

**CAPSTONE PROJECT REGISTER**

Class: Duration time: from 01/01/2025 To 20/04/2025

(\*) Profession: <Software Engineer> Specialty: <ES> <IS>

X

(\*) Kinds of person make registers: Lecturer Students

X

1. Register information for supervisor (if have)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Full name** | **Phone** | **E-Mail** | **Title** |
| Supervisor 1 | Võ Thị Thanh Vân | 0903919695 | vanvtt10@fpt.edu.vn |  |
| Supervisor 2 |  |  |  |  |

2. Register information for students (if have)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Student** | **Full name** | **Student code** | **Phone** | **E-mail** | **Role in Group** |
| 1 |  |  |  |  | Leader |
| 2 |  |  |  |  | Member |
| 3 |  |  |  |  | Member |
| 4 |  |  |  |  | Member |
| 5 |  |  |  |  | Member |

3. Register content of Capstone Project

(\*) 3.1. Capstone Project name:

* English: Dairy Farm Management System
* Vietnamese: Hệ thống hỗ trợ quản lý trang trại nuôi bò sữa
* Abbreviation: DFMS

1. **Context**:

A Dairy Farm Management System (DFMS) is a software system designed to simplify and optimize the operations of dairy farms. This system integrates various functions related to herd management, milk production, feed management, and financial oversight into a single, cohesive solution. By centralizing data and automating routine tasks, the DFMS helps farmers enhance productivity, improve animal welfare, and achieve greater operational efficiency. It enables farmers to monitor real-time data on herd health, production levels, and resource usage, leading to more informed decision-making and better management practices.

The core functionalities of a DFMS is herd management, which involves tracking individual animals’ health, breeding, and productivity. The system allows farmers to maintain detailed records for each dairy cow, including milk yield, reproductive status, vaccination history, and health issues. By analyzing this data, farmers can identify trends, address health concerns proactively, and optimize breeding programs.

In addition to herd management, a DFMS plays a main role in managing feed and nutrition. The system helps farmers plan and monitor feed rations, track feed inventory, and analyze the nutritional content of different feed types. By optimizing feed management, farmers can ensure that dairy cows receive the right balance of nutrients, which is essential for maintaining high milk production and overall health. The DFMS also provides tools for scheduling feed deliveries and managing supplier relationships, further streamlining the feeding process and reducing waste.

Overall, a DFMS empowers dairy farmers to manage their operations more effectively, leading to improved productivity and profitability.

1. **Proposed solutions**

*The features of Diary Farm Management System*

* Herd Management
* Maintain detailed records for each dairy cow, including identification numbers, breed, age, reproductive history, health records, and production data.
* Track health issues, treatments, vaccinations, and medical history. Schedule and manage veterinary visits and interventions.
* Monitor reproductive cycles, track mating and insemination activities, and manage pregnancy records and calving schedules.
* Milk Production Management
* Capture data on individual and bulk milk production, including volume, quality, and fat/protein content.
* Generate reports on daily, weekly, and monthly milk production, including trends and comparisons across different dairy cows or groups.
* Feed Management
* Plan and monitor feed rations to ensure balanced nutrition for the herd. Adjust rations based on production levels, health status, and lactation stages.
* Track feed inventory levels, manage suppliers, and schedule feed deliveries to optimize feed usage and reduce waste.
* Analyze the nutritional content of different feed types and adjust formulations to meet the herd’s dietary needs.
* Farm Operations Management
* Schedule and manage routine tasks such as milking, cleaning, and maintenance activities.
* Track labor hours, manage shift schedules, and monitor employee performance and productivity.
* Monitor the condition and maintenance schedules of dairy farm equipment and infrastructure.
* Set up alerts for critical events, such as health issues, low feed levels, or equipment malfunctions, to prompt timely action.
* User Management and Security
* Make sure that users have the right permissions based on their jobs and responsibilities, implement role-based access restrictions.
* Ensure data security measures to protect sensitive information related to herd management, and personal details.

1. **Functional requirements**

* **Dairy Farm Workers/Operators** 
  + Manage list of dairy cow information
  + Manage detailed records for each dairy cow, including identification numbers, breed, age, reproductive history, health records, and production data.
  + Track health issues, treatments, vaccinations, and medical history.
  + Schedule and manage veterinary visits and interventions.
  + Monitor reproductive cycles, track mating and insemination activities, and manage pregnancy records and calving schedules.
  + **Perform routine tasks such as milking, feeding, cleaning, and monitoring animal conditions. Use the DFMS to record these activities and manage schedules.**
  + **Input data related to milk yields, feed consumption, and any observed issues with the herd into the system.**
  + **Follow task lists and reminders generated by the DFMS to ensure all operational tasks are completed efficiently.**
* **Farm Owners/Managers**
  + Operate farm activities.
  + Use the DFMS to make decisions regarding farm operations, resource allocation, and long-term goals.
  + Generate reports on farm operations, including production and compliance status.
* **Veterinarians**
  + Access and update individual cow health records, including medical history, treatments, and vaccinations.
  + Track and monitor the health status of cows, identifying and addressing health issues.
  + Schedule and document veterinary treatments, including medication administration and follow-up care.
* **Administrator**
  + Admin can manage all account in the system.
  + Manage configuration of system.
* **System Handler**
  + Send notification.
  + Send email notification.

1. **Non-Functional:** 
   * **Usability**

* This software application is easy for everyone to use confidently.
  + **Reliability**
* This software system performs the specified functions without failure.

(\*) 3.2. Main proposal content (including result and product)

1. **Theory and practice (document):** 
   * Students should apply the software development process and UML 2.0 in the modelling system.
   * The documents include User Requirement, Software Requirement Specification, Architecture Design, Detail Design, System Implementation, and Testing Document, Installation Guide, sources code, and deployable software packages.
   * Server-side technologies:

* Server: .NET Core/Spring Boot
* Database System: SQL Server/MySQL Server/PostgreSQL.
  + Client-side technologies:
* Web Client: HTML5, CSS3, JavaScript, ReactJS/Angular.
* Mobile App: Flutter/React Native.

1. **Program:**
   * Mobile App for Workers/Operators, Veterinarians
   * Web App for Owners/Managers, Veterinarians, Administrator
   * API for System
2. **Proposed tasks for students:**

* Task package 1: Develop the API for the System.
* Task package 2: Develop the Mobile application for Workers/Operators, Veterinarians.
* Task package 3: Develop the Web application for Owners/Managers, Veterinarians, Administrator
* Task package 4: Build - Deploy and Test the system.
* Task package 5: Prepare all the required documents: System analysis and design, test plan, installation manual, user manual.
* Each work group may have many students participating but there will be 1 member responsible for the main responsibility.
* Notice: all students are required to understand the reference documents thoroughly and may need to explain to the viva committee.

4. Other comment (propose all relative thing if have)

……………………………………………….

|  |  |
| --- | --- |
| **Supervisor (If have)**  *(Sign and full name)* | TP HCM, 01/12/2024  **On behalf of Registers**  *(Sign and full name)* |