UNIVERSITY OF RWANDA

COLLEGE OF SCIENCE AND TECHNOLOGY

SCHOOL OF ICT

COMPUTER AND SOFTWARE ENGINEERING

SOFTWARE DESIGN AND DEVELOPMENT LAB

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CCMS

Online Coffee cooperatives Management System

Project Technical report

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Table of Contents

CHAPTER 1: Introduction

Computer technology is rapidly changing the way everything is done in every domain by simply becoming the best tool to be used in data collection, data analysis, data visualization, and also the safest and easiest way to store various information which results in better predictions for the future, according to the information collected by systems.

Through a web-based management system, all information about coffee cooperatives in Rwanda can be collected, analyzed, and be presented in a very effective way to the government officials, cooperative managers, and investors who are interested in coffee cooperatives and coffee production.

1.2 Background information

Up to now, it is hard for NAEB and RAB to provide information related to coffee cooperatives such as their types, location, cooperative members and cooperative managers. It is also hard for farmers to report any case which is harming coffee farming and coffee production, directly to sector and district agronomists, RAB and NAEB.

1.3 Problem statement

Information chain of coffee cooperatives in Rwanda is done in more traditional way by providing printed papers containing unprocessed information which is time consuming and untrustworthy way of supplying information because it only provide information access to small number of organizations and investors involved in coffee farming and coffee production and

also it requires them to arrive to the headquarter of NAEB to get those information.

Registration process of coffee cooperatives around the country takes time to be completed which makes it difficult for coffee farmers to register their new upcoming cooperative and cooperative managers to update information related to their cooperatives.

1.4 Objectives

1.4.1 General objective

Filling the gap of supplying all needed information in details that are related to coffee cooperatives in Rwanda.

1.4.2 Specific objectives

Facilitating communication between government boards (RAB and NAEB) and coffee cooperatives all around the country.

Providing an easy and better way for coffee farmers to report incident cases such as diseases, flood, and absence of fertilizers which negatively affect coffee production.

Helping government officials such as SEDOs, district and sector agronomists, and also cooperative managers to know all information (type of cooperatives, location of cooperatives, and all cooperative members) related to the coffee cooperatives under their responsibilities.

Modernizing coffee farming by the use web-based application.

CHAPTER 2: System analysis and design

2.1 System analysis

2.1.1 Requirements definition

2.1.1.1 Why system is needed

- Online coffee cooperative management system is need to digitize coffee cooperatives information supply chain which is very important aspect for all entities involved in coffee farming, coffee production, and investors all around the country.

- Online coffee cooperative management system will interact with databases of Government boards (NAEB and RAB) by fetching necessary information related to coffee farming and coffee cooperatives around the country.

- Online coffee cooperative management system will make it easy for cooperative managers to manage their cooperatives digitally and also manipulation of coffee cooperatives information will be easy quick and available 24/7.

- Reporting coffee diseases all around the country will be easy and quick task for each farmer since there will be embedded system in every coffee plantation to detect and report any disease to online coffee cooperatives management system. This will lead to quick response to any disease which can harm coffee plantation.

- System will be used by the government boards in annual planning due to the functionality of data visualization which will make it easy to assess every domain involved in coffee farming, and coffee cooperatives, like increase/decrease in cooperatives registered annually, type of fertilizer which is being used by many farmers, and also quantity of production for each cooperative around the country.

2.1.1.2 Functional requirements

- Registration: System users will be registered by system admin and also through this process each system user will obtain role and permissions to make sure every system user will perform operation depending on role and permissions he/she possess.

- Login: System login will provide authentication and authorization to every system user to avoid unauthorized access to the system. It will also initialize sessions, token for every user who logged in, to be used later in logout.

- Logout: System will provide logout functionality the every user who logged in to secure and to strengthen system security, and also for the purpose of protecting user's information.

- Database remote access: System will have remote access to the databases of government boards to fetch

necessary information to be used in the system and also it will provide processed information to those databases.

- Embedded system: Embedded system will detect and report any disease to the main system.
- Data visualization: System will process data collected and provide meaningful information which will visualized to end-users to help them for planning and reacting to any situation that can harm coffee plantation.
- Data creation and Manipulation: System will allow users to create, read, update, and delete system data according to the roles and permissions they possess.

2.1.1.3 Non-functional requirements

1. Operational

- The System should run on all devices (tablets, Smartphone, and Desktop).
- The System should interact with remote databases for data fetching and also sending data for backup and other remote databases.
- The System should be connected to the embedded system in order to collect all information that can be provided by embedded system.

2. Performance

- The System should support more than 2000 users at the same time.
- The System should send data to backup database every 24 hours.

3. Security

- No user can be able to perform unauthorized operation
- System will provide authentication and authorization though login process and redirection will depend on users' role and also operations to be performed by the system user will also depends on permissions granted to the system user by the admin.
- System will provide contact form for system users to submit their enquiries and comments for system improvement and better performance

2.1.2 System intended users

- Sector and District agronomists
- Cooperative managers
- SEDO
- Farmers
- Administrators

2.1.3 Intended system partners

- NEAB
- RAB

2.2. System Design

2.2.1 UI design

Navigation bar

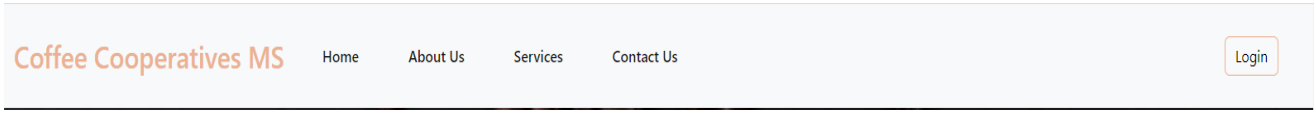

Figure 1: Navigation Bar

Navigation Bar contains links which help users to navigate to each section of home page which is landing page in nature.

Home page

Figure 2: Home page

Home section contains information which describes the purpose and objectives of online Coffee cooperatives management system.

Login

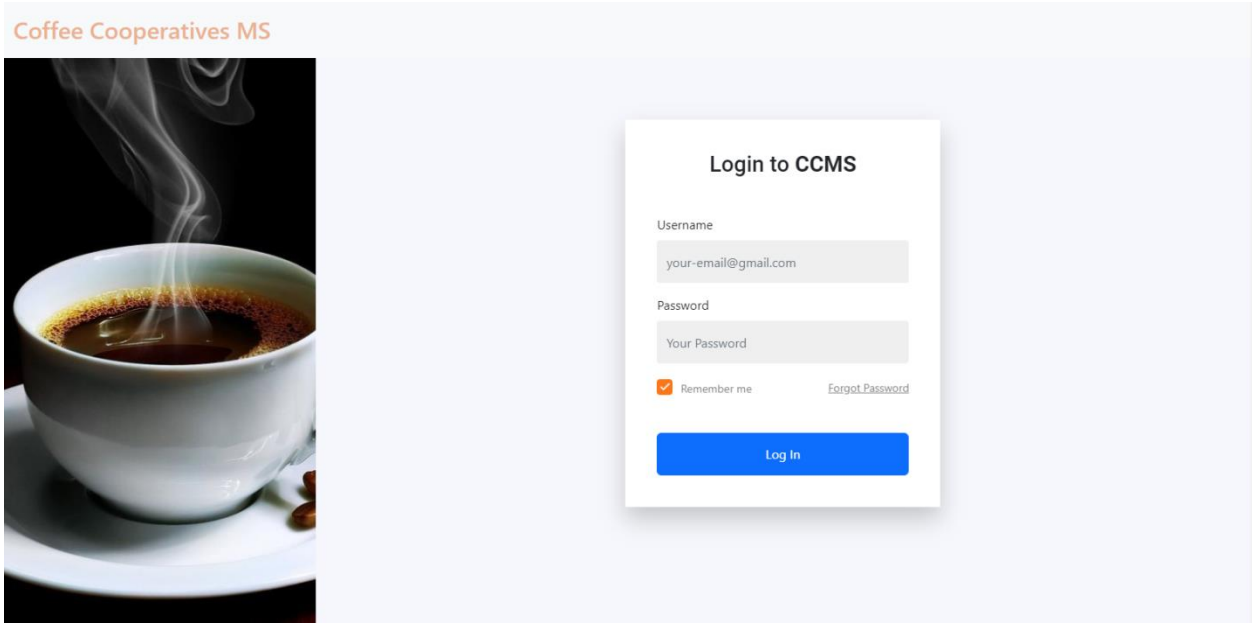

Figure 3: Login Page

The login page allows a user to gain access to an application by entering their username and password or by authenticating.

About Us

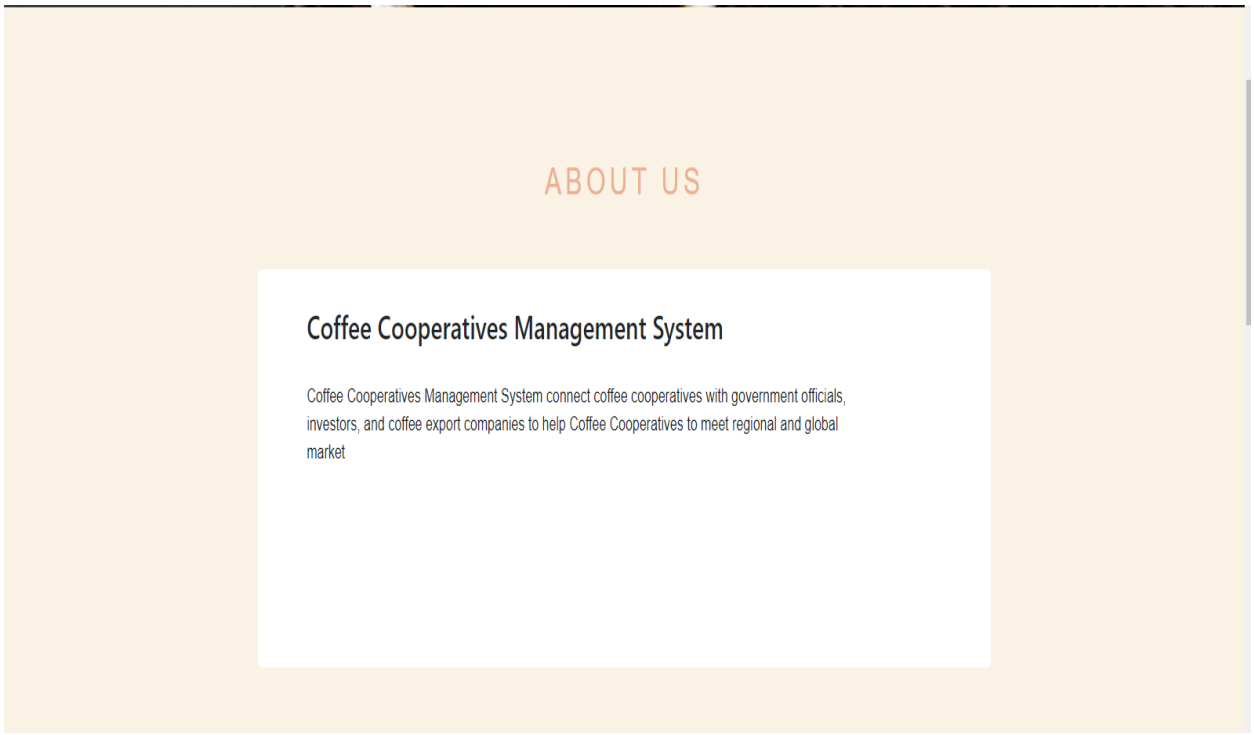

Figure 4: About Us

About Us section contains information which share a systems' story and history and provide a deeper connection with customers. Users want to know the team behind the brand they are supporting.

Services

Figure 5: Services

Service section present services to the system users, motivate them to get in touch with the system, make it possible for them to start interacting with system, as well as allow the system to collect the user's data.

Contact Us

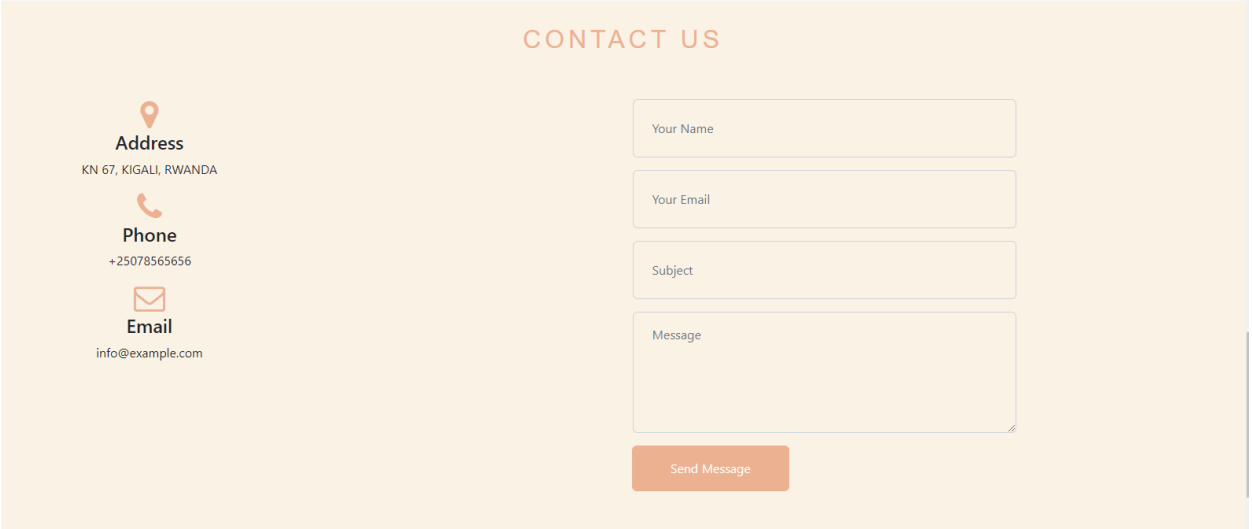

Figure 6: Contact Us

Contact us section provide a way for system user's to contact system administrator. Contact us section includes username, email and phone number of user as well as email, address, and phone number of the company so that the system user and system admin could quickly find the required information.

Footer

Figure 7: Footer

Footer section contains a copyright, links to a social media platforms by using social media icons, In short, a footer contains information that improves system overall usability.

Dashboard/Admin

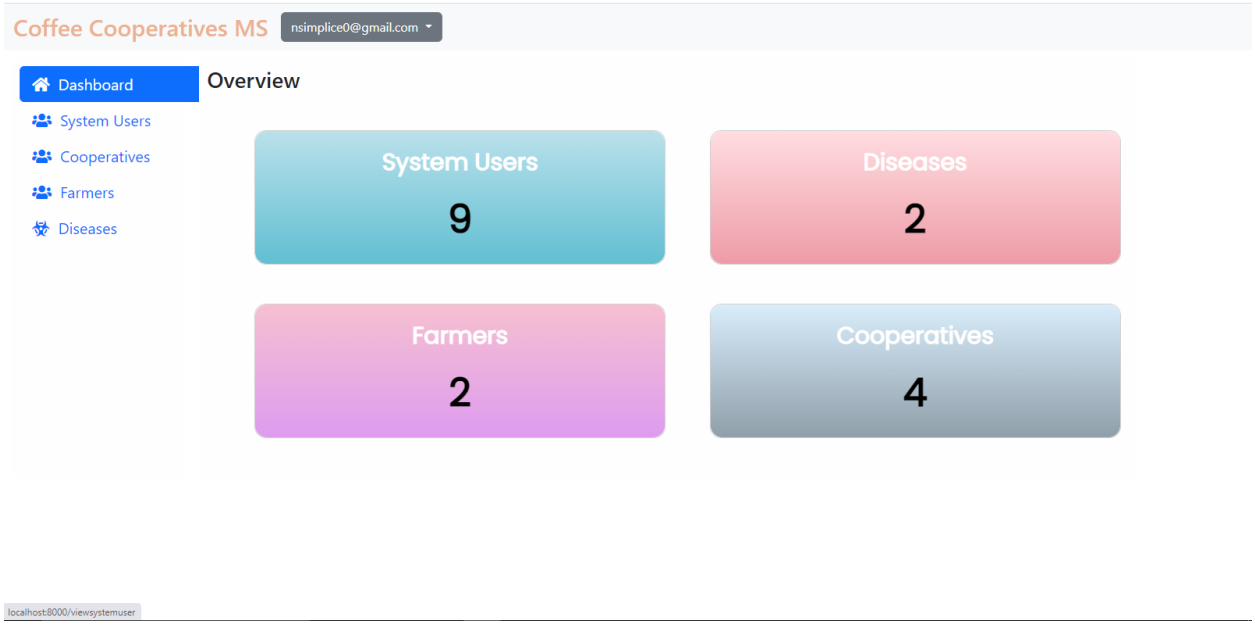

Figure 8: Dashboard/Admin

Dashboard for system users with admin role contain interface of helpful gauges and cards that allow us to understand performance of the system.

It also contain logout button which help user leave the site in secure way by protecting his/her credentials. It contain search box which help admin to filter the results fetched from system's database.

Dashboard/Admin contains links to other pages which enable system admin to perform many more operations. Like creating, updating, Reading, and deleting system users and coffee cooperatives.

Dashboard/Logout

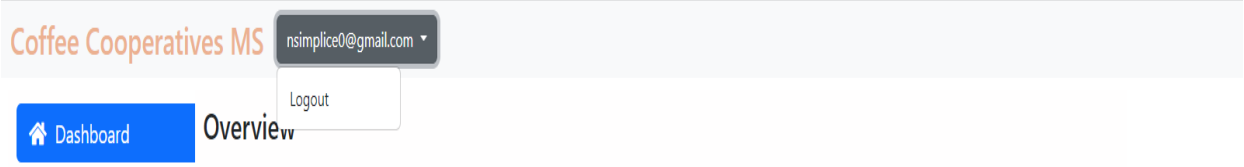

Figure 9: logout

System allow user to leave the site in a very secure way by clicking dropdown which contains System user's email he/she has used in login process, after clicking on dropdown button system display logout button. When System user clicks on logout button system immediately

invalidating his/her credentials, and also it will kill sessions set while logging in after system will redirect user to home page of the system.

Dashboard/System User /Admin

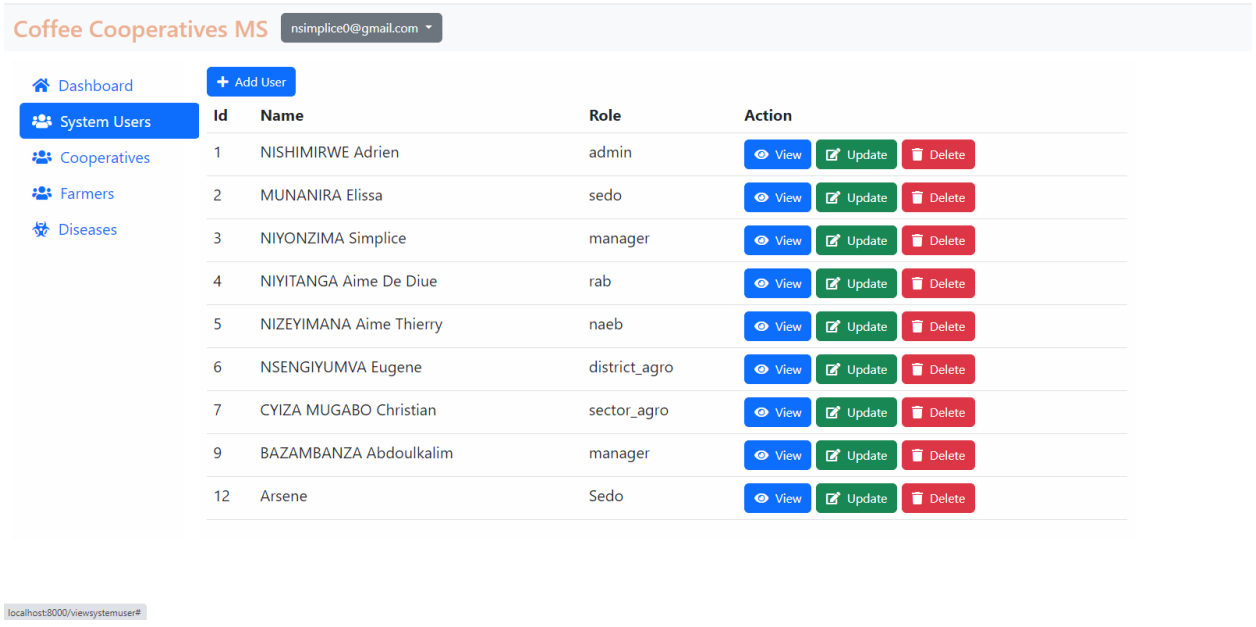

Figure 10:Dashboard/System/Admin

System provides a way of adding new system user by clicking Add user button.

System fetch all system registered users and provide ability to view full details, update user's details, or delete system user by clicking the button associated with the operation to be performed.

It also provide search box to filter or to search particular system user among other users.

Dashboard/System User/View

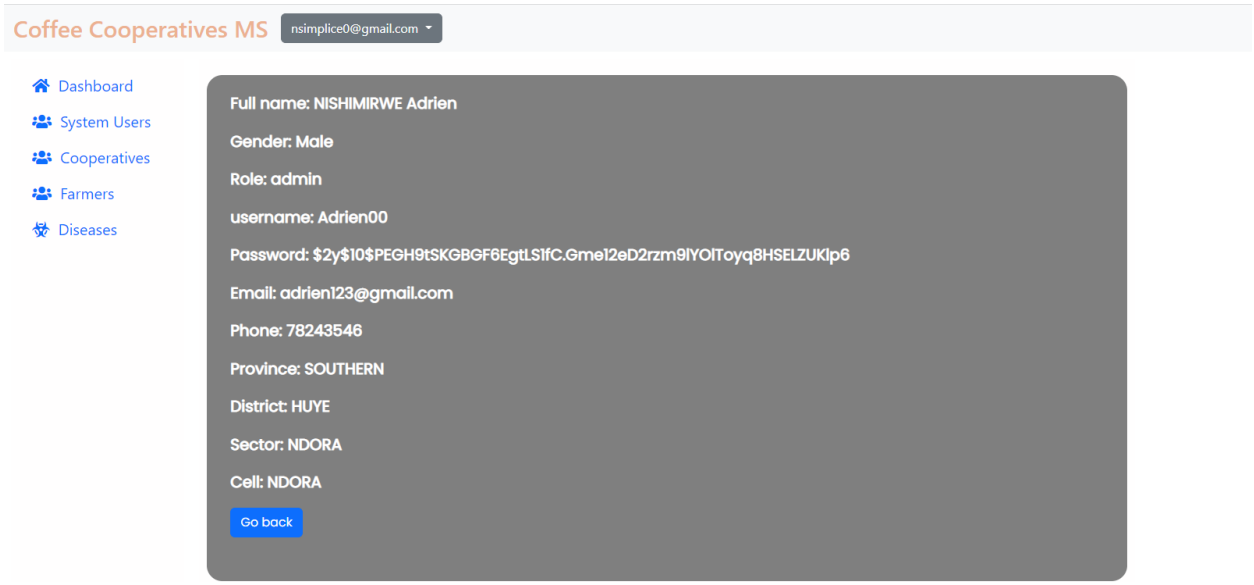

Figure 11:System user View

Dashboard/Cooperatives/View

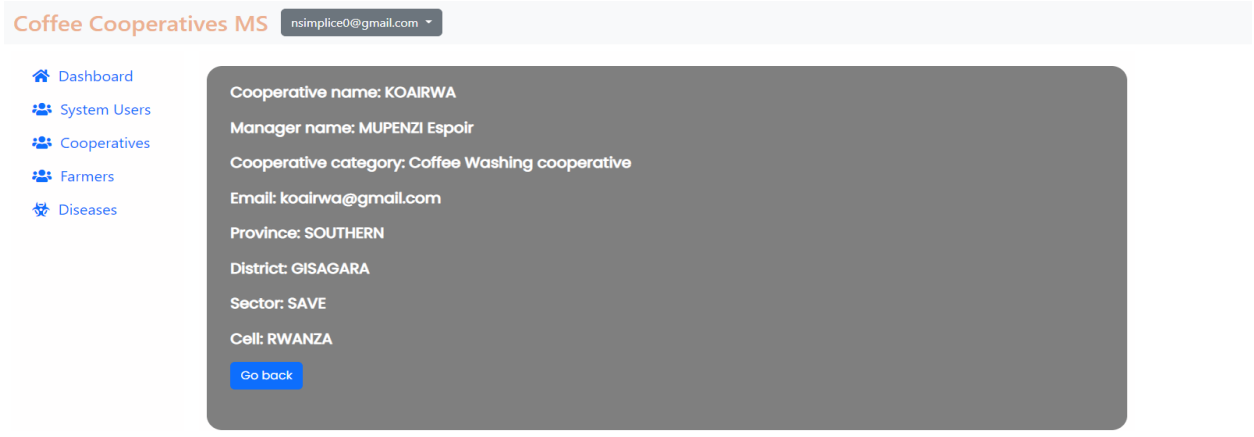

Figure 12:Cooperative View

Dashboard/Farmers/View

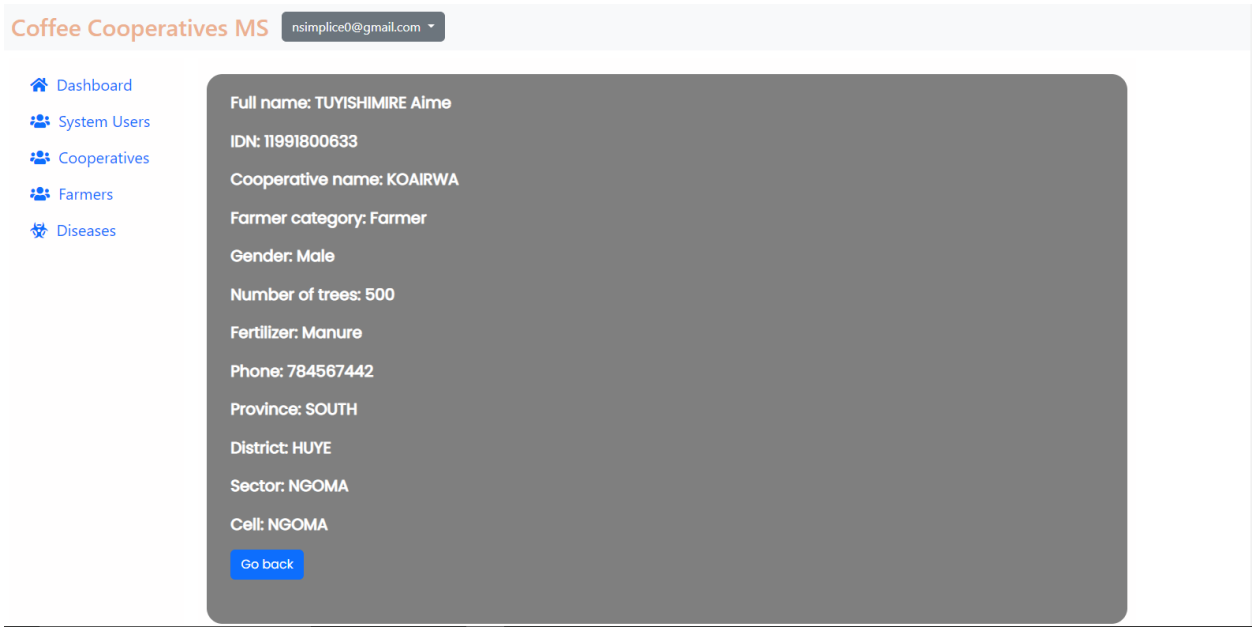

Figure 13:Farmer View

System provide way to view full details of any system user, Cooperative, Farmer, disease by clicking on View Button which get full details depending on ID and display full information in new card.

Dashboard/Add user

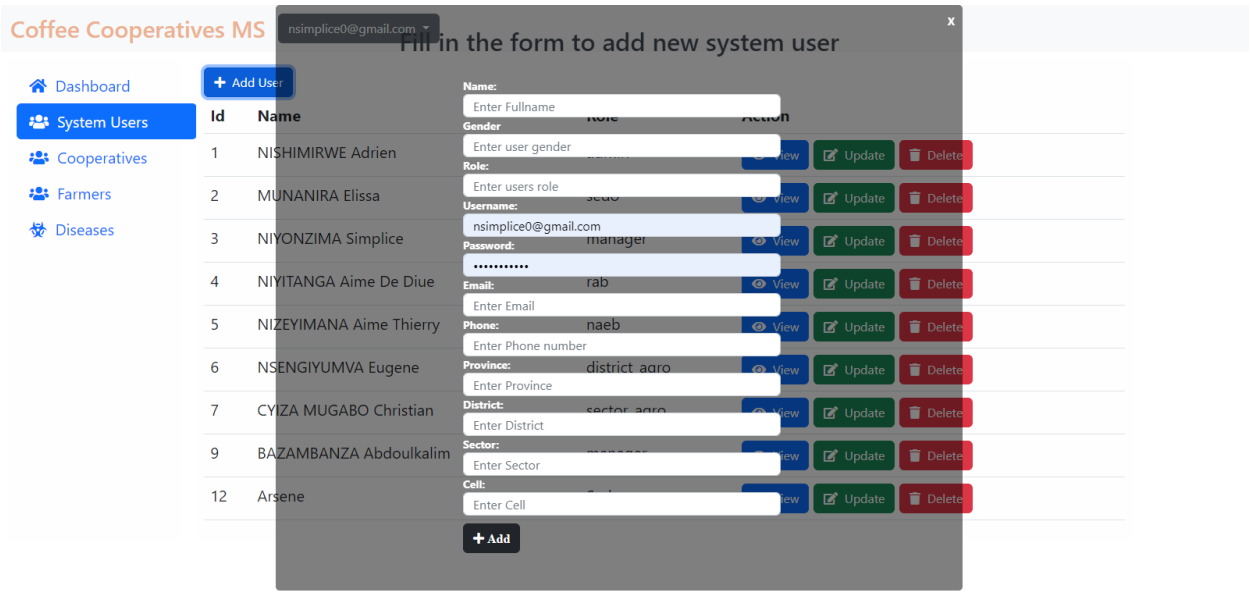

Figure 14: Dashboard/ Add User

Online Coffee Cooperatives Management System allows User with admin role and creates permission to add new system user and grant him/her role and each role is associated with specific permissions, just by clicking “Add user” button and fill the pop up form and press “Add button.

Dashboard/Cooperatives

Figure 15: Dashboard/ Cooperatives

Dashboard/Cooperatives display all cooperatives registered by system admin with permissions to CRUD operations to every cooperative displayed on the list.

It also provide search box to filter or to search particular cooperative among other cooperatives.

Dashboard/Add cooperative

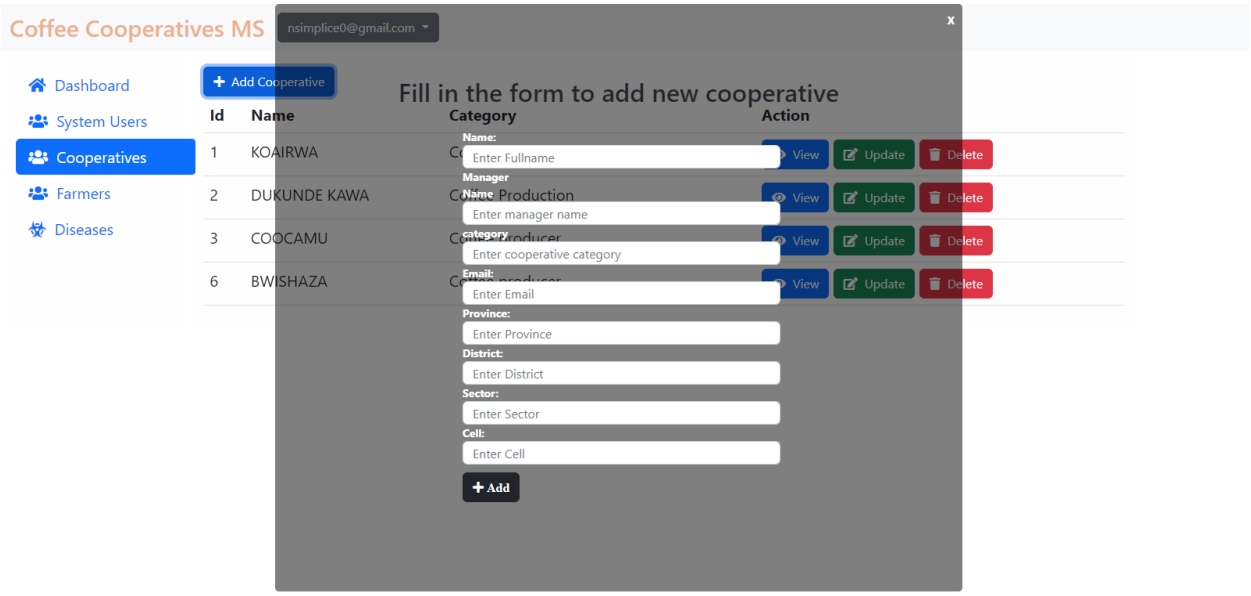

Figure 16:Dashboard / Add Cooperative

System provide pop up form to add new coffee cooperative to the system by clicking on Add Cooperative button located at the top of the table which contains all registered coffee cooperatives.

Dashboard/Farmers

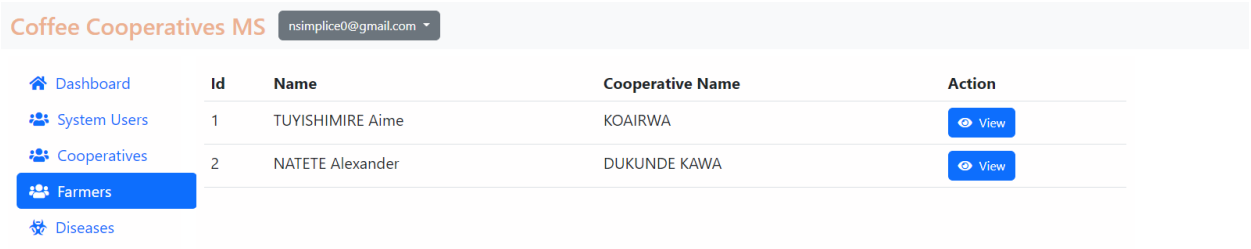

Figure 17: Dashboard/ Farmers

System provides a way to view all registered members of coffee cooperatives all around the country.

It also provide search box to filter or to search particular farmer/cooperative member among other farmers/cooperative members registered in the system.

Here, system admin has no permission to update information related to any member/farmer who is registered in the system because this permission in only possessed by system user with manager role.

Dashboard/Diseases

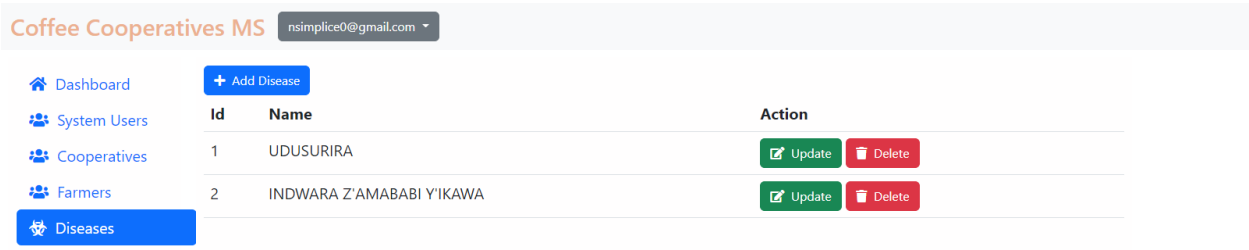

Figure 18:Dashboard /Disease

System provide screen with all disease registered or reported by embedded system connected to Online Coffee Cooperative Management System, with permissions of updating and deleting disease.

It also provide search box to filter or to search particular disease among other diseases registered in the system.

Dashboard/Add Disease

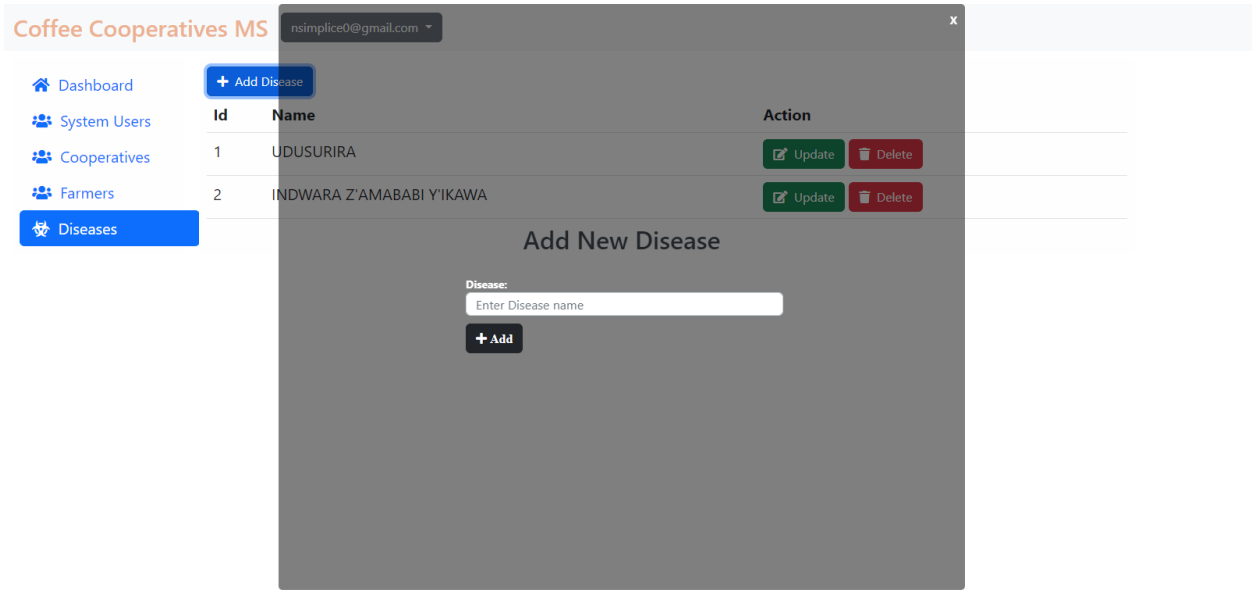

Figure 19:Dashboard /Add Disease

System provide pop up form to add disease to the system by clicking on Add Disease button located at the top of the table which contains all registered diseases.

2.2.2 Database design

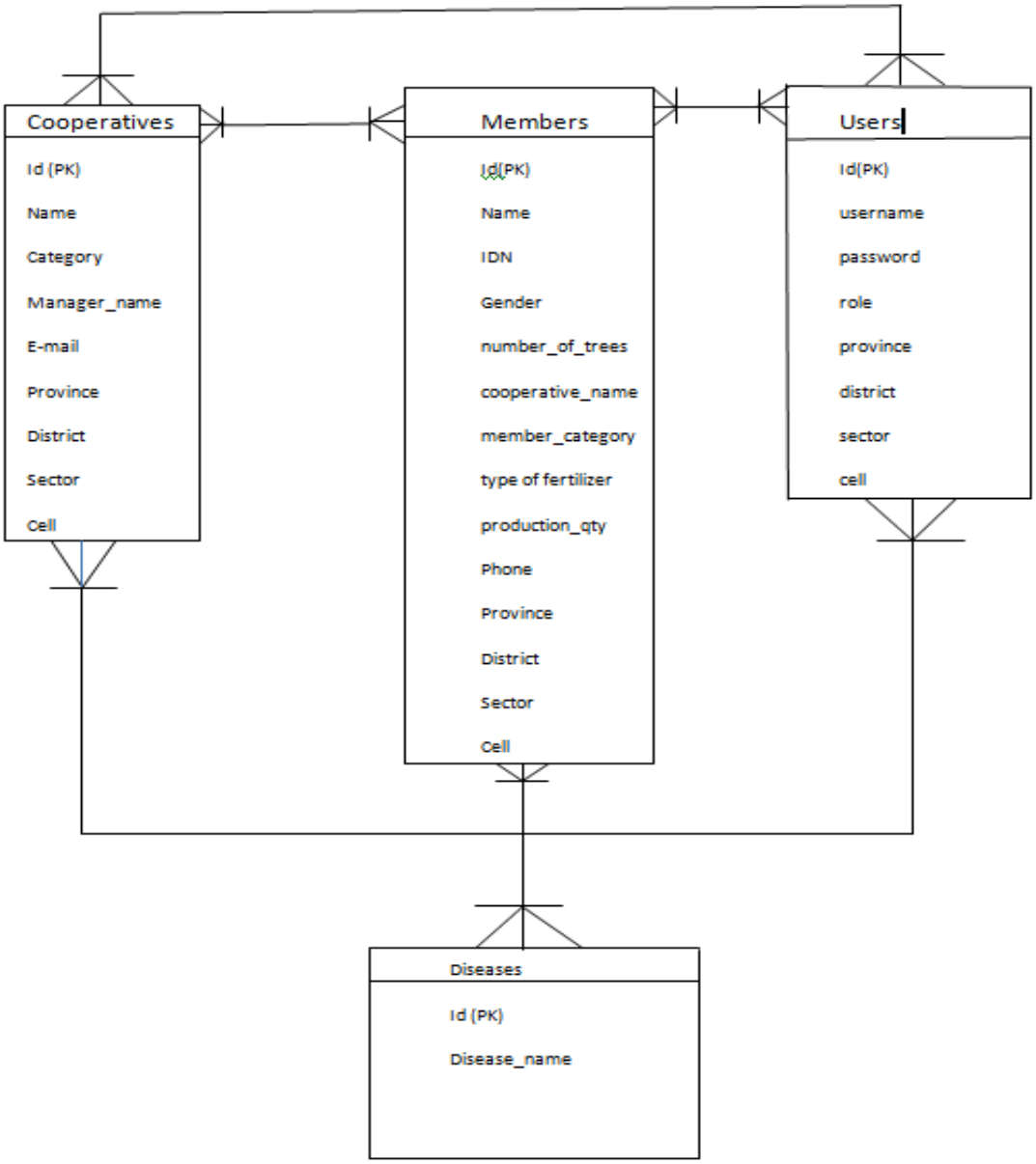

Figure 20: ERD

CHAPTER 3: Conclusion and Recommendation

Conclusion

Online Coffee Cooperatives Management System will make it easy for RAB, NAEB, district and sector agronomist, SEDOs, and cooperative managers to solve many issues related to coffee farming in Rwanda through a web-based Application.

Recommendation

- Governments' boards are recommended to use this Online Coffee Cooperatives Management System to improve from traditional way of collecting information as well as data processing to a digitized way.
- Farmers are recommended to use this system to interact with government boards and also get more information about coffee plantation which will be provided by the system.
- Coffee Cooperative Managers are recommended to use this system to manage their cooperatives in easy, fast, and secure way.

Appendix : https://github.com/Simplice24/CCMS-Laravel