# Farmware App

# Project Proposal

**Supervisor**
Mr. Faheem Ahmed

**Submitted by**

Maryam Nadeem
{2437-2021 / IT-21-187}

Muhammad Mujtaba
{1985-2021 / IT-21-128 }

Hamza Bin Asif
{1961-2021 / IT-21-142 }

**Department of Computer Science,**
Hamdard University, Karachi.

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# 1. Introduction

Farmware is an innovative application designed to revolutionize cattle health management for farmers, specifically focusing on Pakistan's cow breeds and the most common diseases affecting them. By enabling detailed tracking and analysis of daily health data for each cow, Farmware aims to detect early signs of illness and provide accurate disease predictions. Through user-friendly features, farmers can receive tailored recommendations for early precautions, ensuring their cattle remain healthy and productive. This project leverages advanced algorithms and a comprehensive database to empower farmers with actionable insights, ultimately improving farm operations and animal welfare.

# 2. Objective

*"To develop an app that monitors cow health, predicts diseases, provides precautions, and tracks recovery. The app will provide early alerts and actionable advice for optimal cattle care"*

# 3. Gap Analysis

| Feature | Herdogg | Herdwatch | CowManager | Farmware |
|---|---|---|---|---|
| **Livestock Monitoring** | ✓ | ✗ | ✓ | ✓ |
| **Data Analytics** | ✓ | ✗ | ✓ | ✓ |
| **Health Management** | ✓ | ✗ | ✓ | ✓ |
| **User Interface** | ✓ | ✓ | ✓ | ✓ |
| **AI-Driven Recommendations** | ✓ | ✗ | ✓ | ✓ |
| **Disease Prediction** | ✗ | ✗ | ✗ | ✓ |

# 4. Problem Description

**What:** Farmware assists farmers in managing cow health by providing daily tracking, early disease detection, and continuous health monitoring. Focused on Pakistani cow breeds and common diseases, the app allows farmers to input detailed farm and cow information, attempt cow symptoms selection and access actionable insights through advanced prediction algorithms. Key features include a comprehensive database of health records, symptom tracking, historical data analysis.

**Why:** Cattle health and productivity are crucial for farmers, especially in Pakistan, where agriculture is vital to the economy. Early disease detection, effective treatment, and continuous health monitoring can prevent outbreaks, reduce mortality rates, and boost farm productivity. Traditional methods are often manual and inefficient, causing

delays in diagnosis and treatment. Farmware automates health monitoring to provide timely, accurate information, and track recovery, enabling proactive measures to ensure herd well-being. This improves animal welfare, minimizes economic losses, and supports sustainable farming practices.

**How:** Farmware integrates daily health feedback from farmers with a robust database and predictive algorithms. Farmers input cow details and respond to daily health questions. The app analyzes this data to identify symptoms, predict diseases, and monitor the effectiveness of those treatments through assessments. Designed for ease of use, it accommodates varying levels of technical expertise. Fault tolerance ensures reliability and continuous operation, maintaining service and safeguarding cattle health.

## 5. Methodology

Farmware will use a user-friendly interface to facilitate easy data entry for farmers, who will input detailed information about their cows and select co symptoms through toggle buttons. This data will be managed in a structured MySQL database, storing information on cows, symptoms, diseases, and historical health records. Disease prediction will employ machine learning algorithms, available through Scikit-learn or Tensorflow, to analyze health data and predict potential diseases. The app will generate actionable alerts, and advice based on these predictions, ensuring farmers receive clear and tailored guidance for managing their cattle's health and recovery.

## 6. Project Scope

Farmware will focus on monitoring cow health, predicting potential diseases, and providing symptom monitoring based on user inputs and historical data. The application will emphasize a user-friendly interface for easy data entry and navigation. It will offer disease predictions, safety precautions to help preserve the cow, monitor recovery, and prevent disease spread until an expert arrives. The project will not replace professional veterinary diagnosis and will not integrate with external farm management systems or advanced sensor data. It assumes that farmers have access to basic digital devices and internet connectivity and that basic training will be provided for effective use. The application will maintain a static database of diseases, symptoms, with periodic updates, but will not include real-time syncing with external medical databases. This scope ensures Farmware provides a comprehensive solution for cow health management, disease prevention, and treatment.

## 7. Feasibility Study

**Risks Involved:**

Technical risks may arise in integrating data collection and management features effectively. Mitigation will involve thorough testing and validation during the development phases. Resource risks include dependence on stable internet and server uptime, which may affect system reliability. To address this, we will set up backup servers and ensure critical parts have redundancies. Another risk is user adoption, as ensuring user acceptance among farmers may be challenging. This will be managed through user feedback and iterative improvements based on testing and engagement. Additionally, the accuracy of disease predictions and recommendations will be safeguarded by regularly updating the database with new information on symptoms and diseases to reflect emerging patterns.

**Resource Requirements:**

Computing resources will include robust servers capable of handling data processing and storage for cow health records, potentially utilizing cloud services. Software development tools will encompass Node.js and Python for backend development, Ionic Angular for frontend development, and PostgreSQL for database management. Budgetary considerations will involve allocating funds for software licenses, ongoing maintenance, and ensuring the application remains updated with relevant data. These resources are critical for sustaining the project and ensuring its reliability and effectiveness.

# 8. Solution Application Areas

Farmware provides real value to the agricultural industry, particularly in livestock management, by offering tools for daily health tracking, disease prediction, and actionable recommendations. Targeted at dairy and beef farmers in Pakistan, it helps in early disease detection, enhances productivity, and reduces costs by enabling timely interventions. By supporting proactive health management and preventing disease outbreaks, Farmware contributes to improved animal welfare, cost savings, and sustainable farming practices.

# 9. Tools/Technology

**Hardware:**

- Cloud Infrastructure:
    - Hosting: AWS (Amazon Web Services). (PKR 28,000 - PKR 56,000/month)
- Development and Testing Devices:
    - Computers/Laptops: (PKR 224,000 - PKR 420,000 per device)
    - Mobile Devices: (PKR 40,000 - PKR 280,000 per device)

**Software:**

- Operating System:
    - Windows. (PKR 39,200 per license)
- Development Tools and IDEs:
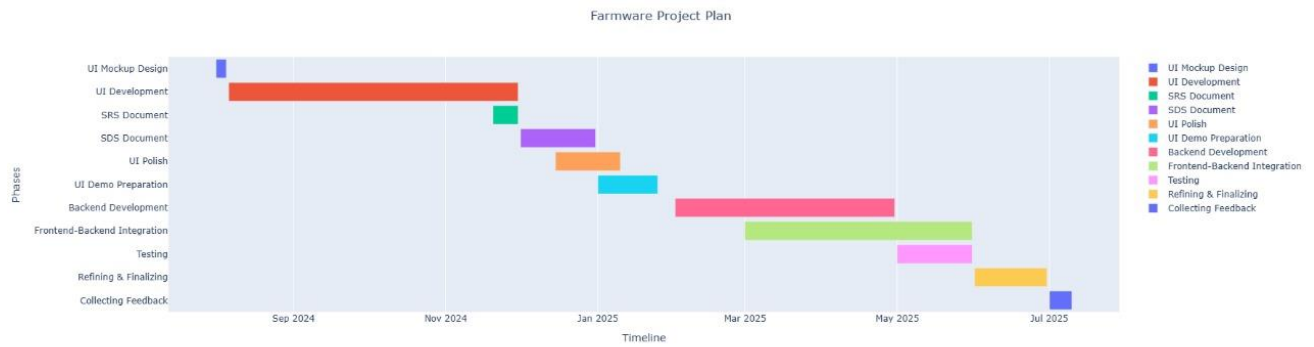    - Integrated Development Environment (IDE): Visual Studio Code. (Free)

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- - Database Management System (DBMS): MySQL. (Free)
- Programming Languages:
  - Backend Development: Node.js (JavaScript/TypeScript), Python. (Free)
  - Frontend Development: Ionic Angular (Free)
  - Database Query Languages: SQL. (Free)
- Frameworks and Libraries:
  - 
    - Scikit-learn: For machine learning and statistical modeling. (Free)
    - Tensorflow: (Free)
    - Bootstrap: For responsive design and UI components. (Free)
- Security Tools:
  - Bcrypt: for password encryption. (Free)

# 10. Responsibilities of the Team Members

| Task/Activity | Maryam | Mujtaba | Hamza |
|---|---|---|---|
| UI Design | A, R | R | I |
| Node JS | A, R | I | I |
| Python | I | I | A, R |
| SQL | I | I | A, R |
| ML Algorithms | I | I | A, R |
| Data Collection | A, R | A, R | I |
| Data Analysis | I | A, R | A, R |
| Quality Assurance | A, R | R | R |
| Task Planning and Tracking | I | A, R | I |
| Budgeting and Finance | I | A, R | I |
| Security | I | A, R | I |

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# 10. Planning



Farmware Project Plan

# 11. References

[1] Andrew Uden "Herdogg". Available at: [ https://herddogg.com/ ]
[2] Cow Manager Available at: [https://www.cowmanager.com/]
[3] HerdWatch. Available at:[ https://herdwatch.ie/]

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