain implementations. Some examples of these applications include food security and protection [5], tracking and monitoring of food quality [7], decreasing food waste [8], evaluating functional details precisely [9], and assisting small farmers [10] with arrangement trades and purchases that reduce economic prices [11]. Utilising pre-existing blockchain technologies might make the construction and evaluation of these applications easy. Attaching alternate computational and cryptographic procedures enables the capacity to satisfy particular needs depending on the launch problems of these applications.

Applications of blockchain technology in agriculture and the current uptick in the promotion of blockchain developments are the focus of this research study. Before understanding how these apps work inside, you must have studied our usual introduction to blockchain development, a synopsis of the data storage area environment, and an assessment of one of the most significant systems now accessible. We provide a thorough analysis of several blockchain uses in farming techniques in order to preserve that. Consistent with the study, we need to examine both the current challenges in implementing the systems and the opportunities presented by the emerging

new technologies. On top of that, there's a visual representation of how blockchain technology may be improved to create a future food supply chain that is significantly more reliable and trustworthy.

Our assessment is based on established frameworks. We have really used a comprehensive approach to seek out compositions. The systematic strategy requires us to gather all relevant research publications by searching Google Scholar and many electronic databases for relevant styles, such as Open Athens, IEEE Xplore, and Scientific Study Direct. Information privacy and security (IPFS), blockchain, provenance, and traceability were some of the keywords utilised to find suitable employment possibilities. Blockchain technology has several significant uses, including in agriculture, supply chain management, the network of things, and the web of points. You may assure the completion of an information event by using all of these keyword expressions in various combinations. In order to address these three critical questions about the study, we need to do a comprehensive literature review: (1) What are some ways that blockchain technology may be used to common agricultural tasks? (2) When first released, which issues do these blockchain apps claim to effectively address? What are some potential ways to get beyond these obstacles, too? The third question is: how can we improve blockchain technology to create a future food supply chain that is both secure and economical? A COVID-19 pandemic supply chain solution based on blockchain technology to increase resource allocation in times of emergency This work is great for a number of reasons, including the following: (i) it assesses the current and future uses of blockchain in agriculture; (ii) it describes the blockchain architecture that is most suited to the agricultural sector using an image of its technical components; and (iii) it clarifies the main challenges in different Our work continues to deliver substantial research in the agricultural environment, despite the fact that fresh blockchain research studies have proliferated in the recent few years [12]-- [21]. By recommending the most effective methods and approaches for specific agricultural situations, we are able to put our knowledge to use in this position, which involves both theoretical and practical considerations. The structure of this article is made to follow these guidelines: In Location II, the computational and cryptographic equations underlying contemporary blockchain technology are described. In Section III, we classify and analyse several of the current blockchain applications. In Section IV, we discuss the evidence and go into the benefits and drawbacks of integrating blockchain technology with other

cutting-edge innovations. Furthermore, as an improvement, we provide a graph of the specific blockchain implementation in a reasonable context in Area V. The article concludes with Section VI, which offers more guidance for the workplace.

HARDWARE & SOFTWARE REQUIREMENTS:

HARDWARE REQUIRMENTS :

- System : i3 or above.
- Ram : 4 GB.
- Hard Disk : 40 GB

SOFTWARE REQUIRMENTS :

- Operating system : Windows8 or Above.
- Coding Language : python

SYSTEM STUDY FEASIBILITY STUDY

Here we provide you with a rough estimate of how much the project will cost, what we want to achieve, and how long it will take to complete. You should keep the proposed system's practicability in mind throughout the review process. Our primary objective is to determine the business's safety in relation to the proposed technology. Prior knowledge of the system's key requirements is required for an expediency analysis.

When doing the expediency analysis, remember these three points above all others:

Invest Less Money Familiarity with Current Technology and How It Is Used in Social Media

What may be a financial benefit

The primary objective of this research is to assess the potential monetary impact of the system on businesses. There is a limit to how much money the corporation may invest in the system's development. An explanation must be provided for every single dollar. Given how readily available the technology used is now, it should come as no surprise that the industrialised system came under budget due to this. Purchasing just the customised items was of utmost

importance.

The possibility of progress

Determining whether the system is technically possible is the main question driving this study. The current technological resources should not be overloaded by any intended system. Current technical capabilities aren't up to the task. Consequently, the customer is likely to have high expectations. The little effort required to update the present system is the basis for the low demand predictions.

THE EFFICACY OF ITS NETWORK

An important aspect of research is studying how users adjust to the system. Giving the user the training they need to get the most out of the technology is a part of this process. The system's image among users has to change from that of an enemy to that of a necessary utility. An individual's level of comfort with a system is proportional to the quality of their first introduction and subsequent education about it. He should feel comfortable offering constructive comments as he will be the one using the system ultimately.

The 4.1 version of the Unified Modelling Language (UML) diagram

"Unified Modelling Language" is the abbreviation for UML. The universally accepted standard for developing object-oriented software programmed is Uniform modelling Language (UML), a general-purpose modelling language. The item administration group is in charge of making and overseeing the item.

Making UML the de facto language for object-oriented software expression is one of its long-term objectives. Current UML consists mostly of a meta-model and a collection of rules. Unified Modelling Language (UML) might be enhanced in the future by either including more processes and techniques or by enhancing its integration with existing ones.

The Unified Modelling Language allows for the description, visualisation, construction, and documentation of any system's products, not only software. Service modelling is one of several non-software systems that fall under this category.

Using the Unified Modelling Language (UML) is a great way to create complex systems for enterprises.

It is important to use the Unified Modelling Language (UML) while developing software systems that prioritise things. Visual notations play a significant role in the Unified Modelling Language (UML) for representing software project design.

Getting to

From a structural viewpoint, the primary objectives of the UML are: 1. Create and share meaningful versions more easily by making available a language for expressive aesthetic modelling that is ready to use.

2. Allow domain-specific frameworks and some leeway to expand upon the fundamental concepts.

Third, play around with different development environments and programming languages.

You will have a better understanding of the modelling language by building an organised model.

5. Promote the expansion of the market for OO tools.

Frameworks, components, collaboration, and patterns are a few instances of more complex development concepts that need support.

Apply what has been shown to work. 7.

As an example of a UML behaviour diagram, a use-situation diagram is built and generated using use-case analysis. The purpose of this diagram is to show how a system's

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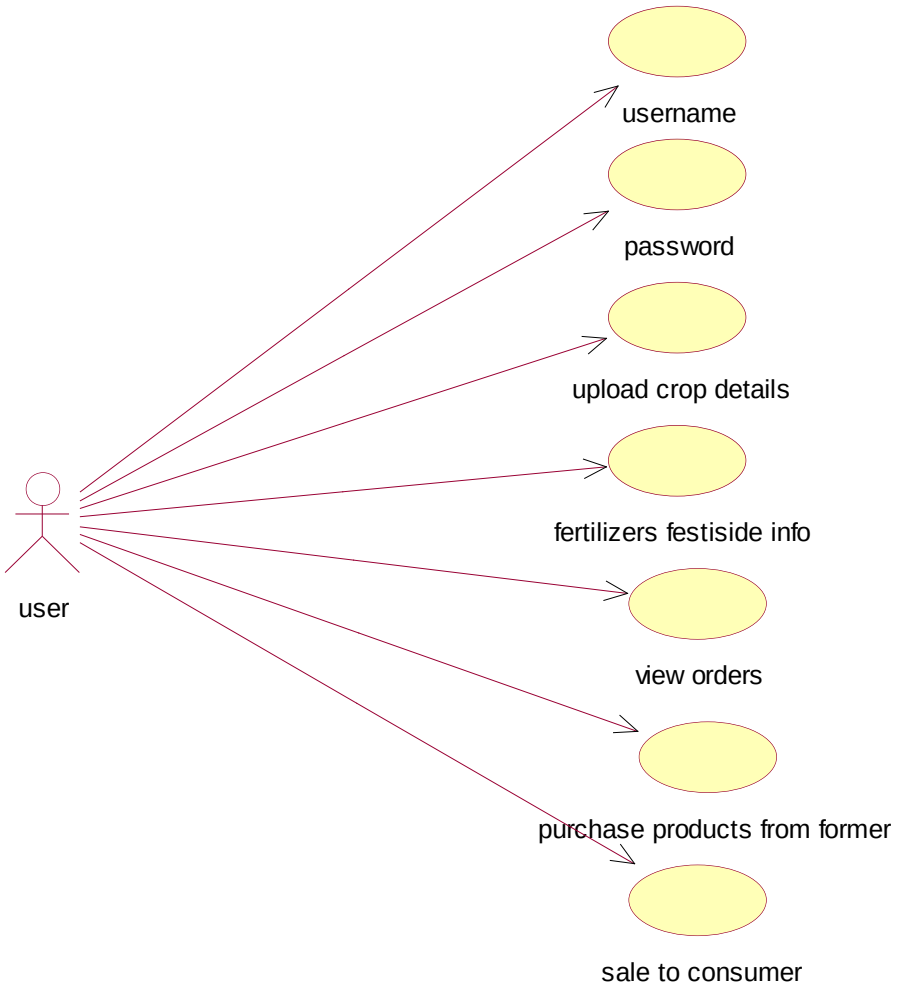
capabilities, specific goals, and the stars all work together. Usecase diagrams are great for quickly identifying who is responsible for what in a system. You can see the system's operation and the role of each component.



CLASS DIAGRAM:

Along computer program construction, some one group chart on the inside of the model transformation pronunciation (uml) is just a sort of stationary contour schematic the said defines its formation of either a scheme by the use of trying to show its machine's coaching, there own

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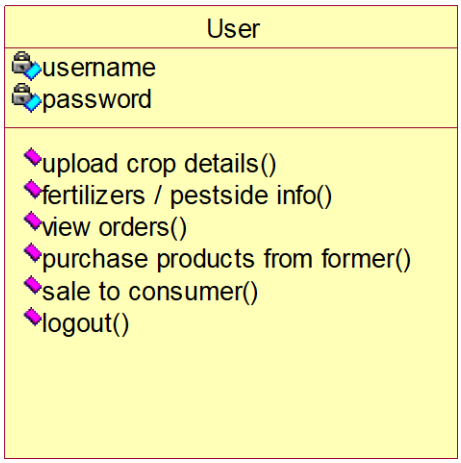
qualities, activities (or techniques), as well as the connections almost all of the directions. This describes that also category wants to carry facts.



SEQUENCE DIAGRAM:

One sequence schematic through computer aided pronunciation (uml) is just a kind of interactions graph a certain signifies why process related undertake with one another under what command. This is a concoct of such a sequence line graph. Flowcharts sometimes are often called sequence diagram, event possible outcomes, but also ensuring timely bldcm.

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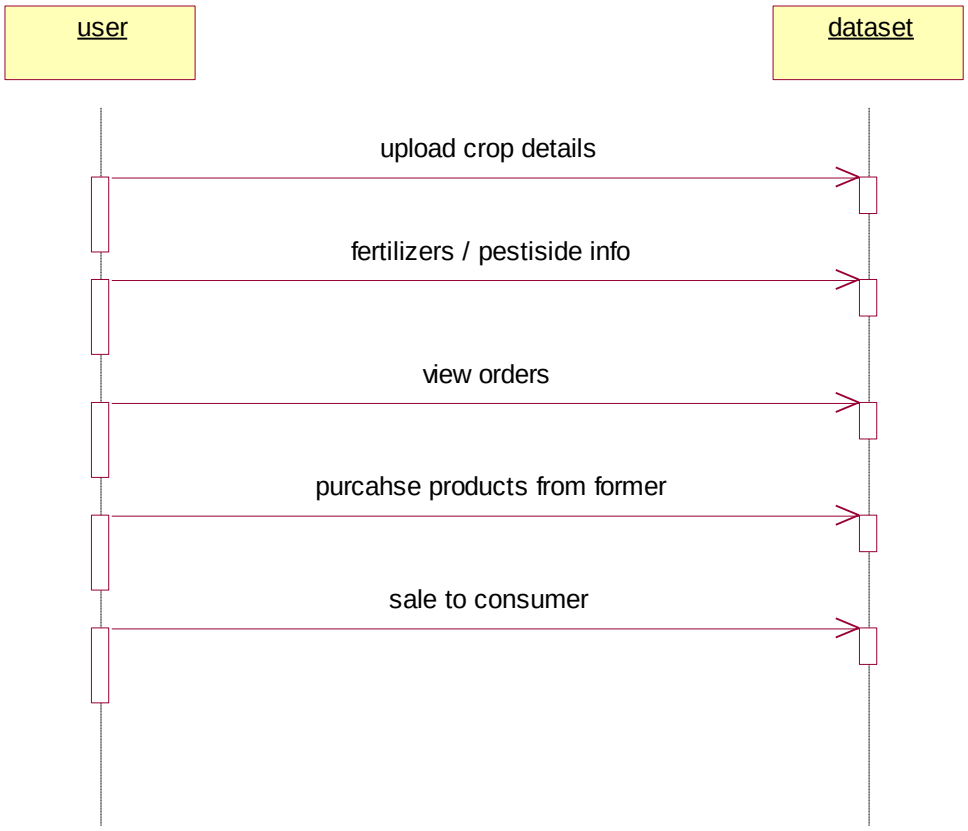

COLLABRATION DIAGRAM:

Flow charts have been visualization tools like workflow management yeah systematic actions as well as moves of aid such as wish, incarnation but also multithreaded. With in model transformation pronunciation, flow charts could be used to clarify this same firm as well as functional step-via-step workflow management after all sub - assemblies inside a sensor. A kind form of recreation diagram indicates the general sliding like maintain.

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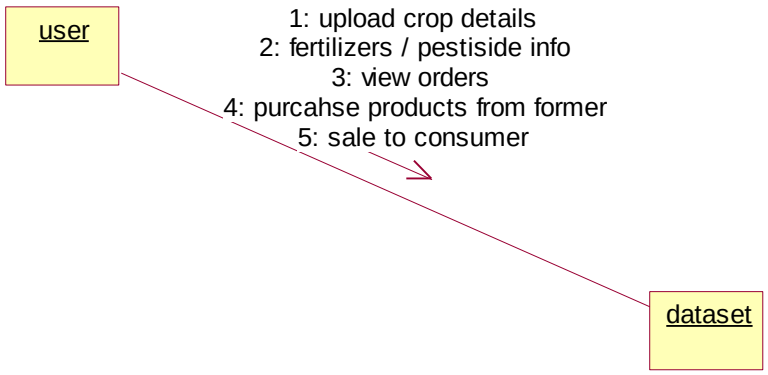

IMPLEMENTATION:

MODULES:

Upload crop details

Fertilizers /pestiside info

View orders

Purchase products from customer

Sale to consumer

SOFTWARE ENVIRONMENT

Some interesting facts about Python that you may not be aware of are these.

Python has surpassed all others as the go-to language for high-level, general-purpose code.

Python can accommodate both object-oriented and procedural programming styles. When compared to Java programmes, Python ones often leave less of a trace.

Since the language adheres to strict indentation constraints, code will never be overrun and will remain readable at all times.

Many well-known internet companies utilise Python, such as Google, Amazon, Facebook, Instagram, Dropbox, Uber, and many more.

Among Python's numerous strengths is its large standard library, which is pre-installed and provides support for a wide range of tasks, such as -

"Learning by Machines"

Some examples of programming languages used to create user interface applications include Python, Tkinter, and PyQt.

The Django framework is one example of a programme; Dropbox, Instagram, and YouTube all utilise it.

Software for processing images includes Pillow and OpenCV.

Web crawling platforms such as Selenium, BeautifulSoup, and Scrapy

Evaluation standards

Regarding the media files

Python has several advantages:

Examine Python's performance in comparison to other languages.

1. Quite a few novels

Web browsers, regular expressions, databases, CGI, email, and image processing are just a few of the many valuable features included in Python's core code. We won't have to start from scratch since it is open-source and available for free download.

2. Extremely versatile

It has already been shown that Python is easily extensible to accommodate other languages. You have the choice between two languages while you're writing code: C++ and C. Projects rely on this tool.

3. Simplified integration

The fact that Python can be enhanced and integrated is an additional perk. Python code may be found embedded in C++ and other languages' source codes. This is an opportunity for our other-language project to include scripting features.

4. Increase Efficiency

Compared to Java or C++, this language gives programmers more leeway thanks to its user-friendliness and extensive library. A writer's ongoing objective should be to find ways to do more with less.

5. Activities That Can Be Performed By Networked Devices

For the IoT, this is promising news as Python powers state-of-the-art hardware like Raspberry Pi. People will start to use the phrase more often in this way.

Java programmers may need to create classes before they can print "Hello World" to the console. Python, on the other hand, requires little more than a textual statement. Everything from getting it to operate to comprehending it to picking it up is easy. This is one reason why Python is less verbose and so simpler to learn than other languages.

7. A breeze to read

Similar to English, Python does not make extensive use of terms that are not necessary. This makes it an excellent tool for learning, coding, and understanding. Making blocks without curly brackets is still possible; you just need to indent them properly. The outcome is an improvement in code readability.

8. With respect to the language

Both object-oriented and procedural approaches are compatible with this language. We can mimic reality using classes and objects, but functions make code easier to understand and use. Classes allow for the encapsulation of data and methods into a single object.

9. Totally Free and Open Source

Python, as I said before, can be downloaded for free. Since Python is open source, anybody may download it, make changes to it, and then share it. Behind that, you may even be able to view the code. Many useful tools have been pre-installed to make your workday easier.

10. Portable

If your project was written in a language like C++, it may be necessary to make certain modifications in order to make it compatible with several platforms. Even though that's not how Python typically works. It is sufficient to create the code simply once before executing it in another location. Always have the saying "Write Once, Run Anywhere" handy. Be wary about adding features that are dependent on the system.

11. Interpreted

As a last point, remember that this language relies heavily on interpretation. Due to the sequential execution of instructions, imperative languages are easier to debug than compiled ones.

Has Python's usefulness been thrown into question so far? Here in the comments section is where you have the option to do it, if desired.

Python Is Superior to Its Rivals in Many Ways:

1. System Maintenance

Python has a much lower code-to-function ratio than other languages for almost all jobs. Due to Python's great support for its standard libraries, you won't need to look for any extra libraries to finish your project. Python is often suggested to those who are just beginning their career in this field because of this very reason.

2. Reasonably priced

Since Python is free and open source, anybody from one-man businesses to multinational corporations may use it to construct apps. Python is widely used and has a huge user base, therefore you may expect greater community help while using it.

The 2019 annual report from Github states that Python has surpassed Java in terms of popularity.

3. Python: A Complete Newbie Can Master It

Python applications can run on the three most common OSes: Linux, macOS X, and Windows. Python has several frequent applications, including data analysis, online scraping, process automation, internet programming, game development, and complicated visualisation. Meanwhile, programmers may sometimes encounter the need to be proficient in languages other than Python. They say it's a programming language that's compatible with everything.

Knowledge of the Python programming language

For the most part, Python has served your project well so far. Think about the consequences of your actions before you perform them. In order to find Python's shortcomings, let's compare it to other languages.

1. Travel Time Limitations

Line by line execution is the hallmark of Python programmes. But Python's slow performance stems from its interpret-ability. You won't see any results from this until the clock is ticking. Python has many benefits, therefore its slowness won't be a problem unless speed is very crucial.

2. Poor performance on mobile devices and web browsers.

Despite Python's fame as a server-side language, developers seldom use it for client-side tasks. Making applications for mobile devices is another nonstandard usage. Consider the Carbonnelle scheme for illustration purposes.

Security concerns have prevented Brython from gaining popularity, despite the language's ease of use.

3. Principles and Standards

You may be aware that Python makes use of dynamic typing. This means that you may skip telling the code generator what kinds of variables to use. We should start with duck-typing. Would you be so kind as to provide me further details? Ducks, even when they're good at hiding, are still ducks. Runtime presents developers with unique challenges, but generally speaking, the procedure is simpler.

4. Incomplete database access on several tiers

Python has to modernise its database access layers to compete with other widely used technologies such as ODBC and JDBC. Because of this, major companies stay away from it whenever possible.

5. Vintage Style -

Attention, everyone. This is a big deal. The fact that Python is quite easy to use could actually work against it in certain situations. Witness my deeds. When compared to Java, Python is far more approachable and simpler for programmers with less experience. I fail to see the rationale for the code's verbosity given how simple Java is.

The pros and cons of Python have been covered in a plethora of publications.

Python development: -

What does the connection between the alphabetic symbols have to do with Python, a computer language? Starting with the letter ABC, both of them are suitable. In this context, Python is obviously referring to the computer language ABC. The Abc programming language and environment were developed by the Dutch Institute of Computer Science and Information Technology (CWI). Particularly in the late '80s, ABC influenced Python's architecture. Guido van Rossum developed the Amoeba distributed OS when he was a student at the CWI. In an interview with Bill Venners1, Guido van Rossum said: "In the early 1980s, I worked as an implementer on a team building a language called ABC at Centrum voor Wiskunde en Informatica (CWI). I don't know how well people know ABC's influence on Python. I try to mention ABC's influence because I'm indebted to everything I learned during that project and to the people who worked on it."Later on in the same

Interview, Guido van Rossum continued: "I remembered all my experience and some of my frustration with ABC. I decided to try to design a simple scripting language that possessed some of ABC's better properties, but without its problems. So I started typing. I created a simple virtual machine, a simple parser, and a simple runtime. I made my own version of the various ABC parts that I liked. I created a basic syntax, used indentation for statement grouping instead of curly braces or begin-end blocks, and developed a small number of powerful data types: a hash table (or dictionary, as we call it), a list, strings, and numbers."

Here is what machine learning is: -

Understanding the nature and limitations of machine learning is necessary before delving into the specifics of the various methods. Classification has the risk of giving the wrong idea, even if machine learning is often considered a branch of AI. Despite its undeniable status as the mother of machine learning, it is more practical to see it as a data science instrument for building models.

Machine learning relies on mathematical models. The term "learning" is used when these models include parameters that may be changed depending on the data that has been seen. It is plausible to assume that the software is "learning" from its mistakes. After learning from past data, these models can understand the characteristics of new data and use them to generate predictions. Classifying all machine learning approaches into broad groups will make things simpler. This will shed light on the matter at hand and reveal whether or not these "learning" tactics grounded in mathematics are on par with the "learning" that the human brain is capable of.

Machine learning has many practical uses, including:

The two main areas of machine learning are supervised and unsupervised learning.

It is possible to give labels to unlabeled data using supervised learning, which reproduces the relationship between a label and the characteristics of the measured data. Examples of such issues are classifications labelled with sets of discrete categories and regressions labelled

with sets of continuous values. This section provides an analysis of many supervised learning examples, including both types.

Using methods like dimensional reduction and grouping, unsupervised learning models may model dataset properties without labels. This approach is sometimes referred to as "letting the dataset speak for itself." Data may be organised into distinct categories by clustering algorithms, and dimensional reduction processes can refine data presentation. We will demonstrate both forms of unsupervised learning in the next section.

An Essential Function for ML

Our superior capacity for abstract thought has propelled humans to the status of most intellectual and highly developed species in the universe. Artificial intelligence is still in its early stages when compared to human intelligence. So, why is it considered that advancements in machine learning are so important? "Make decisions, based on data, with efficiency and scale" is the most effective rendering of the phrase.

Companies are investing heavily in AI, ML, and DL technologies because they are looking for solutions to their problems and methods to understand their data. Automating the technique becomes much easier using data-based machine judgements. Problems that do not follow a rigid logic pattern in programming may be solved with data-driven judgements. Human intelligence is unparalleled, yet we must work together to solve the world's most pressing problems. Machine learning is therefore crucial.

Difficulties with ML: *

Even while machine learning—a subfield of AI—has made great strides, especially in cybersecurity and autonomous cars, it still has a ways to go. Why? Reason being, ML has encountered several issues that it is unable to resolve. These are the problems that ML is now facing:

It is quite difficult to get trustworthy data for use in machine learning systems. The inability to properly extract and interpret features stems from inaccurate or incomplete data.

Machine learning (ML) models need a lot of human effort to gather data, identify features, and retrieve them.

It may be challenging to find qualified individuals to work in ML since it is still a developing field of research.

The lack of a good rationale for articulating business challenges is a major issue with ML as it is still in its early stages.

When given data, a model that has been either over- or under-fit would provide inaccurate findings.

Problems with ML models caused by the "plague of dimensions" occur when data objects have too many attributes. It might be a real problem.

The ML model is challenging to put into practice because to its complexity.

Among the many uses for machine learning are: -

If you ask the experts, this is the "golden year" for artificial intelligence and machine learning, two of the fastest growing areas of technology. Several real-world issues, despite their seeming intractable nature, may lend themselves to its application. After this, you will see several examples of ML in action.

Psychological evaluation

Taking stock of mental health

The ability to detect and avoid mistakes

Attempting to foretell the trajectory of the weather

Financial market analysis and forecasting

Synthesising spoken language

The ability to recognise human speech

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Customer Affinity Groups

Recognising things

Identifying deceitful actions

Steering clear of deceit

Assisting customers with their online shopping needs

How Can I Begin to Understand Machine Learning?

The phrase "machine learning" was first used in 1959 by Arthur Samuel to characterise a "field of study that gives computers the capability to learn without being explicitly programmed."

It was from this need that machine learning was born! These days, a lot of people are looking for jobs related to machine learning. According to Indeed, the greatest paid job in 2019 is machine learning engineer. This position is expected to have a growth rate of 344% and a beginning salary of $146,085.

Even today, many individuals have no idea what machine learning is or how to begin studying it. So, to help you out, this post will go over the fundamentals of machine learning and give you some advice on how to get better at it. An first step has been taken!

When first looking into machine learning, where does one even begin?

Becoming an excellent Machine Learning Engineer is within your reach if you follow this general plan. You may accomplish your goal by simply rearranging the operations in the right order.

Get a Basic Understanding First

Assuming one isn't a complete genius, the absolute least required for anybody interested in ML is knowledge of Python, Linear Algebra, Multivariate Calculus, Statistics, and

Probability. If you are unfamiliar with them, it is also OK. You don't need a PhD to start, but you will require good subject understanding.

(a) Get a firm grasp of advanced mathematics, including calculus with variables and linear algebra.

Machine learning relies heavily on mathematics, with linear algebra and multivariate calculus standing out. The degree to which you rely on data science services, however, varies. There are many popular libraries available, so mathematics shouldn't be a problem for your machine learning projects as long as they focus on real-world applications. Building and studying Machine Learning algorithms from the ground up requires a solid understanding of Linear Algebra and Multivariate Calculus.

a) Earn a four-year degree with a major in statistics.

Data reigns supreme in the world of machine learning. Data collecting and cleaning will really occupy your ML professional for a considerable amount of time. Statistical methods also include gathering, analysing, and presenting data. The news shouldn't come as a shock to anybody.

Statistical significance, probability distributions, hypothesis testing, and regression analysis are all crucial concepts. When it comes to machine learning (ML), Bayesian Thinking is essential. The book covers a vast array of topics, including conditional probability, maximum likelihood, priors and posteriors, and many more.

Learn Python inside and out. That's the last bit of advice.

Some statistics, linear algebra, and multivariate calculus students have the opportunity to study on their own. Therefore, it is essential to learn Python. Machine learning systems may also make use of languages like R and Scala. Most people now agree that Python is the greatest language to use for ML projects. Many of Python's libraries are designed for use with artificial intelligence and machine learning; they include Scikit-learn, TensorFlow, Keras, and many more.

So, knowing Python is a necessity if you're interested in machine learning. Fork Python, a no-cost course on GeeksforGeeks, is one resource that could be helpful 4 this.

Getting some knowledge about neural networks is the next thing to do.

You are free to begin studying ML after you have fulfilled all the requirements. The easiest way is to master the fundamentals first, then move on to more complex concepts. Machine learning is based on these principles:

a. Data Processing in the Cloud

Machine learning algorithms construct specialised representations, or models, after examining data. One alternative name for a model is a hypothesis.

In data, an often mentioned "feature" is a quantifiable aspect. Using a feature vector is a useful way to define a collection of numerical features. Feature vectors are sent into the model as input. It is possible, for instance, to utilise sensory data like as colour, aroma, taste, etc., to forecast the likelihood of fruit.

Our goal in developing this model is to predict a "label" or "target" value. Inputs for fruits would similarly have their names identified (e.g., apple, orange, banana, etc.) as the feature section.

The instruction will culminate in the development of a model or hypothesis. The model could classify fresh data based on the predicted labels from a set of attributes.

It will be possible to submit data and get a projected label after the model is finished.

[a] Various Methods for Machine Learning

Supervised learning uses regression and classification models to learn new information from a training dataset that has labelled data. An important step in learning is getting to the desired level of performance.

Unsupervised learners can acquire a better grasp of unlabeled data by using methods such as factor and cluster analysis to reveal its structure.

At the same time as unsupervised learning ignores labels altogether, semi-supervised learning mixes a limited amount of labelled and unlabeled data. Instead of spending a fortune on Supervised Learning, you can get much better results by using labelled data.

Reinforcement learning describes how a system learns its next move by mimicking its previous successes and failures. Given the current situation, the next step is to adopt learning habits that maximise future reward.

Machine learning has many benefits, including:

1. Quickly identify trends and patterns -

Machine learning allows for the potential screening of massive datasets for trends and patterns that humans may overlook. I can think of Amazon. The e-commerce platform may learn more about its users' habits and past purchases so it can provide them with more personalised recommendations, sales, and alerts. Based on the results, they are presented advertisements that are more tailored to their interests.

2. Robotic technology that completely eliminates the need for human intervention.

You won't need to keep an eye on your project constantly when you use ML. In the future, machines that can learn might improve their own algorithms and make predictions without any help from humans. Think about how antivirus software changes to detect and prevent new threats. Machine learning is also quite good at detecting spam.

3. Ongoing Improvement

As they have more and more data to work with, machine learning algorithms are always improving and becoming more efficient. Students will be able to make better decisions if they do this. Take the hypothetical goal of creating a weather prediction model. With more and more data readily available, algorithms are becoming better and quicker at generating predictions.

4. Managing data sets that are both dimensional and diverse

Machine learning algorithms are not up to the task of dealing with data that is dynamic or unexpected, as well as data that is multi-variate and multi-dimensional.

5. Heavy Utilisation

Anyone, from doctors to online retailers, may succeed using ML. This might lead to more precise targeting of the right people at the right times and a more tailored experience for customers.

Potential Dangers of Machine Learning: -

1. Data Collection

Machine learning models can only be trained using large, diverse, and impartial datasets. Additionally, there will be times when they are required to wait for new data to be generated.

2. Material Assets and Energy

To achieve high precision and reliability in machine learning, it is essential to give the algorithms enough time to learn and develop. On top of that, it requires a lot of resources to operate. Your machine may not be powerful enough, you may think after this.

3. Making Sense of the Results

One further major challenge is correctly understanding algorithm output. Based on your requirements, choose the most suitable algorithms.

4. The propensity to err significantly

The autonomy of machine learning is not without its flaws. Just think about how difficult it is to train an algorithm with insufficient data. Predictions might be impacted by bias in the training set. They see ads that have nothing to do with them. It could take a long time to uncover such errors, and they might trigger a chain reaction of ML faults. It will take some time to discover them and then figure out where they came from, but once you do, the issue will be solved.

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Python Development Techniques: -

In February 1991, Python 0.9.0 was made public by Guido Van Rossum via alt.sources. Formerly included in this version were fundamental data types like str, list, dict, and more, as well as exception handling. It was also object-oriented and had a module structure.

The first public release of Python occurred in January 1994. Nearly 6.5 years after its inception, Python 2.0 was released in October 2000. Lambda, filter, reduce, and map—functional programming tools—were among the most strikingly different. But Guido Van Rossum was never a fan of these instruments. List comprehensions, a thorough garbage collector, and support for Unicode were some of the new features added to Python 3.0 (also called "Python 3000" or "Py3K"). For a further eight years, Python 2.x maintained its popularity. Python 3 cannot be used with Python 2 or older. "There should be one -- and preferably only one -- obvious way to do it." The twelfth rule of Python Zen suggested that this objective should be achieved or eliminated in Python 3. This concept was fully or almost fully realised in Python 7.3:

A new feature at your fingertips is print.

This replaces the previous iterators, views, and lists with

Guidelines for organising comparisons have been simplified. Any elements in a heterogeneous list must be identical for sorting to work.

The only method for ensuring the security of integers is the int type. Additionally, long is an integer.

Dividing two integers produces a float value instead of an integer. All it takes to return the behaviour to its "old" state is to input "//".

Text and data stand in for Unicode and 8-bit data.

Objectives: -

We demonstrated that our approach can effectively differentiate intra-retinal layers using the ANIS feature, even in low-resolution images characterised by speckle noise, low contrast, and inconsistent intensity levels across the board.

Python

Python is an interpreted language that is meant to be used for a wide variety of purposes and is supposed to be very abstract. Guido van Rossum, who introduced Python for the first time in 1991, made code readability a priority in his design philosophy. He did this by making heavy use of white space.

The dynamic type system and built-in memory management are two of Python's most notable features. It comes with a large standard library that supports all three programming paradigms—imperative, functional, and procedural—and it is compatible with all three.

Python is an interpreted language since its code is processed at runtime by an interpreter. Compiling your software is not necessary before running it. Both PERL and PHP have a number of commonalities.

Python is an interactive language because, when seated at a Python prompt, you can construct programmes directly with the interpreter.

Furthermore, Python is cognizant of the relevance of development velocity. Code that is both short and simple to comprehend is an essential characteristic, as is the ability to access robust structures that avoid code duplication. The amount of code that has to be read, comprehended, and scanned in order to modify behaviour or fix faults may be shown by maintainability, which isn't always a helpful number on its own. Python has achieved a lot because to its wide standard library, easy-to-learn syntax, and fast development, especially among programmers with prior expertise in other languages. Python tools have maintained their stability, ease of installation, and time-saving qualities even after fixes and updates performed by those inexperienced with the language.

Course Material: -

Deep learning

A free and open-source software tool that facilitates dataflow and differentiable programming, TensorFlow is one of its several potential uses. The research and production divisions of Google use this symbolic math library, which is utilised by neural networks and other machine learning applications.

The Google Brain team developed TensorFlow for exclusive internal use. On November 9, 2015, it was released under the Apache 2.0 licence.

As Tiny as a Pinguin

You may use the array manipulation capabilities of the Numpy module for a variety of tasks. Tools for handling multi-dimensional arrays and a high-performance object are some of its characteristics.

This module is necessary for doing scientific computations in Python. Of its many distinguishing features, the following stand out as particularly noteworthy:

Practical N-dimensional array

Intricate processes for sending

Methods for integrating Fortran with C and C++

It will be helpful if you know your way around probability, linear algebra, and the Fourier transform.

It would seem that scientists are making use of Numpy, a robust multi-dimensional data container. Accessing several databases is a breeze with Numpy since it lets you define any data type.

Furry lizards

Pandas is an excellent tool for data analysis and manipulation that uses free and open-source software. The Python code is freely available to everybody. The main applications of Python

were data munging and pre-processing. The majority of the time, it wouldn't be suitable for analysing data. Python fixed this problem. No matter what data source you have, Pandas can handle the five typical processing and analytical procedures: load, prepare, modify, model, and analyse. Python with Pandas is used in a wide variety of fields, including analytics, statistics, economics, and finance.

Matplotlib is a programme that we utilise.

While working in an interactive environment or with hardcopy forms, you may produce publishable figures using the Matplotlib package, a Python 2D plotting toolkit. Matplotlib is compatible with many different languages and frameworks, including IPython, Python, scripts, web application servers, Jupyter Notebook, and many more Python modules and utilities. Matplotlib was created to make complex processes easier to understand and implement. Simple to use and requires minimal programming to create a wide variety of graphs, including histograms, power spectra, bar charts, error plots, scatter plots, and more. Get a feel for it by browsing the sample plots and thumbnail galleries.

Pyplot, with its MATLAB-like interface, is a great tool to have on hand while working with IPython to create simple charts. Through an object-oriented interface or a well-known set of techniques with MATLAB, advanced users may alter any part of the plot, such as the line styles, font characteristics, axis settings, etc.

Investigation of Scikit-360

The Python library Scikit-learn provides a uniform interface and access to a number of supervised and unsupervised learning algorithms. Because it is compatible with a wide range of Linux distributions and has a simplified, permissive BSD licence, it is attractive to both academic and corporate organisations. Python

Python is an interpreted language that is meant to be used for a wide variety of purposes and is supposed to be very abstract. Guido van Rossum, who introduced Python for the first time in 1991, made code readability a priority in his design philosophy. He did this by making heavy use of white space.

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How to Install Python on Windows and Mac:

You don't have the highly adaptable programming language Python installed on any of your gadgets. This high-level programming language has been around since 1991, yet its popularity keeps growing. The extensive usage of white space demonstrates its dedication to code readability.

With Python's object-oriented approach and language notion, you may write code for your project that is both clear and logical. On Windows, this software is not pre-installed.

Python may be installed on Mac or Windows using the following methods:

Python has seen significant evolution throughout the years. Please, could you show me how to install Python? This course has everything a beginner to Python might want and more. Python 3.7.4, commonly called Python 3, is the most recent version of the programming language.

This version of Python (3.7.4) is not compatible with Windows XP and earlier versions of the application.

Be sure to do this before you install Python. To begin, determine your system's requirements. The version of Python that is compatible with your computer is determined by the operating system and CPU type. When I use my own computer, I use Windows 64-bit. Python 3.3.4 or Python 3.7.4 may be installed on Windows 7 by following these steps. A Python cheat sheet is downloadable for each of the four easy stages that make up the installation procedure.

Crucial to the success of your PC installation is selecting the correct version.

To access the Python website, use Chrome or your chosen online browser. The installation process may begin when you have downloaded the application. A more direct alternative would be to visit https://www.python.org.

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Now, check for the latest and the correct version for your operating system.

Step 2: Click on the Download Tab.

Third, choose the installation numpy you want to use, for as panes 3. 7. 4. Toggle along the bright yellow line that you can see further down to get a preview of several versions of the

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programme. The latest scripting language version for windows 2, 6, and 3 is available for download here.

Looking for a specific release?

Python releases by version number:

Release version	Release date		Click for more
Python 3.7.4	July 8, 2019	Download	Release Notes
Python 3.6.9	July 2, 2019	Download	Release Notes
Python 3.7.3	March 25, 2019	Download	Release Notes
Python 3.4.10	March 18, 2019	Download	Release Notes
Python 3.5.7	March 18, 2019	Download	Release Notes
Python 2.7.16	March 4, 2019	Download	Release Notes
Python 3.7.2	Dec. 24, 2018	Download	Release Notes

Step 4: Scroll down the page until you find the Files option.

Step 5: Here you see a different version of python along with the operating system.

Files

Version	Operating System	Description	MD5 Sum	File Size	GPG
Gzipped source tarball	Source release		68111671e5b2db4aef7b9ab01bf0f9be	23017663	SIG
XZ compressed source tarball	Source release		d33e4aae66097051c2eca45ee3604803	17131432	SIG
macOS 64-bit/32-bit installer	Mac OS X	for Mac OS X 10.6 and later	6428b4fa7583daff1a442cba8cee08e6	34898416	SIG
macOS 64-bit installer	Mac OS X	for OS X 10.9 and later	5dd605c38217a45773bf5e4a936b241f	28082845	SIG
Windows help file	Windows		d63999573a2c06b2ac56cade6b4f7cd2	8131761	SIG
Windows x86-64 embeddable zip file	Windows	for AMD64/EM64T/x64	9b00c8cf6d9ec0b9abe83184a40729a2	7504391	SIG
Windows x86-64 executable installer	Windows	for AMD64/EM64T/x64	a702b4b0ad76debdb3043a583e563400	26680368	SIG
Windows x86-64 web-based installer	Windows	for AMD64/EM64T/x64	28cb1c608bbd73ae8e53a3bd351b4bd2	1362904	SIG
Windows x86 embeddable zip file	Windows		9fab3b81f8841879fda94133574139d8	6741626	SIG
Windows x86 executable installer	Windows		33cc602942a54446a3d6451476394789	25663848	SIG
Windows x86 web-based installer	Windows		1b670cfa5d317df82c30983ea371d87c	1324608	SIG

Panes system, also known as the inbuilt file format, Panes 32-bit arm exe windows setup, and Panes 64-bit browser windows setup are the three possibilities available to you when deciding between Panes floating point php transfer.

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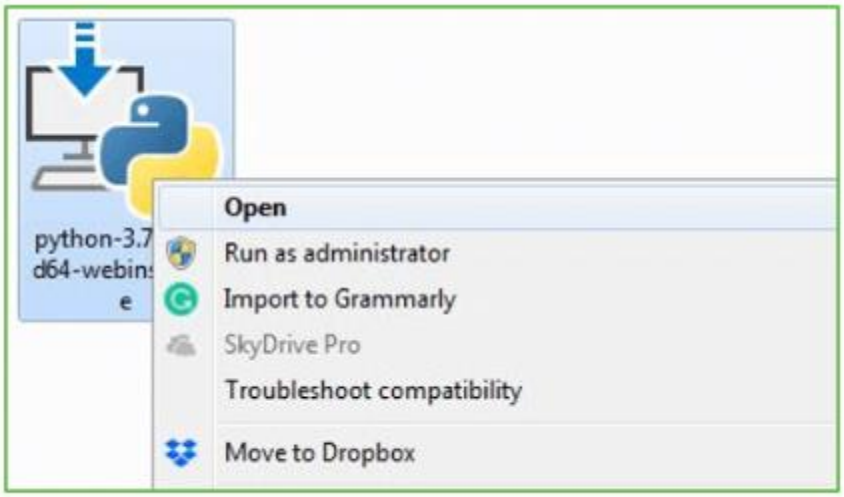
•Skylights x86-64 embedded file format, panes x86-64 exe technician, and skylights x86-64 internet windows setup are the three solutions available to you while transferring skylights 128-bit php.

Here, the Windows x86-64 browser technician will be run by the researchers. After this point, the next one about that version, yup, numpy, would be complete. Now that PHP is implemented, humans are moving on with both the second segment and re. tion. Setting up

Please be aware that there are revisions and updates made to the edition, and that you may access them by selecting the "Discharge Memo" option.

Setup similar to Python

First, you'll need to go between both access and the same attempted download of the numpy variation in order to evade the entrance into force.



Step 2: Before you click on Install Now, Make sure to put a tick on Add Python 3.7 to PATH.

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Step 3: Click on Install NOW After the installation is successful. Click on Close.

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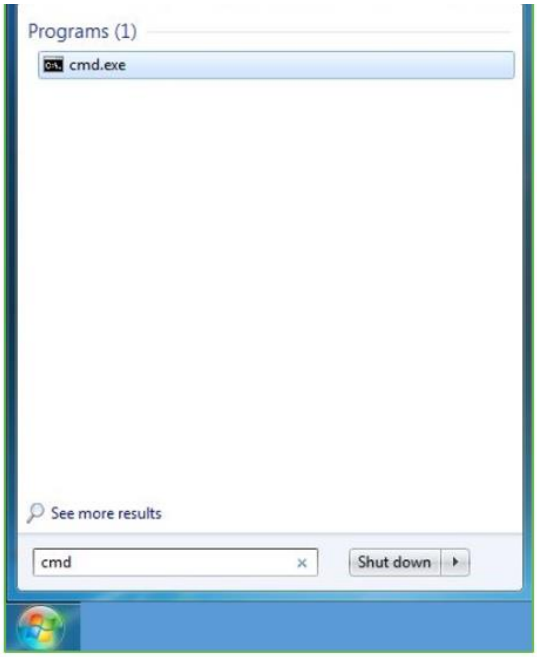
After following the three steps for installing Python, you should now have a fully functional Python environment. It is time to check whether the installation was successful.

Just a heads up, the installation might take a few minutes.

Check That Python Is Actually Installed

At the very beginning, press the Start button.

2-Type "cmd" into Windows' Run Command.



Step 3: Open the Command prompt option.

Step 4: Let us test whether the python is correctly installed. Type **python –V** and press Enter.

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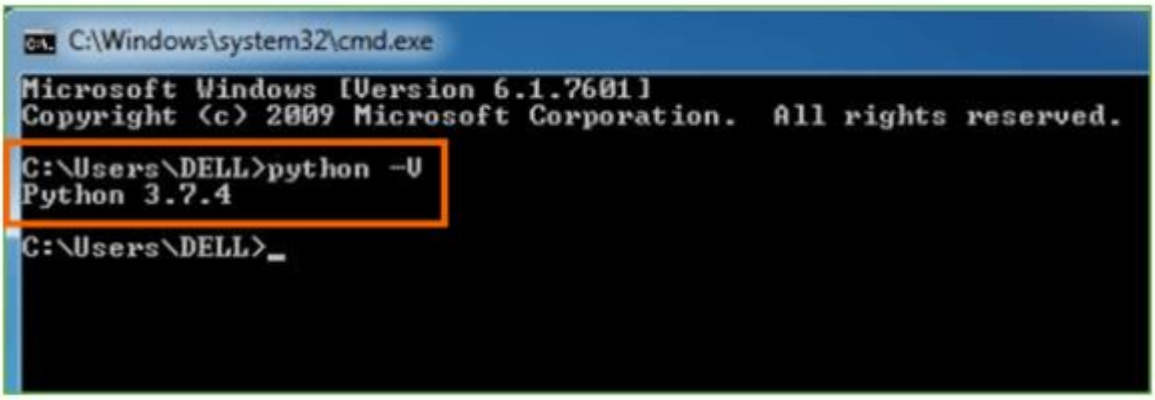


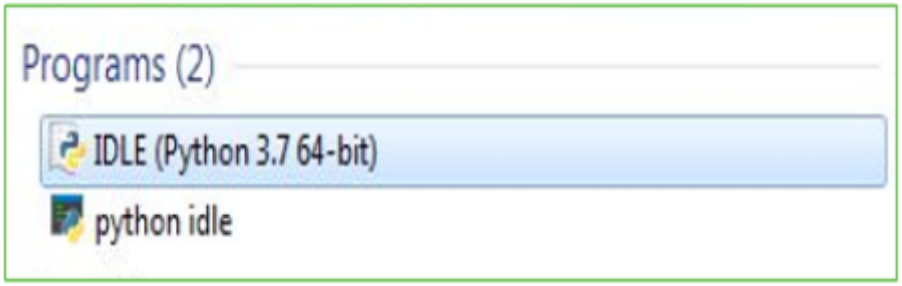
Step 5: The final result will be 3.7.4.

Please be aware that this will not work if you are using an older version of Python. In order to install the new version, you need to remove the old one.

Examine the Python IDLE in action.

The first step is:Select "Start."

Second Step:Press the Windows key + R to launch Python at idle.



Third, double-click the 64-bit Python 3.7 IDE to launch it.

Fourthly, before you keep working in IDLE, save the file.Find File > Choose "Save."

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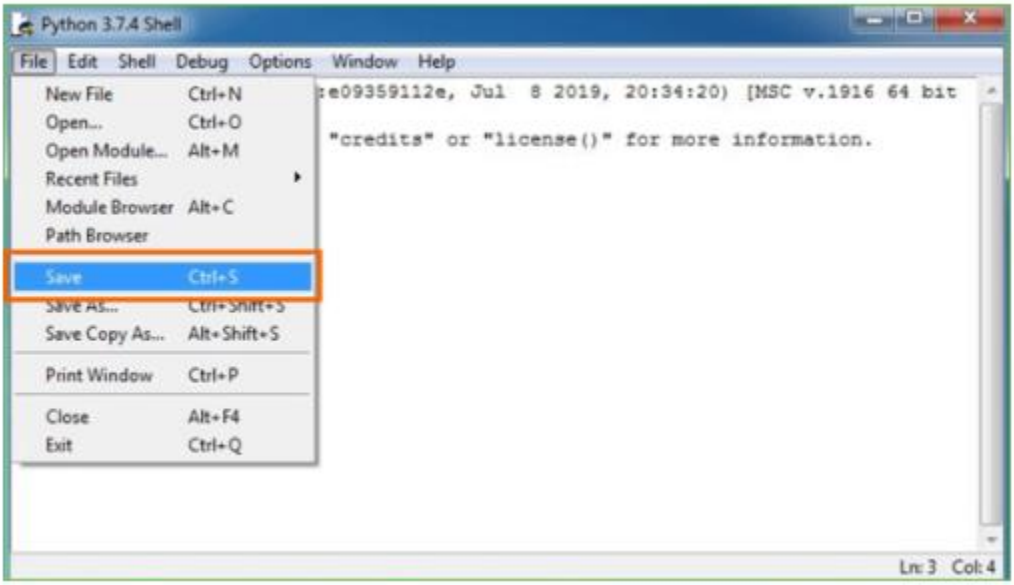

Step 5: Give the file a name and be sure to save it as a Python file type. To save, click the "Save" button. Hello World is the moniker I've given to the files here.

Now, in Step 6, type "print" to begin.

6.SYSTEM TEST

Finding errors is the purpose of doing tests. The primary objective is to search for vulnerabilities in a service or product. It provides a way to test the functioning of the whole, its components, or even its sub-assemblies. In order to guarantee that software meets user expectations and does not abruptly malfunction, it must undergo certain testing procedures. There is a selection of tests available to you. A plethora of tests must be performed.

Each Test

Conducting tests on certain units

Unit testing ensures that a program's core logic is functioning correctly and that programme inputs produce valid outputs. Get the internal code flow and every potential decision's direction checked. The main focus is on testing the various software components of the application.It executes prior to the integration of all completed components. Our knowledge of its construction will determine the outcome of this invasive structural test. Unit tests are

created to verify certain operations, programming, or setups of a system by means of elementary component-level testing. Unit testing ensures that all routes in a business process have clear inputs and outputs and follow the specified requirements.

Examining the connection

The purpose of an integration test is to verify the proper functioning of each component of the programme. One area where event-driven testing excels is in displaying findings, whether on a screen or in the field. The combination must be correct and consistent if the unit tests were successful individually, and integration tests demonstrate it. Locating problems that arise as a result of component integration is a primary objective of integration testing.

Evaluating how effective

Through a methodical process, functional testing ensures that the tested functions are accessible and match the criteria outlined in many sources, such as the user manual, system documentation, business and technical requirements, and more.

Common things to check during functional testing are:

Verifying Input: We need to take every conceivable kind of feedback.

It is necessary to eliminate the identified improper input.

What has to be done: The task at hand cannot be completed without it.

It is crucial to execute the acknowledged types of application outputs.

In order to establish a connection with these systems or processes, you must first activate them.

When creating and executing functional tests, it is essential to keep in mind the objectives, essential functionality, or unique test cases. Data fields, predefined procedures, sequential processes, and business process flows should also be addressed extensively during

testing. Functional testing cannot be completed without first discovering more tests and calculating the effective value of current tests.

Evaluating the Setup

It is essential to do system testing on an integrated software system to ensure it functions as intended. It verifies a configuration by seeing whether the results are known and predictable. Among the many types of system tests is the configuration-oriented unit test. System testing, which is influenced by process flows and descriptions, is mostly driven by integration points and pre-determined process links.

Executing Evaluations

White box testing requires the software tester to have prior knowledge of the program's structure, language, and purpose. What it does. Some areas are inaccessible to a black box level.

Performing tests inside a controlled environment

We mean when we say "black box testing" that we test software without knowing the module's language, structure, or inner workings. Starting with a final source document like a requirements or specification document, create a black box test as you would any other kind of test. In a "black box" test, the user is completely removed from the action.Absolutely not! You can't "see" inside. The test simply takes parameters and produces a result; it is unconcerned with the program's inner workings.

Running Automated Tests

While it is normal practice to do coding and unit testing separately in software development life cycles, the latter is more typically integrated with the former.

Get yourself tested and ready Both manual field testing and comprehensive documentation of all functional tests will be conducted.

Aim of the evaluation Make sure that every field is turned on.

You may access the pages using the URL that was supplied.

All responses, communications, and the welcome screen must be instantaneous.

It is necessary to assess the functioning.

Verifying proper formatting, avoiding duplicate entries, and validating that all links go to the right page are crucial to the method.

Evaluating Efficiency

In order to identify and resolve interface problems, software integration testing entails sequentially launching many software components on the same platform.

Integration testing is a crucial part of enterprise-level development as it ensures that dependent software components function as expected.

The tests were successful for all of the previously listed test scenarios. Everything was perfect.

User Acceptance is an essential part of any project. Feedback from actual users is crucial to the testing process. It is also confirmed that the system can meet the functional requirements.

The tests were successful for all of the previously listed test scenarios. Everything was perfect.

SCREENSHOTS

Launch DJango Server by double-clicking the "run.bat" file; the following screen will appear when you're ready to execute the project.

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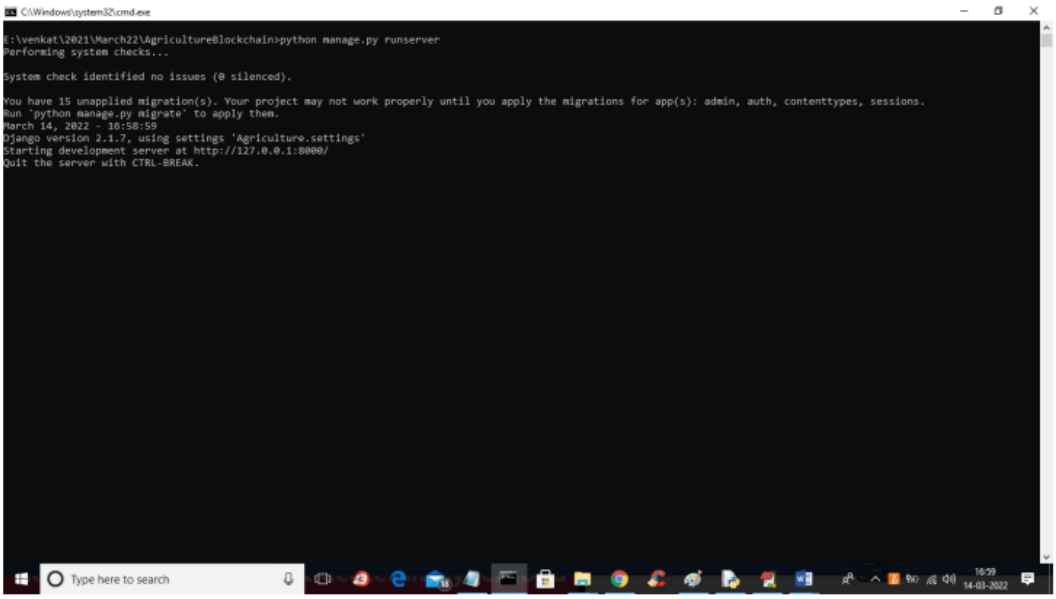
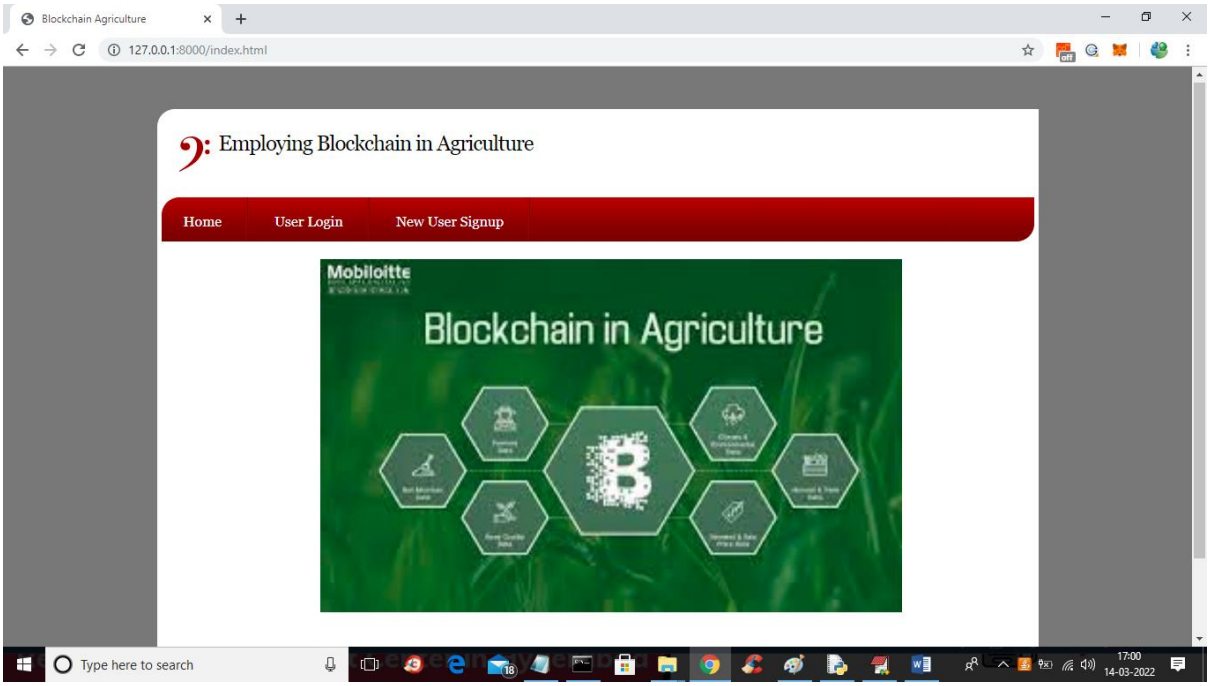


In above screen server started and now open browser and enter URL as 'http://127.0.0.1:8000/index.htm' and press enter key to get below screen



In above screen click on 'New User Signup' link to get below screen

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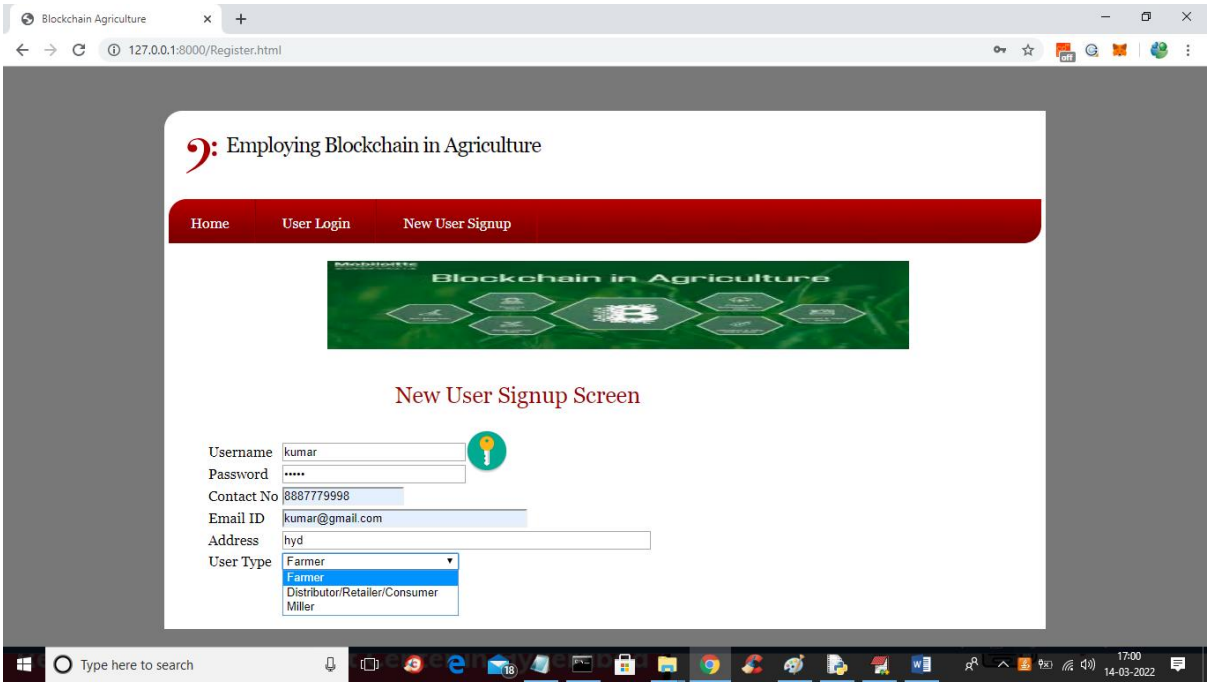
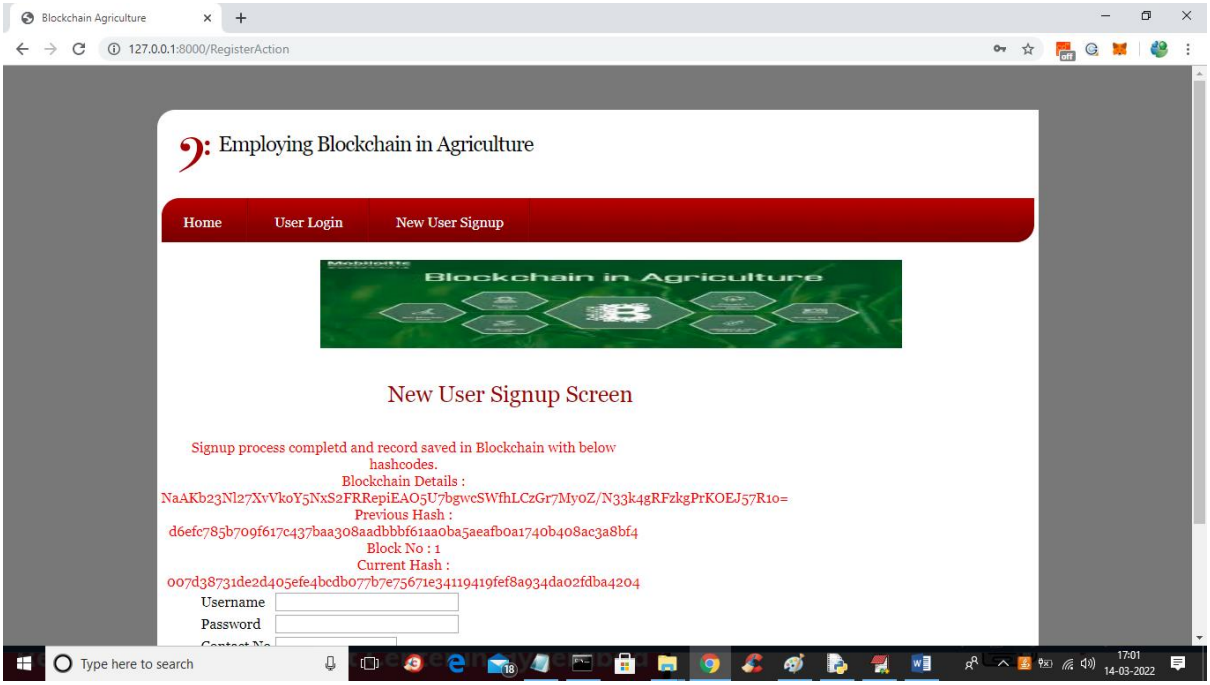


Clicking the submit button once the user has registered and selected their preferred user role (farmer, distributor, or miller) may bring up the results below.



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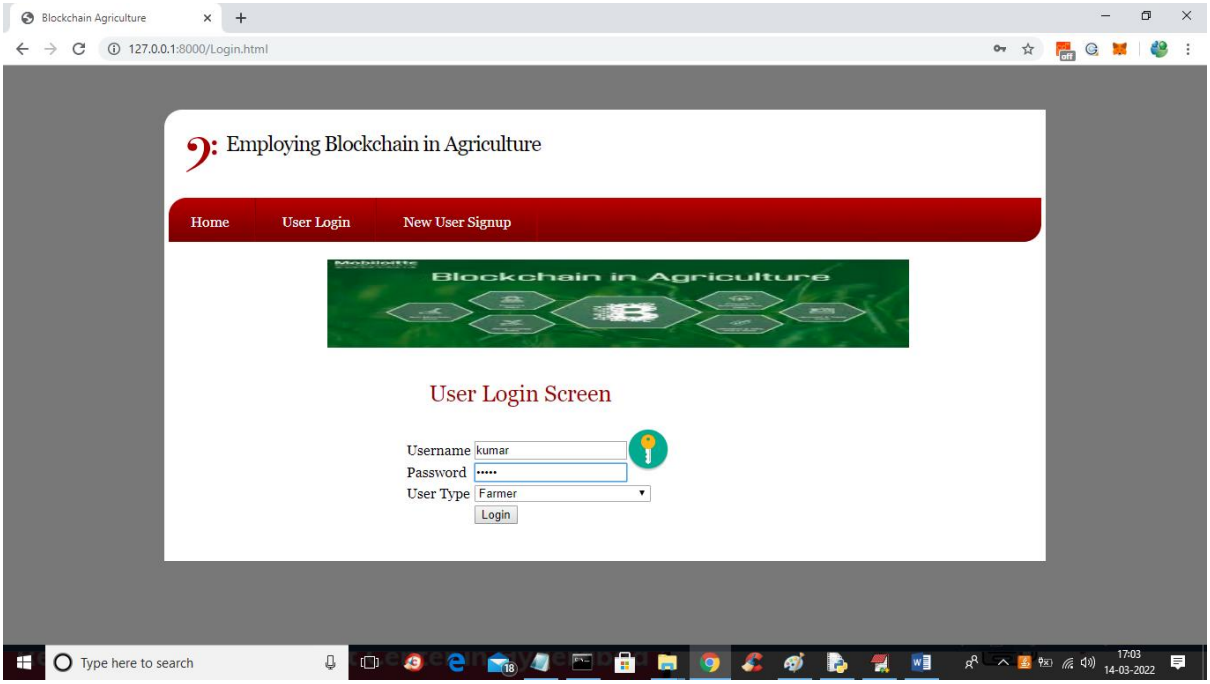
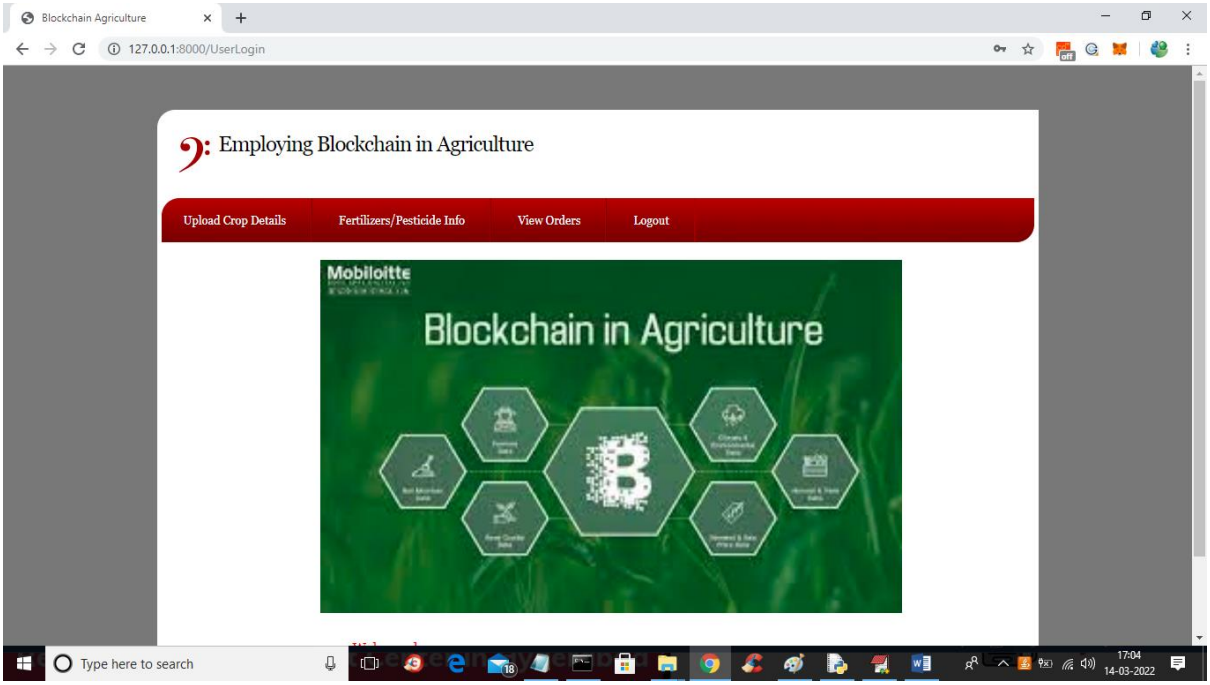
You can see the data stored in Blockchain and the hash codes of both older and newer blocks on the screen in red. The process is same for adding distributor and miller users as well. You may see the screen below after pressing the "User Login" button.



The next screen will appear once the user, Kumar Farmer, logs in, as seen in the previous screen.



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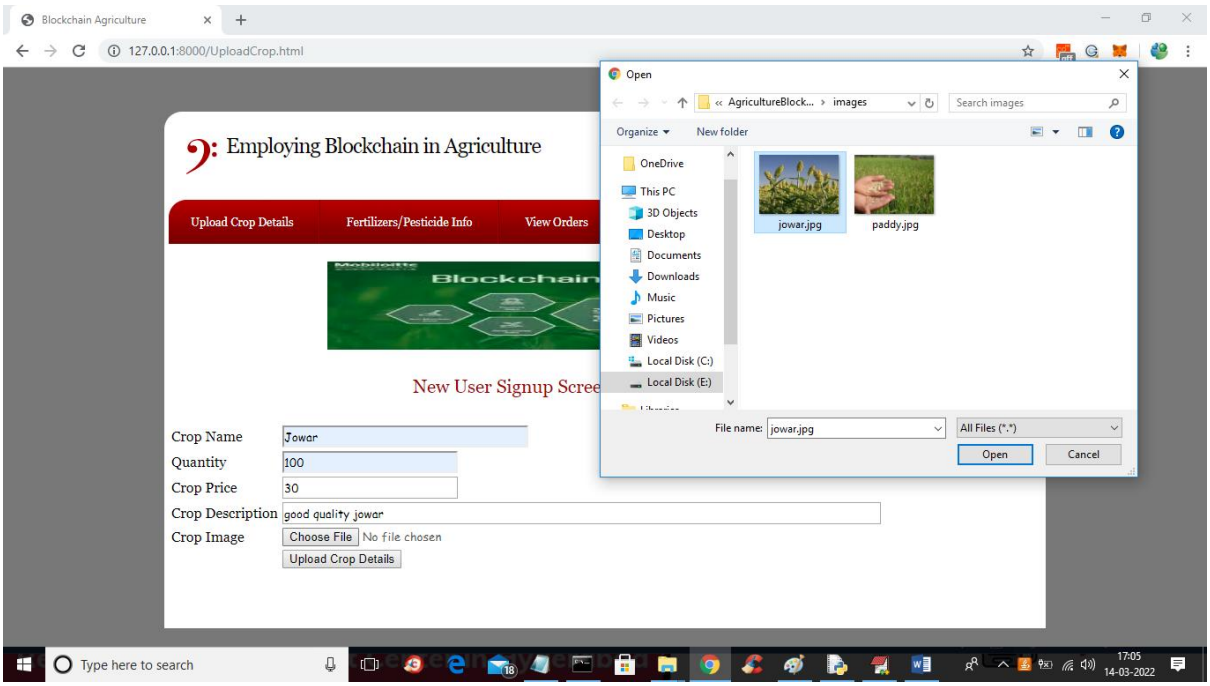
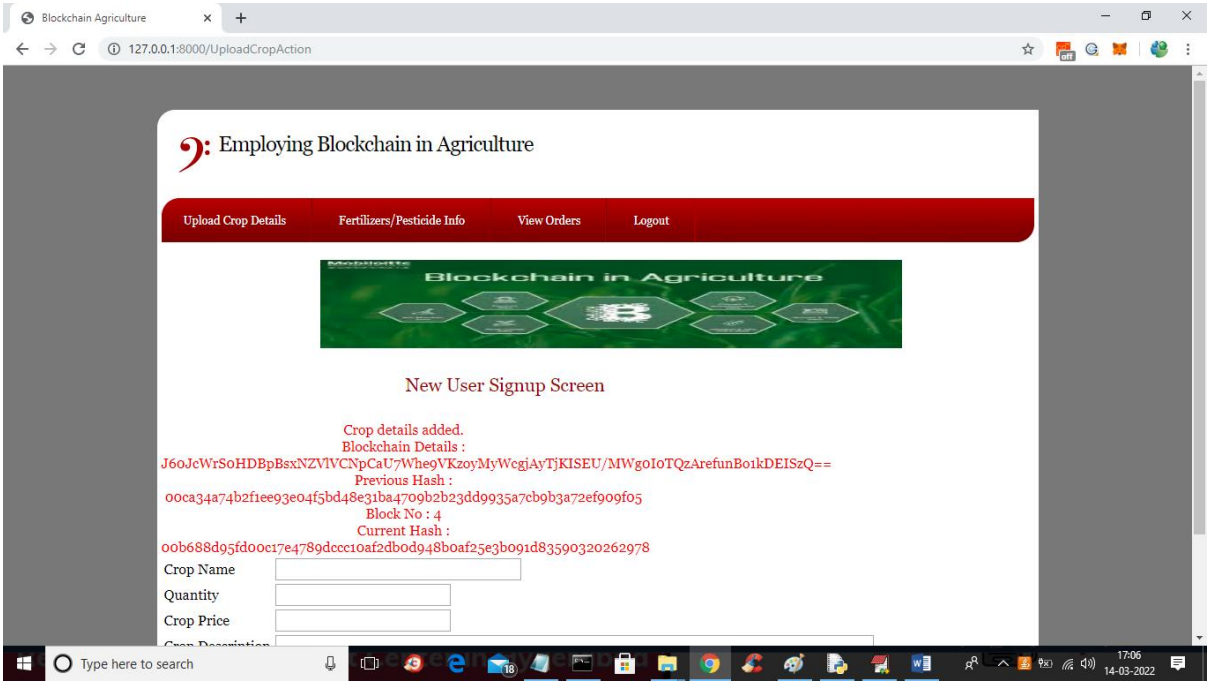
To upload crop information, click the "Upload Crop Details" option in the previous page. Then, you'll get the screen below.



By clicking the "Upload Crop Details" button, the farmer may get the following result after uploading crop information along with photographs, as shown in the previous screen.



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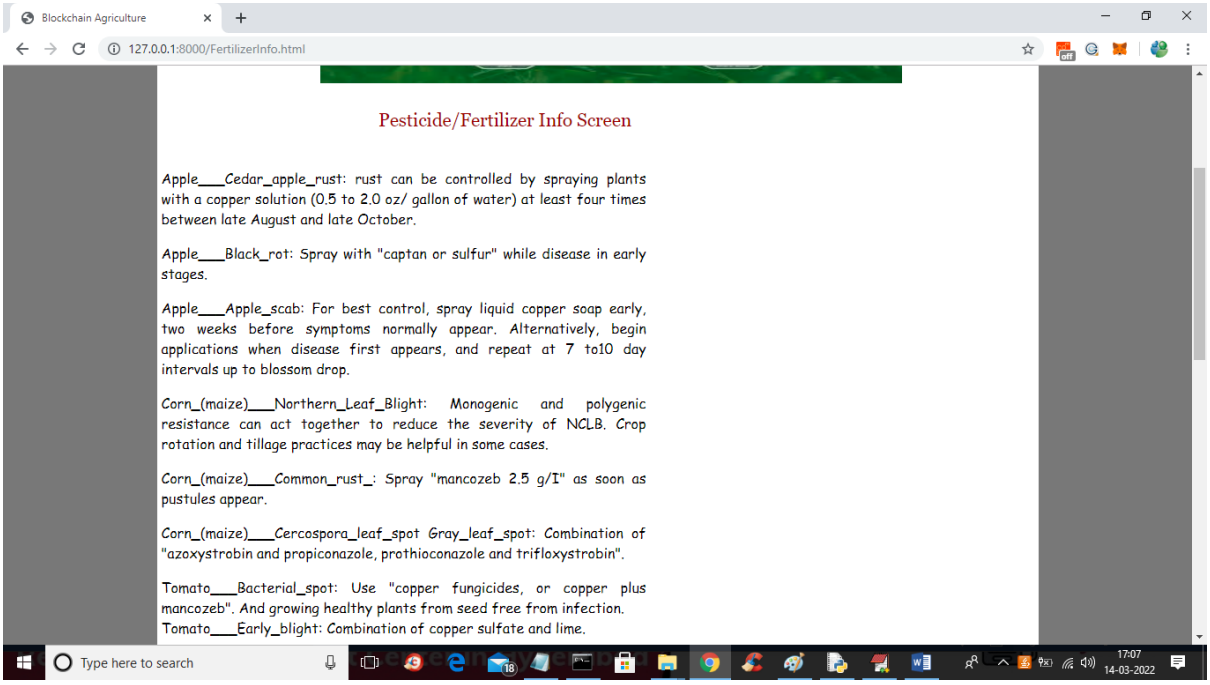
In above screen plant details included Blockchain and we can see hash code of old and new block. In a similar way you can add any type of variety of plants and currently click on 'Fertilizers/Pesticide Details' web link to check out fertilizers details



Farmers may see what crops they need to fertilise, see their names on the screen, and then log out and back in to buy them.

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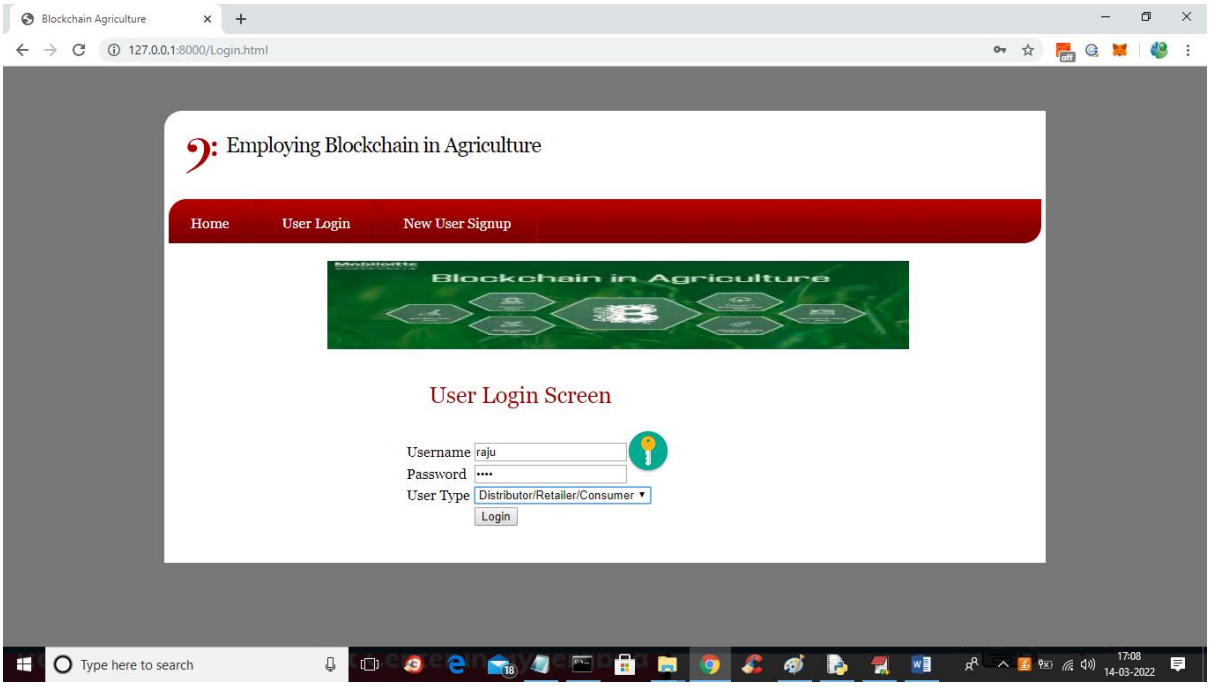

In above screen distributor user is login and after login will get below screen

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

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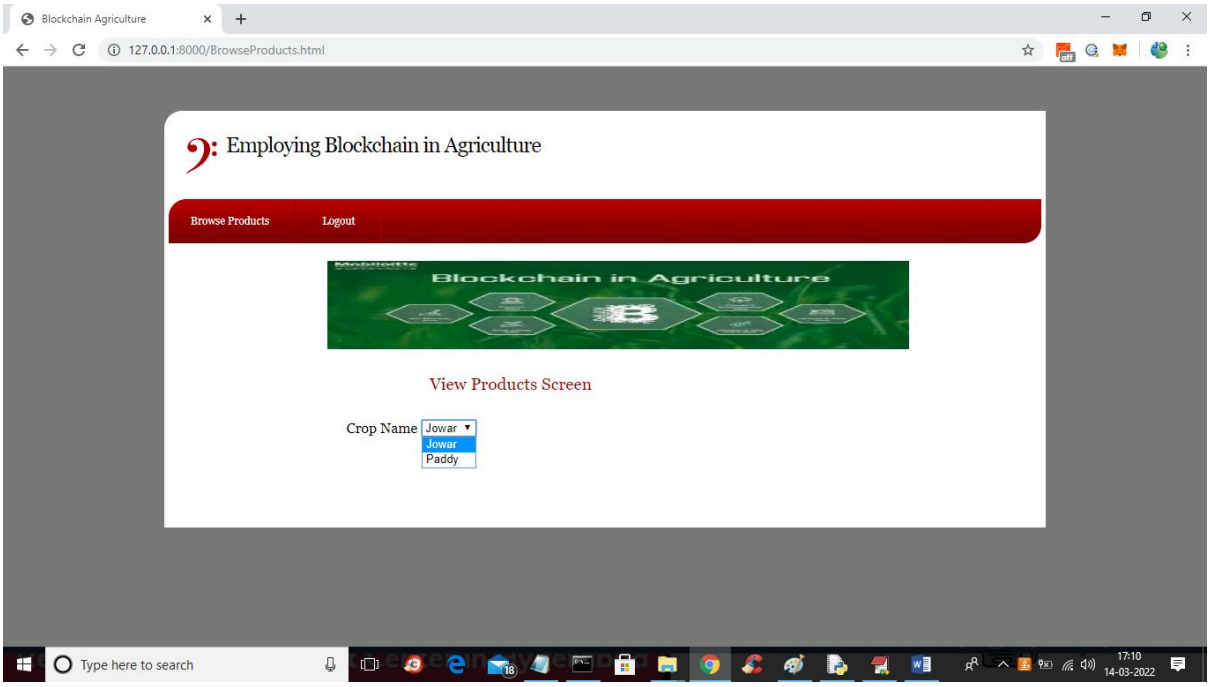
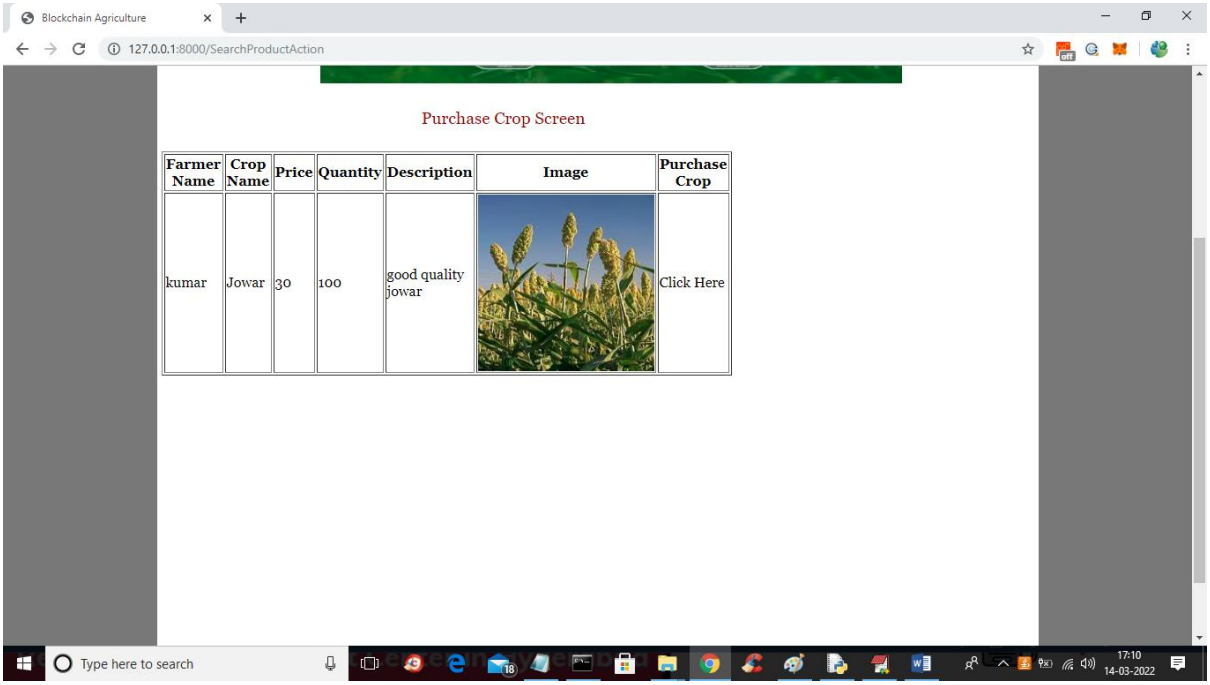


The distributor may choose the desired crop from the screen above and then click the button to get the result shown below.



Distributors may see all the information they need to make a purchase on the screen above by clicking the "Click Here" link.

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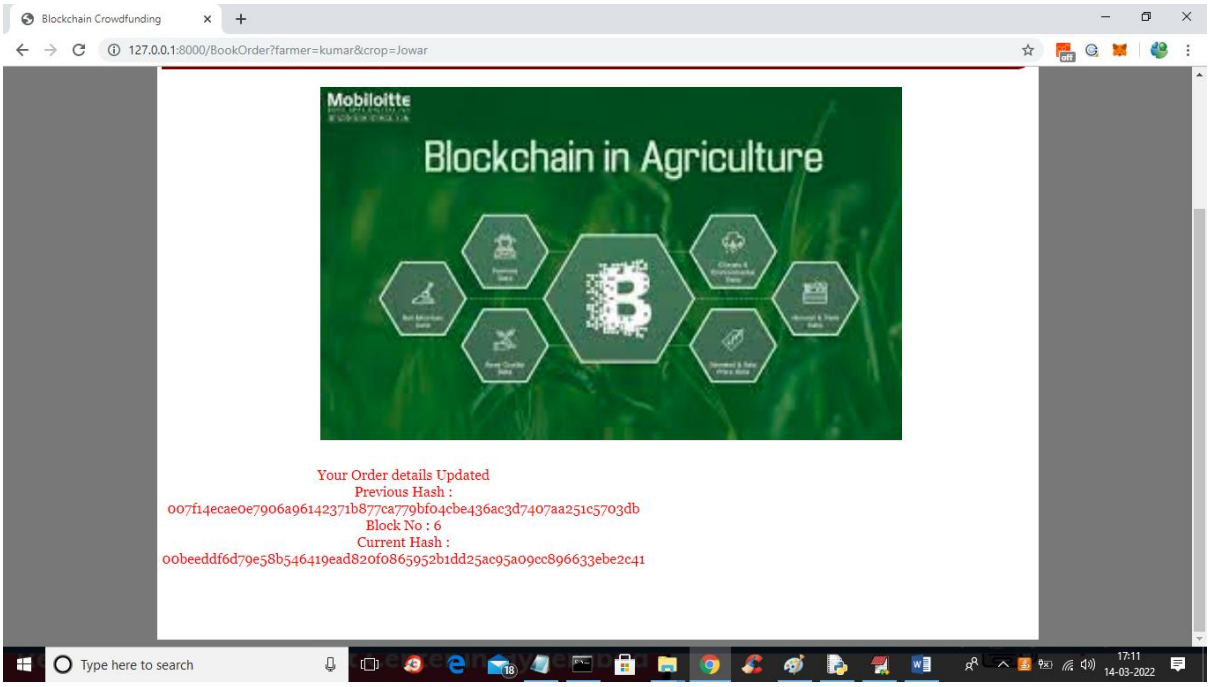
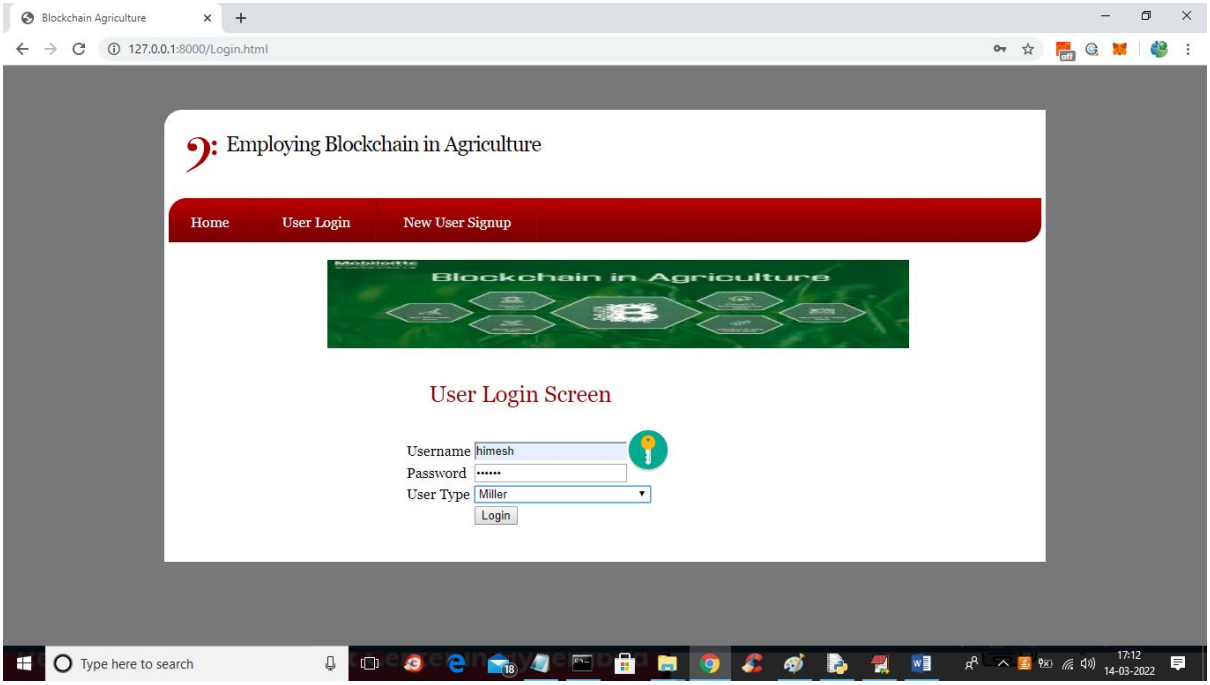


Now that your distributor order is validated, you may logout and log back in as Miller, as seen in the red lettering on the screen above.



In above screen miller user is login and after login will get below screen

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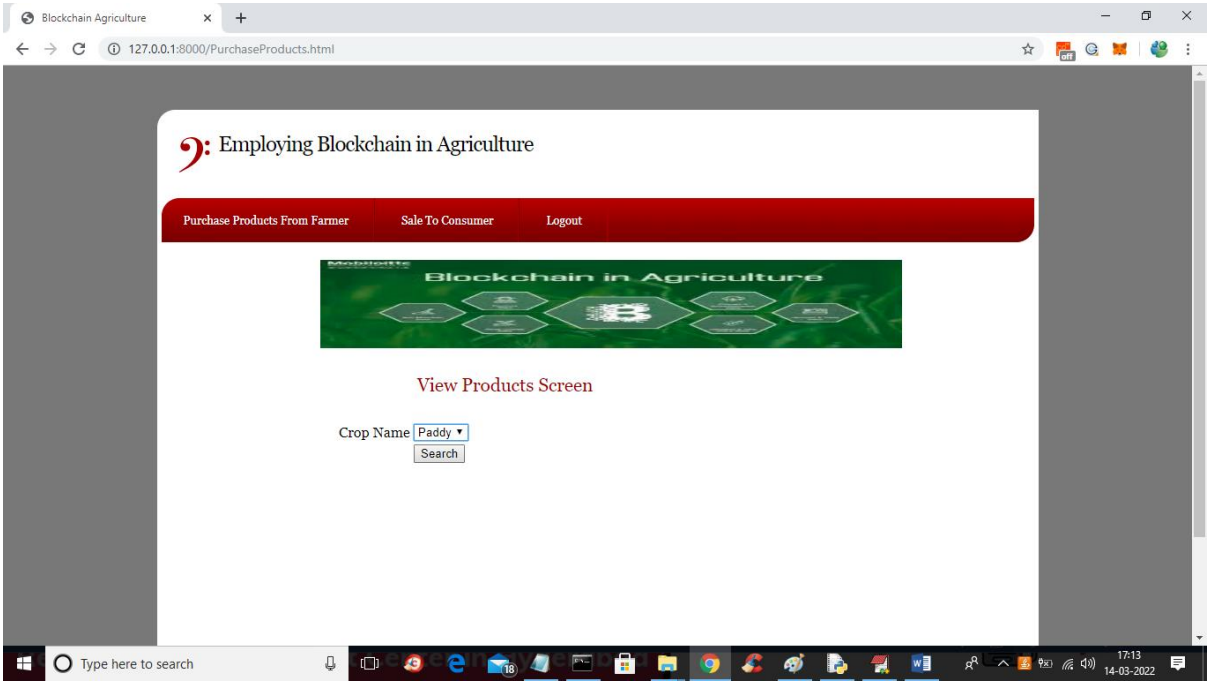
To access the crop screen, go to the previous screen and click on the "Purchase Products from Farmer" option.



To see the crop information as shown in the screen below, choose the crop and then hit the button.

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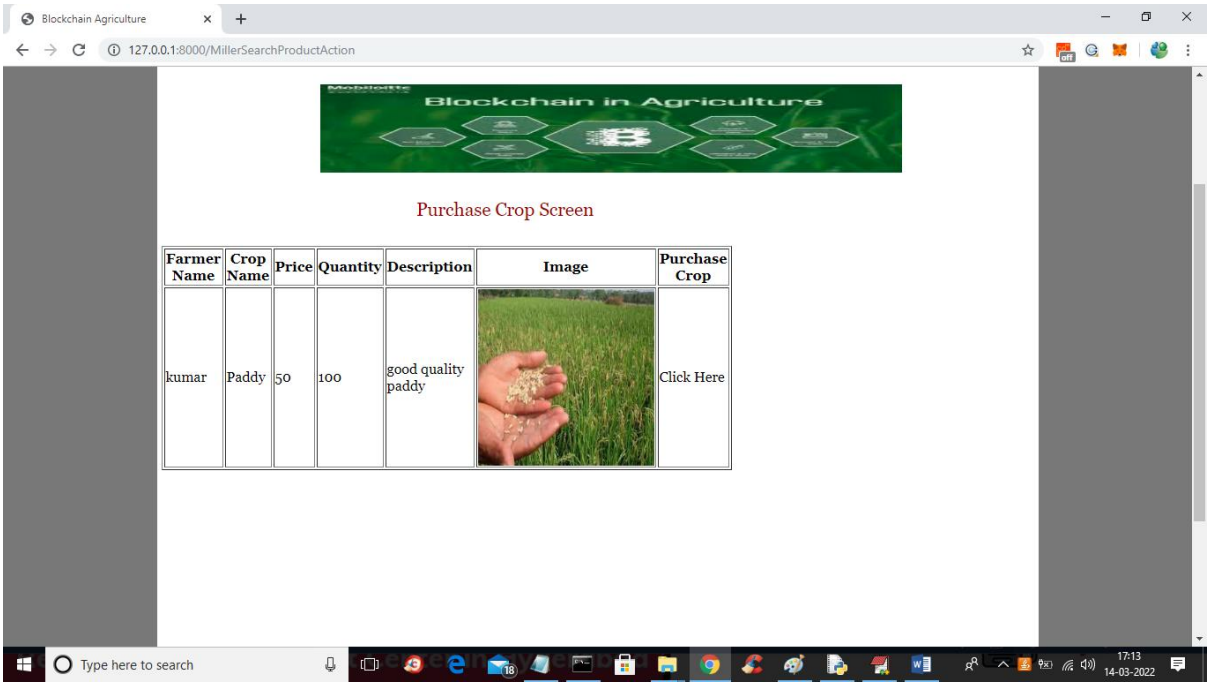

Miller may check all crop information on the above page. To get to the purchasing screen, click on the "Click Here" link.

Next, click the "Sale To Consumer" option to see the page below. The order information will be updated on the previous screen, and the farmer will be able to view and satisfy it.

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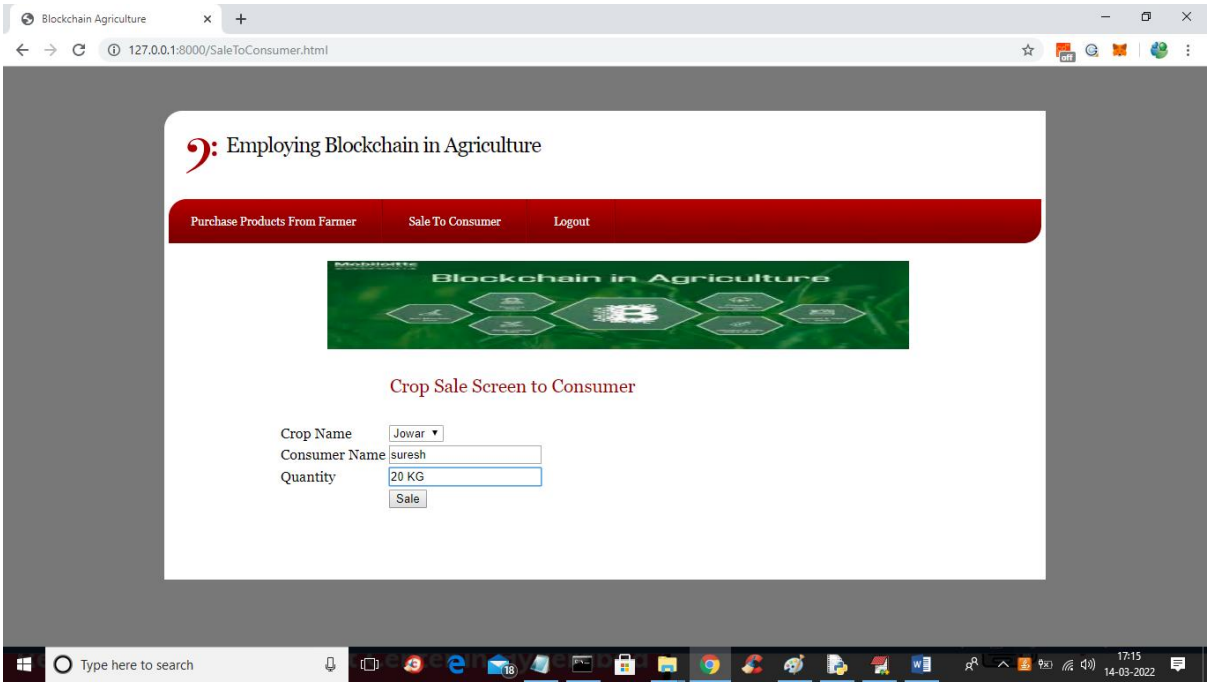

Miller will sell crop to consumers on the above screen and push the button to acquire the outcome below.

You may see the updated sell to consumer orders on the previous page; to see your orders as a farmer, you'll need to log out and back in.

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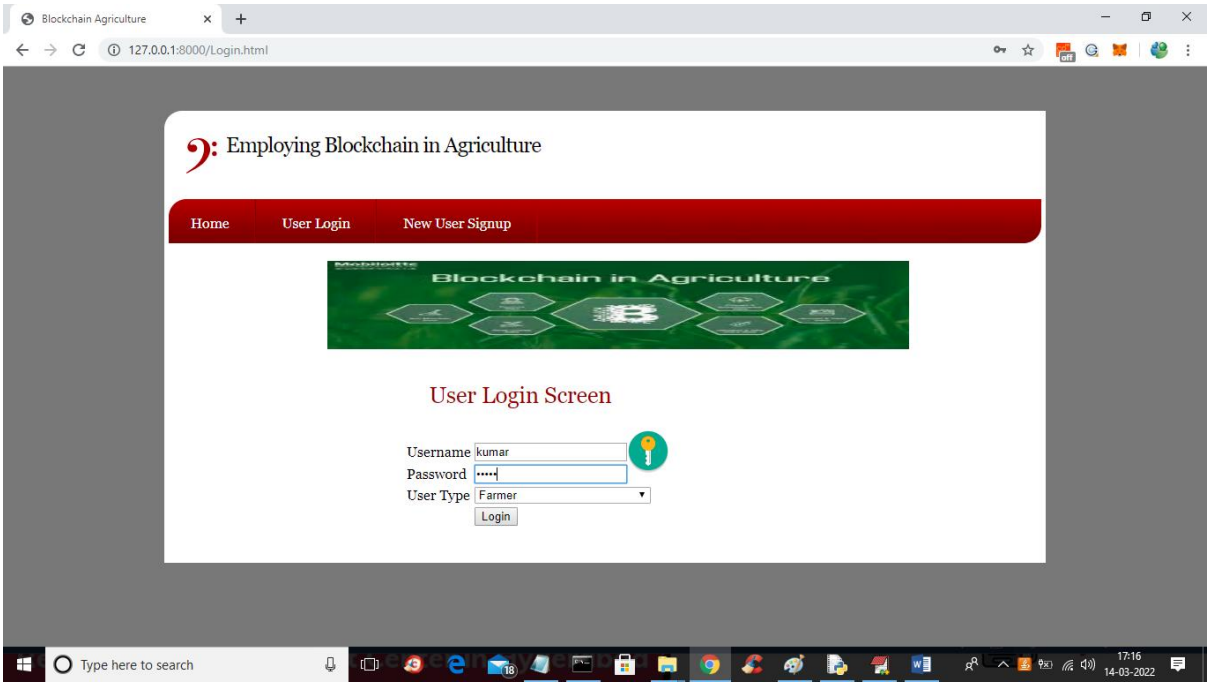
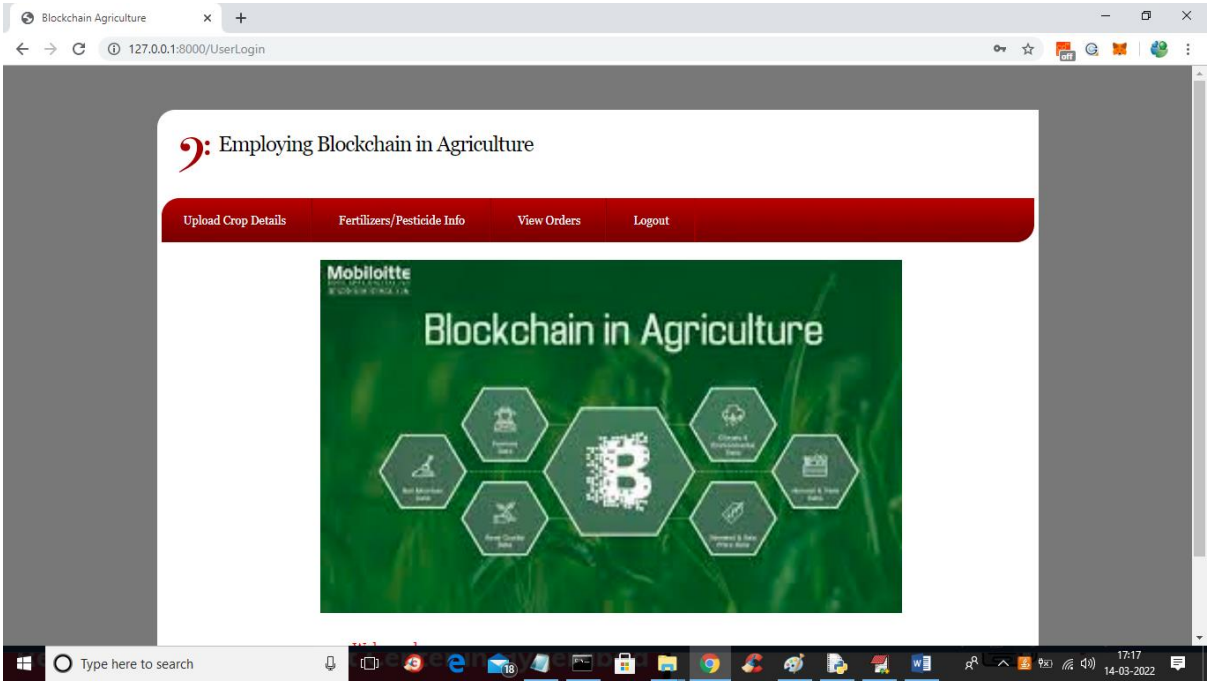


The farmer is logged in on the screen above, and after logged in, they will see the result below.



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

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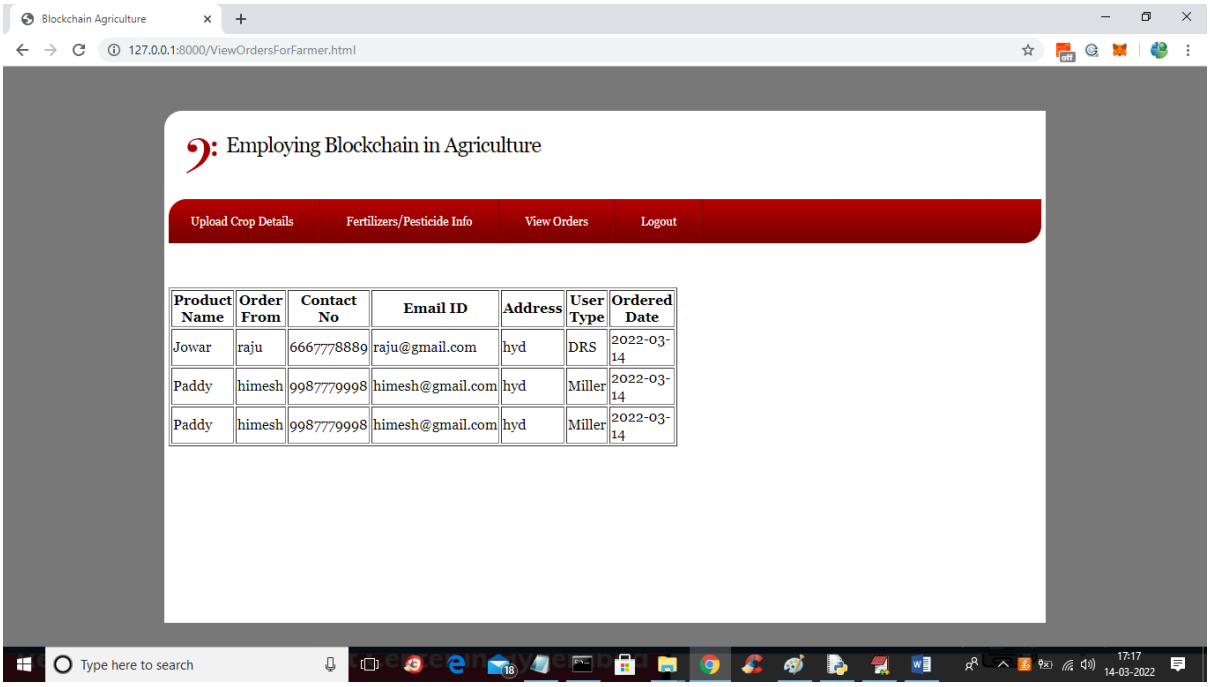

Prior to completing the transaction, the farmer may see the buyer's details, including the crop name, quantity, and contact information, as well as their user type (DRS, retailer, consumer, or Miller), on the screen shown above.

CONCLUSION

The emerging e-agriculture system, which includes blockchain innovation, is transforming the whole industry in an effort to tackle the food crisis of the next century. It provides a number of important functions, from the ranch to the people: first, it ensures the privacy and honesty of information by integrating smart farming and precision agriculture techniques to increase ranch productivity; second, it builds trust among participating parties, which simplifies the food supply chain; and third, it allows farmers to maximise their revenue through a reliable platform. All parties involved in the agricultural market stand to benefit greatly from it.

In order to promote blockchain strategies, this article presents a comprehensive analysis of existing blockchain-based agricultural applications and technology, with a focus on their many uses within the agricultural product ecosystem. Everything from the blockchain's data storage community to its many recommended application platforms has been laid out for you here. A

comprehensive analysis of identified blockchain applications in agriculture has been conducted by us. Before presenting some potential services, we took into account certain important challenges associated with the current usage of blockchain-related new technology in agricultural applications. Scalability, compatibility with preexisting legacy systems, and security and privacy are the three main challenges. Our proposed ideas may be seen, in a nutshell, as an alternate take on the system style makeover. Additionally, we have shown the present COVID-19 global food problem as an example of how blockchain technology may be used in the future to address this industry. Going forward, we want to provide more in-depth talks on blockchain's many facets and make it very clear how the problems highlighted in this article may be addressed in the development of blockchain technology for agricultural systems. Our example may be strengthened with a more comprehensive case study, which could then be evaluated using a battery of empirical tests.

REFERENCES

[1] Satoshi Nakamoto et al., "Bitcoin: A peer-to-peer electronic cash system.," 2008.

[2] Zibin Zheng, Shaoan Xie, Hongning Dai, Xiangping Chen, and Huaimin Wang, "An overview of blockchain technology: Architecture, consensus, and future trends," in 2017 IEEE international congress on big data (BigData congress). IEEE, 2017, pp. 557–564.

[3] Yu-Pin Lin, Joy R Petway, Johnathen Anthony, Hussnain Mukhtar, ShihWei Liao, Cheng-Fu Chou, and Yi-Fong Ho, "Blockchain: The evolutionary next step for ict e-agriculture," Environments, vol. 4, no. 3, pp. 50, 2017.

[4] Fthi Arefayne Abadi, Joshua Ellul, and George Azzopardi, "The blockchain of things, beyond bitcoin: A systematic review," in 2018 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCom) and IEEE Smart Data (SmartData). IEEE, 2018, pp. 1666–1672.

[5] Feng Tian, "A supply chain traceability system for food safety based on haccp, blockchain & internet of things," in 2017 International conference on service systems and service management. IEEE, 2017, pp. 1–6.

[6] Selena Ahmed and Noah ten Broek, "Blockchain could boost food security," Nature, vol. 550, no. 7674, pp. 43–43, 2017.

[7] Si Chen, Rui Shi, Zhuangyu Ren, Jiaqi Yan, Yani Shi, and Jinyu Zhang, "A blockchain-based supply chain quality management framework," in 2017 IEEE 14th International Conference on e-Business Engineering (ICEBE). IEEE, 2017, pp. 172–176.

[8] Sara Saberi, Mahtab Kouhizadeh, Joseph Sarkis, and Lejia Shen, "Blockchain technology and its relationships to sustainable supply chain management," International Journal of Production Research, vol. 57, no. 7, pp. 2117–2135, 2019.

[9] Rosanna Cole, Mark Stevenson, and James Aitken, "Blockchain technology: implications for operations and supply chain management," Supply Chain Management: An International Journal, vol. 24, no. 4, pp. 469– 483, 2019.

[10] Jane Thomason, Mira Ahmad, Pascale Bronder, Edward Hoyt, Steven Pocock, Julien Bouteloupe, Katrina Donaghy, David Huysman, Tony Willenberg, Ben Joakim, et al., "Blockchain—powering and empowering the poor in developing countries," in Transforming climate finance and green investment with blockchains, pp. 137–152. Elsevier, 2018.

[11] Diana Kos and Sanneke Kloppenburg, "Digital technologies, hypertransparency and smallholder farmer inclusion in global value chains," Current Opinion in Environmental Sustainability, vol. 41, pp. 56–63, 2019.

[12] Guoqing Zhao, Shaofeng Liu, Carmen Lopez, Haiyan Lu, Sebastian Elgueta, Huilan Chen, and Biljana Mileva Boshkoska, "Blockchain technology in agri-food value chain management: A synthesis of applications, challenges and future research directions," Computers in Industry, vol. 109, pp. 83–99, 2019.

[13] Hang Xiong, Tobias Dalhaus, Puqing Wang, and Jiajin Huang, "Blockchain technology for agriculture: Applications and rationale," Frontiers in Blockchain, vol. 3, pp. 7, 2020.

[14] Andreas Kamilaris, Agusti Fonts, and Francesc X. Prenafeta-Boldv´, "The rise of blockchain technology in agriculture and food supply chains," Trends in Food Science & Technology, vol. 91, pp. 640–652, 2019.

[15] Francesca Antonucci, Simone Figorilli, Corrado Costa, Federico Pallottino, Luciano Raso, and Paolo Menesatti, "A review on blockchain applications in the agri-food sector," Journal of the Science of Food and Agriculture, vol. 99, no. 14, pp. 6129–6138, 2019.