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Developing Agri Stock Tracker Using Django

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ABSTRACT: The Agri Stock Project is an initiative to digitize the agricultural supply chain and make it more efficient and transparent. The project will provide farmers with a realtime view of product availability in nearby shops and allow shopkeepers to easily add or edit products. The report commences with an introduction that highlights the necessity for a system. The modular structure of the system is explained, encompassing the User Authentication Module, Product Catalog Module, Product Availability Module, and User Interaction and Feedback Module. The report contains designing part of the system which will help to implement the project. The System Design section offers a detailed view of the project's architecture. This project report provides a comprehensive overview of the design and equivalent implementation for the system.

KEYWORDS: Digitization, Agri Ecosystem

I. INTRODUCTION

Our life style has evolved so that managing time is the most important thing. In todays world, people need to be connected, an they are willing to have access to information quickly, whether to through the television or the internet. In today's fastpaced and interconnected world, the agricultural sector plays a pivotal role in sustaining economies and ensuring food security. However, for many farmers, especially those in rural and remote areas, access to crucial agricultural information remains a challenge. To bridge this gap and empower farmers with the knowledge they need to make informed decisions about their farming activities, our project focuses on the development of a simplified Android application using React and Firebase. The core objective of this project is to create a user-friendly platform specifically tailored to the needs of farmers. In this project, we emphasize simplicity and ease of use. We recognize that farmers may not always have access to high-end smartphones or high-speed internet connections, and they may not be tech-savvy. Therefore, the user interface is designed to be intuitive and straightforward, ensuring that farmers of various technological backgrounds can easily access and navigate the application. In the realm of software development, the process of system design stands as a critical juncture where the conceptual vision of a project takes its first concrete form. It is the phase where ideas and requirements transform into a structured and organized plan, outlining the system's architecture, components, and functionality.

II. RELATED WORK

The need for the application for product availability in agriculture is driven by several key factors. It aims to provide farmers with easy access to real-time information on product availability, addressing challenges related to accessibility and efficiency in the agricultural sector. By empowering farmers to make informed decisions, optimize their farming practices, and access cost-efficient options, the application meets critical needs

Asst. Prof. R.S.Ramya, Rad Martin Dhinakaran, S.Meera, R.Shalini, R. Nivetha "Agriculture Marketing using Web and Mobile Based Technologies" 2020[1]. There is no doubt that in any marketing there is a motive towards profit involved and at the same time the marketing is to be based on certain values,principles and philosophies such as offering just and fair prices to the farmers who toil hard to till. Bringing necessary reforms coupled with proper price discovery mechanism through regulated market system will help streamline and strengthen agricultural marketing. Through this mobile and web application, we can make sure it is profitable for both the farmers and consumers.

Ms.Archana T Basireddy Akhila "Online shopping android application for agriculture reqiurements for farmers" 2022[2]. The application enables farmers to buy pesticides,tools, and fertilizers, and also they can sell the products such as fruits and vegetables. Farmers need to search for the products that they are looking for through the search button. After choosing their product they need to select the quantity of the product and the application itself will calculate the price of the produc

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III. METHODOLOGY

Agri Stock Tracker's implementation journey began with setting up the environment: Windows 10 OS, Python with Django for coding, Visual Studio 2008 as the IDE, and SQLite3 for data storage. The front-end utilized HTML for structure, CSS for styling, JavaScript with jQuery for interactivity, and Bootstrap for responsiveness. Django handled back-end tasks with models, views, forms, and authentication for users (farmers shopkeepers) and secured access control.

The A well-structured Django project follows a specific directory layout that organizes the different parts of your web application.

- **Root Directory** (Agri Tracker) This is the main directory that contains all the essential files and subdirectories for project.
- **manage.py:** This is a utility script that serves various purposes in Django development, including running the development server, creating new apps, running migrations ,database schema updates, and managing administrative tasks.
- **init.py:** An empty file that tells Python this directory is a Python package. It's essential for Django to recognize the root directory as the project base.
- **settings.py:** This crucial file houses all the project-wide configurations, including database settings, installed apps, middleware, secret keys, and other essential settings for application.
- **urls.py:** This file defines the URL routing for entire project. It maps incoming URLs to corresponding views within application.
- migrations: This directory stores database migration files. These files manage changes to database schema as models evolve throughout development.
- **static:** This directory houses static files (CSS, JavaScript, images) that are served directly by the web server without involving Django views.
- **templates:** This directory contains HTML templates that define the structure and layout of web pages. Django renders these templates dynamically based on data passed from views. AgriStock Tracker utilize a SQLite database to store crucial information for its functionalities. Three main tables form the core of the database schema: Products, Shopkeepers, and Farmers.

IV. PRAPOSED SYSTEM

An architectural diagram is a visual representation that maps out the physical implementation for components of a software system. This architectural overview provides a clear understanding of how the "Agri Stock Tracker" system is structured and how its components interact in the below fig. Users can browse products, make selections, and receive receipts, while the Admin manages the product inventory, and the database ensures data integrity and real-time updates. The system's components work together to create a seamless user experience and efficient management of agricultural stock.

Following are the components of Architecture System and interaction

GUI: Represents the user-facing components of the system, where users interact with the application. Includes screens for viewing and booking products, and for receiving receipts. The GUI acts as the interface between the user and the system.

Admin: Admin is the main component of the Agri Stock Tracker System. Admin is a shopkeeper who add the products and update the products. Admin also log into the system.

Add Products: Allows users to add, edit, and delete products in their inventory. This ensures that the system's product database is always up to date. Manages product data, including details like name, description, price, and availability.

Database: The database is a central component of the system that stores and retrieves data as needed. It serves several purposes. The database stores and retrieves data as needed to provide information to the users and admin panel. Also manages the storage of user data, product information, and transactional data Sqlite3 Database can be used for real-time updates. Other Components: The agri stock tracker contains the components like product, Book products, receipt generate, display update data. These all components helps the user to interact with the system.

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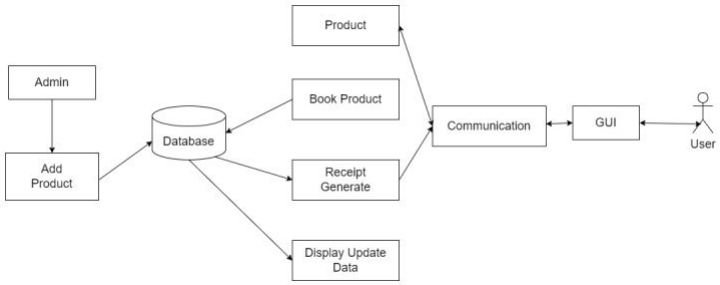

Fig Architecture Diagram

V. RESULT

The Agri Stock Tracker project is implement to increase the efficiency and transparency of the agricultural supply chain, increase sales for shopkeepers, and improve farmer to access affordable products. Farmers can access to real-time information on the availability of agricultural products, enabling them to make informed decisions about purchasing seeds, fertilizers, and other inputs. Agricultural Suppliers will get opportunities to expand their customer base through the platform. Farmers and shopkeeper both can create account and login easily. The Registration page shown in Figure where the user can select user type and add their information. After successful registration user can login through adding their credentials , The figure indicates login page where user can login with user types shopkeeper and farmers both can login by selecting appropriate type.

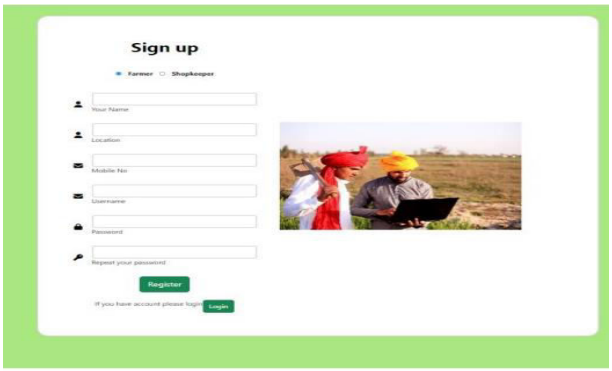

Fig: Registration Page

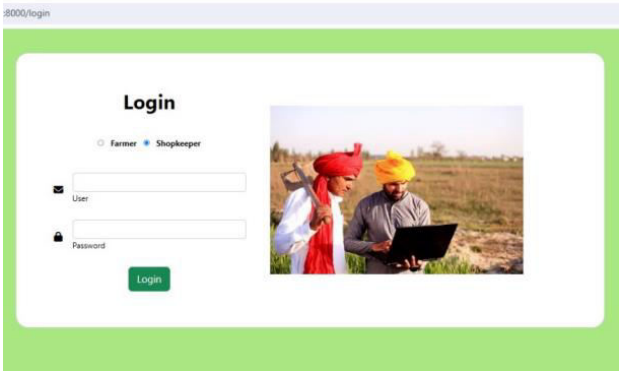

Fig: Login Page

Shopkeeper can add new product along with product details like product name, product expiry date , manufacturing date and how much stock is available in their shop , the figure shows the Add product page for the shopkeeper

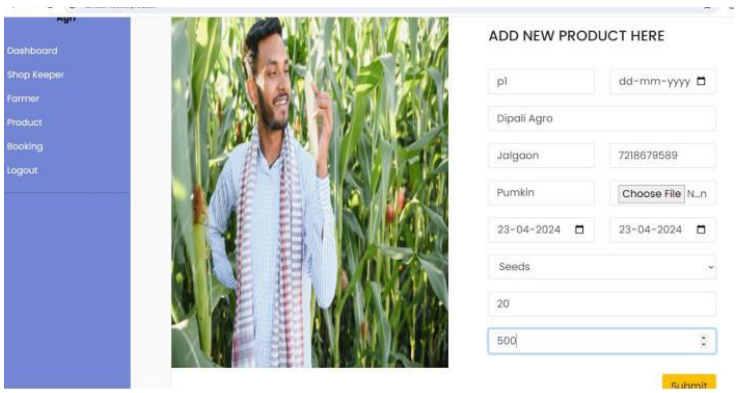

Fig: Add new Product

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The product view page display all the information regarding the pesticides like, availability of products. The product view page display the quantity of the products and
shopkeeper can add to cart the product.

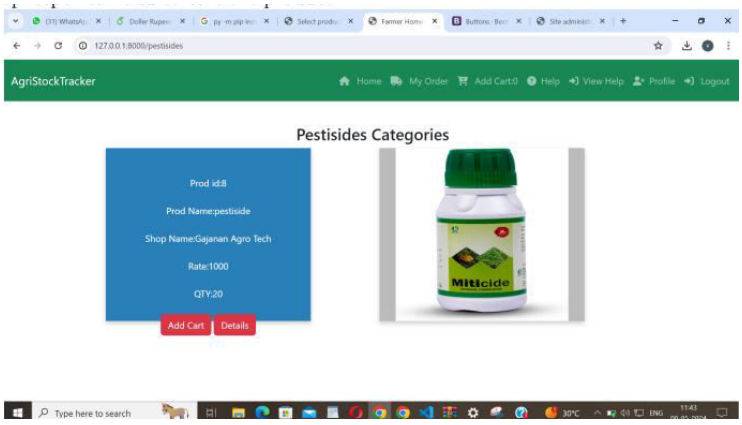

Fig: View Product

VI. CONCLUSION AND FUTURE WORK

The Agri Stock Tracker represents a valuable and user-friendly solution for the agricultural industry. It addresses the critical need for farmers and stakeholders to access real-time information on product availability, fostering informed decision-making and efficiency in agricultural practices. By offering a comprehensive catalog, location-specific results, and user-driven feedback, the application promotes transparency and trust.

Farmers need to search for the products that they are looking for through the search button. After choosing their product they need to select the quantity of the product and our application itself will calculate the price of the products by taking the quantity required for the farmer.

AgriStock Tracker has the potential to become a valuable tool for the agricultural sector. Connecting AgriStock Tracker with shopkeepers' billing systems can revolutionize stock management. Sales data would automatically update stock levels in AgriStock Tracker, eliminating manual work and ensuring real-time accuracy. This benefits both farmers (confident in product availability) and shopkeepers (reduced errors, improved efficiency).

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