SYNOPSIS

ON

"Agri-Contract Connect"

Submitted in

Partial Fulfillment of requirements for the Award of Degree

of

Bachelor of Technology

In

Computer Science and Engineering

By

(Project Id: 24_CS_AIML_3A_08)

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1. Introduction

The agricultural sector faces challenges such as market price volatility, middlemen exploitation, and unpredictable buyer demand. These issues result in income instability for farmers and limit their ability to adopt modern farming techniques. To address these problems, the Assured Contract Farming System aims to provide a technology-driven platform that guarantees market access and fair pricing for farmers by leveraging cutting-edge technologies such as Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), Big Data, and Cloud Computing. This system creates a transparent and sustainable framework to connect farmers with buyers, ensuring security, efficiency, and accountability throughout the supply chain.

2. Project Objective

The objective of the Assured Contract Farming System is to create a digital platform that directly connects farmers with buyers, ensuring market access and fair pricing. By integrating Blockchain, AI/ML, and IoT, the platform will:

- Enable Secure Transactions: Use Blockchain for transparent, tamper-proof contracts.
- Provide Predictive Insights: Use AI/ML to predict crop yields and market trends.
- Monitor in Real-Time: Use IoT devices for monitoring soil and weather conditions.
- Foster Transparency: Offer a traceable supply chain for buyer confidence.
- Support Multi-Lingual Access: NLP enables access in different languages.
- This will help farmers gain stable market access, and buyers receive high-quality produce with full transparency.

3. Feasibility Study:

- **Technical Feasibility**:

The use of Blockchain, AI/ML, IoT, and Big Data is supported by available infrastructure, making it technically feasible and achievable.

❖ **Operational Feasibility**:

The platform is user-friendly with multi-lingual support and IoT-based real-time monitoring, ensuring smooth operation for both farmers and buyers.

❖ **Economic Feasibility**:

The project is cost-effective, offering direct market access to farmers, reducing middlemen, and improving crop yields, leading to long-term economic benefits.

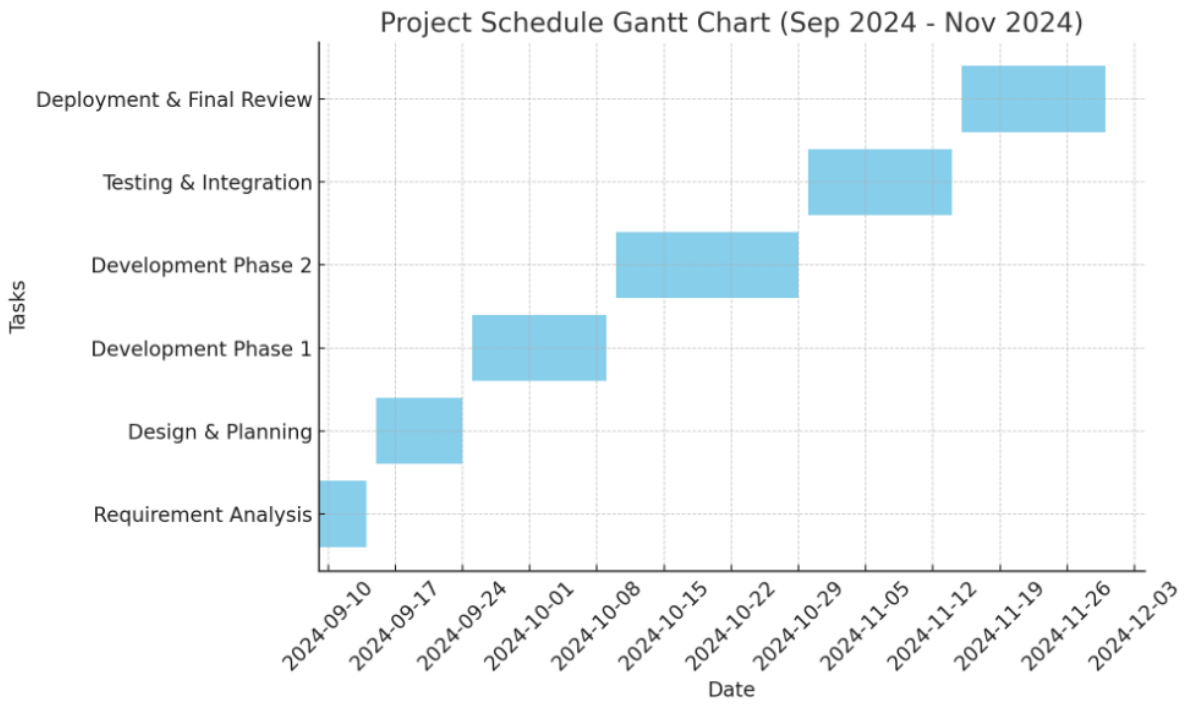
❖ **Schedule Feasibility**:

The project timeline from September 9, 2024, to November 30, 2024, is realistic and manageable, ensuring on-time development and deployment.

❖ **Legal Feasibility**:

Blockchain ensures secure, legally compliant contracts, while data privacy and security regulations are adhered to.

This study confirms that the project is practical and feasible from all necessary perspectives.



4. Methodology/ Planning of work

The development of the Assured Contract Farming System will follow a structured methodology to achieve the project objectives:

- **Requirement Analysis**:

Identify and gather requirements from stakeholders, including farmers, buyers, and regulators. This phase will define key features such as secure contracts, market access, and real-time monitoring.

- **System Design**:

Create an architecture diagram to represent system components, including Blockchain for contract management, AI/ML for predictive analytics, IoT for real-time monitoring, and a user interface for ease of access.

- **Development**:

Implement the backend using Blockchain for secure transactions, AI/ML models for predictive insights, and IoT devices for monitoring. The frontend will be designed to be user-friendly and accessible in multiple languages through NLP integration.

- **Testing & Integration**:

Conduct thorough testing of individual modules and integrate them to ensure the system works cohesively. Real-time data from IoT devices and predictive insights will be verified for accuracy and performance.

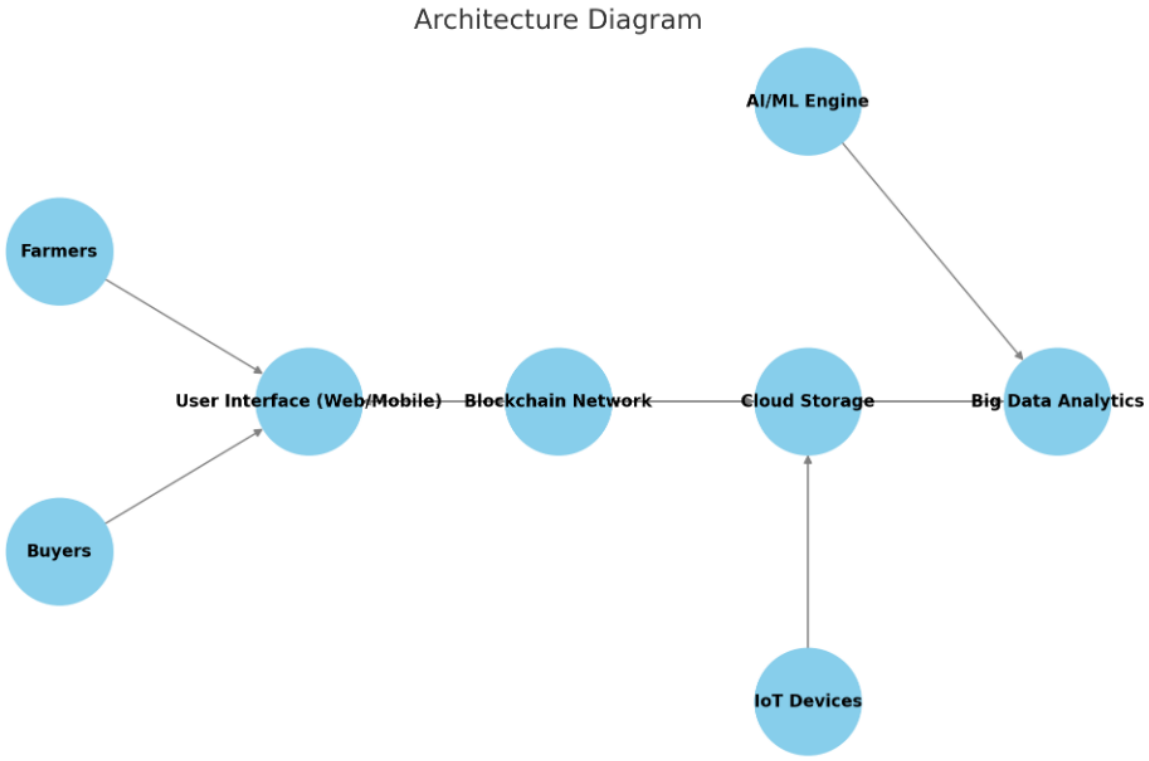
- **Deployment**:

Deploy the system on cloud infrastructure to ensure scalability and security. Provide training and documentation to farmers and buyers.

❖ **Maintenance**:

Continuously monitor the system for updates, bug fixes, and scalability improvements, ensuring long-term reliability.

The following diagram will explain the flow of information in the system (Architecture Diagram/DFD/ER Diagram/Class Diagram to be provided).



5. Tools/Technology Used:

5.1 Minimum Hardware Requirements

Hardware required for the development of the project.

- **CPU:** Intel Core i5 or equivalent
- **RAM:** 8 GB (16 GB recommended for better performance)
- **GPU:** NVIDIA GeForce GTX 1050 or equivalent (for AI/ML processing)
- **HDD:** 500 GB SSD (for faster data access and storage)
- **IoT devices (**sensors for real-time monitoring**),** network router for communication

5.2 Minimum Software Requirements

Software required for the development of the project.

- **OS :** Windows 10 or Linux (Ubuntu 20.04 or later)

Development Tools:

- **Python:** Version 3.8 or later (for backend development and AI/ML algorithms)
- **Node.js:** Version 14.x or later (for server-side development)
- **React.js:** Version 17.x or later (for frontend development)
- **Docker:** Version 20.x or later (for containerization)
- **MySQL:** Version 8.x (for database management)
- **Android Studio:** Version 4.x (if mobile application development is included)
- **Git:** Version 2.x or later (for version control)

This hardware and software setup will ensure smooth development and deployment of the system, supporting the required technologies effectively

6. References: [IEEE format]:

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- M. R. M. Arif, R. K. Tiwari, and D. K. Mishra, “Big Data Analytics in Agriculture: Opportunities and Challenges,” Agricultural Informatics, vol. 1, no. 2, pp. 67-74, 2022.
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These references provide foundational knowledge and insights into the integration of technology in agriculture, particularly focusing on Blockchain, AI/ML, IoT, and big data analytics, which are critical components of the proposed project.