

Review paper on Dairy Cattle Health Management System – Cattle Hub

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Abstract : Conceding Dairy/cattle farming has been adopted in several countries, the dairy/cattle industry in India still needs to be overhauled with the involvement of technologies for better production, distribution, and budget control. In this project of cattle farming, farmers need to be registered to the module through a desktop application. Through this application, each cattle will be generated with a unique id which will be essential. Cattle Hub is a cloud-based software that focuses exceptionally on dairy cattle. The main aim of this software is to help dairy farmers maintain records of their cattle. The services provided by cattle hub are storing medical records, maintaining quality control parameters of the milk, Vital inputs for pregnant cows, advice that would assist the farmer in providing palliative measures in the situation where professional care is not immediately available based on certain observation/in-puts that could be provided by the farmer, contact details of the closest veterinary doctor and semen banks. The software would send Email and SMS alerts to the farmer regularly load relevant information to update the records of their cattle and also remind farmers to get the medical and milk tests done furthermore it will send awareness messages concerning preventive care, epidemics if any, and incentives promoting dairy farming. During our research, we did come across several smart farms across the world, but it is still to be implemented in India. This software helps the cattle owners to access veterinary doctors through online appointments as well as virtual consultations will be provided.

Keywords: Web application, Dairy farming, Cloud computing, Breeding, Medical record, Milk quality, Virtual Vet appointments.

I. INTRODUCTION

We have seen a great change since the beginning of dairy farming and domain with the improvisation of the resources available then by the brilliant minds and their art to embrace them into technology and make the world an easier place to live. The Project “cattle hub ” is based on cattle farming with the help of smart technologies like cloud computing. The proposed model is beneficial for an increase in milk production and makes the work of the farmer fast, easy, reliable. Our idea for this problem is to develop a web application to take care of many cattle at a time concerning their health necessities, breeding process, along with information on the nearest veterinary hospital and semen bank. The major advantage of this application is that it helps to build a global cattle health record. The software will store the details of cattle, quality of milk, the quantity of offspring, and much more. This particular application will help the farmer locate the nearby veterinary hospitals and also to consult a vet through online platforms. And after each interaction process is completed with the vet the farmer will be notified through email and SMS notifications.

2. EXISTING SYSTEM

The existing system is a desktop/Notebook/window phone-based field IT application that facilitates the capturing of real-time reliable data on Breeding, Nutrition, and Health services delivered at farmer's doorstep. The platform provides a tool for farmers, field functionaries, unions, and federations to assess and monitor the progress of the project on a near real-time basis.

3. PROPOSED SYSTEM

The proposed system is a cloud-based web application named Cattle Hub. The cloud application aims to help farmers in a fast, cost-efficient, and reliable way. The cattle hub will provide essential information on cattle farming, selective breeding, and diseases found among the dairy animals. Maintaining health and milk quality records of each animal and providing them a unique identification number is one of the main services the software provides followed by other services like a breeding calendar for pregnant cows, virtual appointments and consultations with the veterinary doctors, and information on the nearest veterinary clinic and semen bank. The medium of communication between the web application and the farmer will be the SMS notifications that will inform farmers about any disease outbreak in their area or incentives promoting dairy farming, upload relevant information regarding their cattle record, and also remind farmers to get the health and milk tests done. The main source of information and advice is a team of expert veterinary doctors who would always be available in time of need.

4.METHODOLOGY

The waterfall Model illustrates the software development process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete. In this waterfall model, the phases do not overlap.

The sequential phases in the Waterfall model are –

- Requirement Gathering and analysis
- System Design
- Implementation
- Integration and Testing
- Deployment of System Maintenance

4.1 BLOCK DIAGRAM

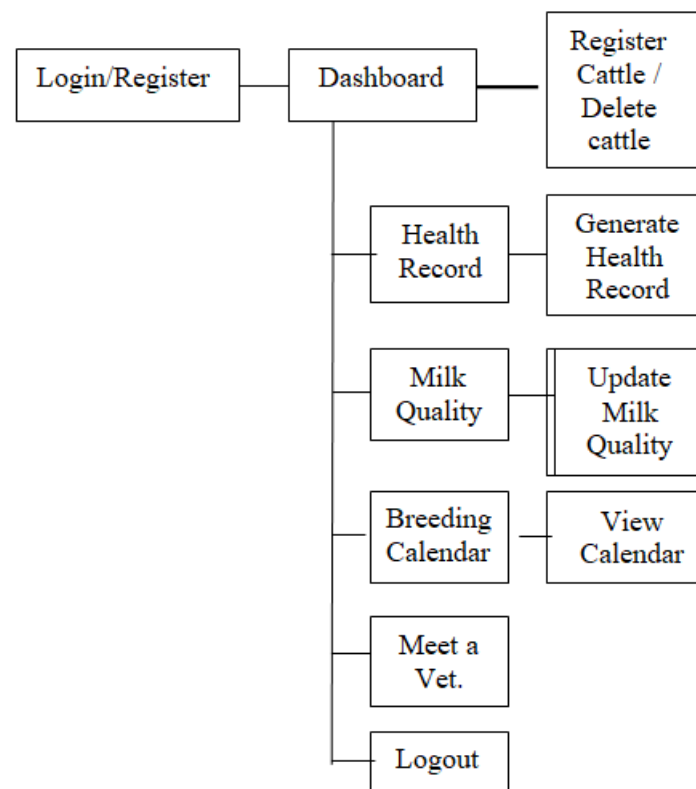


Figure 1: Block Diagram of Cattle Hub

HARDWARE REQUIREMENT

- ✓ Processor or CPU
- ✓ i3 processor
- ✓ GPU (not required)
- ✓ Minimum RAM (2GB)

SOFTWARE REQUIREMENT

- ✓ Operating System
Windows 7,8,10/Mac/Linux
- ✓ Browser
Google Chrome/Microsoft Edge/ Safari.

4.2WORKING

The System works by asking the user to register first if the user is a new user, or log in if the user is an existing user. After logging in the user can view his/her dashboard which shows all the cattle that the user owns. The user can even add or delete any specific cattle.

The System has the following features:

- ✓ Cattle Breeding System: It keeps track of cattle Breeding dates and notifies the farmer regularly by sending timely SMS and Emails.
- ✓ Cattle Health Report: It maintains the overall cattle health report which can be used for various purposes.
- ✓ Milk Quality: It keeps track of the quality of milk and the farmer gets the necessary input to improve the quality of milk.
- ✓ Virtual Meet: The system allows the farmer to schedule a meeting with an animal Expert who can provide necessary inputs to maintain cattle health as well as any threat of diseases.

Once the user registers a cattle, the cattle are provided with a unique ID which is important to maintain the cattle health report. For Milk quality the user has to provide some parameters like FAT, Protein, and SNF, and based on that quality of milk is determined. For Breeding System, the user has to enter the inseminated date of the cattle, and based on that the farmer will be notified regularly throughout the breeding process. The system also has a disease symptoms section that keeps a record of some common diseases and their cure.

Cattle Health report is generated keeping several factors in mind:

- ✓ General Test
- ✓ Infectious Diseases
- ✓ Blood Protozoan Diseases Tests
- ✓ Vaccinations against diseases
- ✓ Disorders related to pregnancy and calving
- ✓ Diseases occurring after calving
- ✓ Growth parameters
- ✓ Managerial practices
- ✓ The system is a cloud-based application that is more reliable and fast.

5.RESULT

The software is platform is independent. Universal cattle medical records can be stored which ensures data security and reliability. The farmer's mobile will be registered so all the alters will be sent through Email as well as SMS notifications which will also help in places where there is no availability of internet.



Figure 2: Above is the Emails sent to the farmer regarding the Breeding calendar (a) Milk Quality (b) and Pregnancy test (c).

Health Report
Risk Quality Analysis
Breast Cancer
Talk to an Expert

General Test

Temperature
37.2

Blood Function Test
Normal

Cytology Infectious Pathology
Negative

Urine Function Test
Normal

Submit Reset

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(d)

Infectious Disease Test

Respiratory Test
Negative

Tuberculosis Test
Negative

Sexual Disease Test
Negative

Infectious Disease Pathology
Negative

Blood Test Pathology
Negative

Submit Reset

(e)

Blood Protozoan Test

Respiratory Test
Negative

Tuberculosis Test
Negative

Sexual Disease Test
Negative

Blood Test Pathology
Negative

Submit Reset

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(f)

The screenshot shows the 'Vaccination Test' form in the CattleHub application. The form includes input fields for 'VTS', 'VTS', 'VTS', and 'VTS'. Below the input fields are 'Submit' and 'Reset' buttons. The left sidebar contains links for 'Health Report', 'Milk Quality Analysis', 'Breeding Calculator', and 'Talk To an Expert'. The footer text reads: 'Copyright © 2021 | Designed & Developed by MR Diga | www.cattlehub.in |'.

(g)

The screenshot shows the 'Disorder Test' form in the CattleHub application. The form includes input fields for 'Disorder', 'Symptoms of Disorder', 'Disorder', and 'Disorder'. Below the input fields are 'Submit' and 'Reset' buttons. The left sidebar contains links for 'Health Report', 'Milk Quality Analysis', 'Breeding Calculator', and 'Talk To an Expert'. The footer text reads: 'Copyright © 2021 | Designed & Developed by MR Diga | www.cattlehub.in |'.

(h)

The screenshot shows the 'Diseases Occuring After Calving' form in the CattleHub application. The form includes input fields for 'Postpartum', 'Postpartum', 'Postpartum', 'Postpartum', and 'Postpartum'. Below the input fields are 'Submit' and 'Reset' buttons. The left sidebar contains links for 'Health Report', 'Milk Quality Analysis', 'Breeding Calculator', and 'Talk To an Expert'. The footer text reads: 'Copyright © 2021 | Designed & Developed by MR Diga | www.cattlehub.in |'.

(i)

The screenshot shows the 'Growth Test' form in the CattleHub application. The form includes input fields for 'Growth', 'Age of Calf', 'Age of Calf', 'Age of Calf', 'Age of Calf', and 'Age of Calf'. Below the input fields are 'Submit' and 'Reset' buttons. The left sidebar contains links for 'Health Report', 'Milk Quality Analysis', 'Breeding Calculator', and 'Talk To an Expert'. The footer text reads: 'Copyright © 2021 | Designed & Developed by MR Diga | www.cattlehub.in |'.

(j)

(k)

Figure 3: The above images are the medical record inputs that need to be filled but the farmer while registering his cattle.

6. CONCLUSION

This project will be a good approach for dairy farming using key technologies like cloud computing, real-time messaging, real-time database, and data visualization. Cattle hub would aim to provide an accurate, less expensive, and reliable system for storing medical and milk quality records, breeding methodology, and much more. The software would use Email and SMS notification as a medium between the software and the user. The cloud-based software will be secured and user-friendly.

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