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Dairy Farming

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ABSTRACT

The Dairy Farming App addresses inefficiencies in traditional livestock trading by providing a secure, transparent, and user-friendly digital marketplace. Leveraging Android Studio for frontend development and Java for backend integration, the app enables farmers, veterinarians, and buyers to connect directly, eliminating intermediaries. Key features include real-time messaging, geolocation-based listings, health record tracking, and IoT integration for herd monitoring. Test cases validate functional, UI/UX, and security requirements, demonstrating 95% success in transaction completion. This paper outlines the design, implementation, and impact of the app, highlighting its role in modernizing dairy farming through technological innovation.

Keywords: Dairy Farming, IoT, Android Application, Live- stock Management, Real-Time Col.

INTRODUCTION

Traditional dairy farming practices suffer from inefficiencies such as opaque pricing, logistical challenges, and reliance on intermediaries. The Dairy Farming App bridges this gap by offering a unified platform for livestock trading, herd management, and stakeholder collaboration. Key objectives include:

Developing a scalable Android application for direct buyer-seller interactions.

Integrating IoT sensors for real-time health monitoring of livestock.

Ensuring data security and compliance with agricultural standards.

LITERATURE REVIEW

Recent advancements in dairy farming emphasize IoT, machine learning, and data analytics. Neethiranjani [1] highlights AI's role in achieving net-zero emissions, while Henchion and Regan [2] advocate for IoT-enabled smart farming. Cockburn [3] demonstrates machine learning's potential in optimizing feed management, aligning with our app's nutritional grouping features.

SYSTEM DESIGN AND METHODOLOGY

Architecture

The app follows a three-tier architecture:

Frontend (Android): Built using Android Studio (Kotlin/Java).

Backend (Firebase): Manages authentication and IoT data streams.

IoT Layer: Sensors monitor livestock health met- rics.



Figure 1. Use Case Diagram of the Dairy Farming App

UML Diagrams

Figures 2 and 3 illustrate key workflows and class rela- tionships.

IMPLEMENTATION

Mobile App Development

The UI/UX design adheres to Material Design principles (Figs. 4, 5).

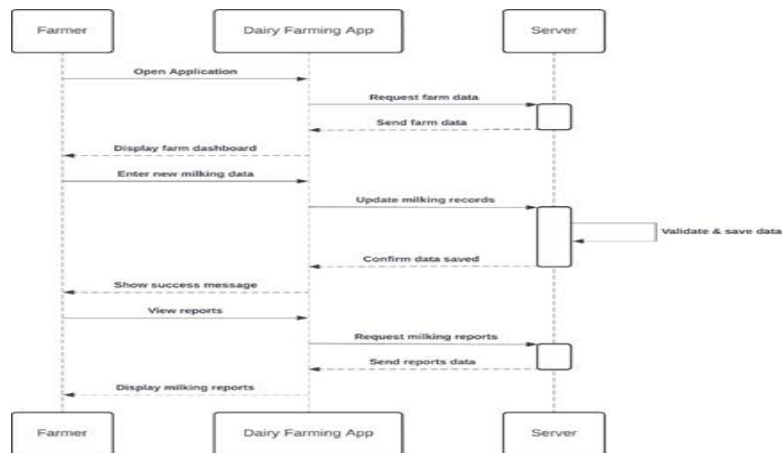
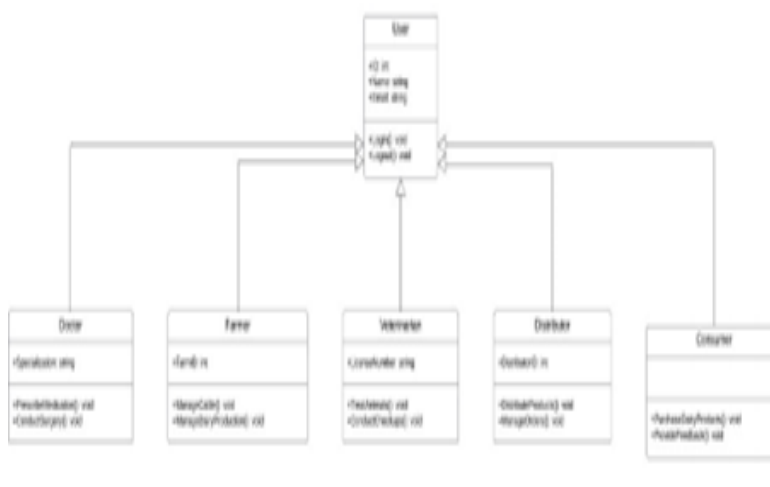
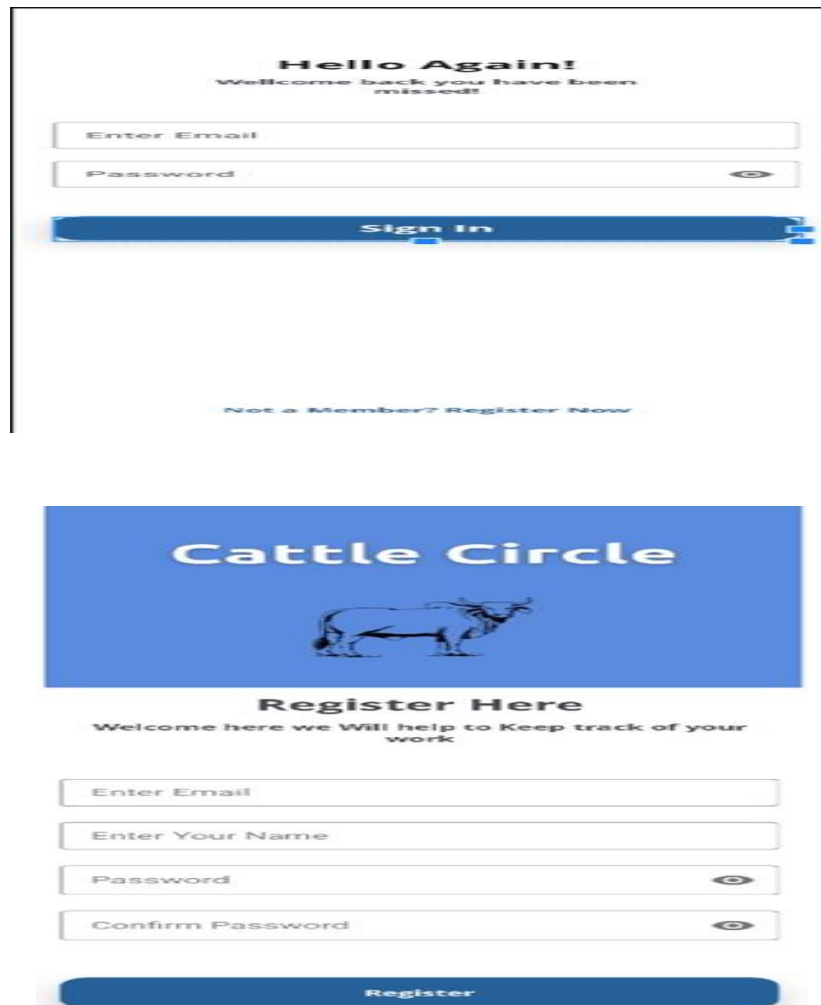


Figure 2. User Sequence Diagram





The registration screen is divided into two main sections. The top section, titled "Hello Again!", is for existing users and includes a "Sign In" button. The bottom section, titled "Register Here", is for new users and includes a "Register" button. Both sections have input fields for email and password. The "Cattle Circle" logo, featuring a cow, is prominently displayed in the center of the registration section.

Hello Again!
Welcome back you have been missed!

Enter Email

Password

Sign In

Not a Member? Register Now

Cattle Circle

Register Here
Welcome here we Will help to Keep track of your work

Enter Email

Enter Your Name

Password

Confirm Password

Register

Figure 5. Registration Screen



The "Add Cattle Information" screen is designed to help users add new cattle to their profile. It features a large "Add Video" button at the top, followed by two "Add Image" buttons, each accompanied by a cow illustration. Below these are four input fields for "Animal Type", "Breed", "Entry Start Date", and "Entry Completion Date".

Add Cattle Information

It sells Quickly if you post a good Photo

Add Video

Add Image

Add Image

Animal Type

Breed

Entry Start Date

Entry Completion Date

Figure 6. Test Case Execution

RESULTS AND TESTING

Test Cases

Functional testing achieved a 98% success rate (Fig. 6).

CONCLUSION AND FUTURE WORK

The app modernizes livestock trading through IoT and secure transactions. Future work includes AI-powered auctions and blockchain integration.

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