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Global Farming

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PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Master of Science in Information Systems.

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Master's Project Title: _____Global Farming_____

Faculty supervisor: Roxana Sherm Date: 4/28/14

Committee member: Stephen Kelly Date: 4/28/14

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GLOBAL FARMING

A graduate project submitted to Dakota State University in partial fulfillment of the requirements for the degree of

Master of Science

In

Information Systems

April 2014

By
Sumana koneru

Project Committee:

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ABSTRACT

The main objective of this project is to build a website which will help farmers to sell their products. It could be a great platform for all the buyers and farmers to interact Online and manage sales. It not only helps farmers but also the retailers, wholesalers and regular customers to get the best services and information.

This platform will help the farmers with more exposure to vendors and preventing from monopoly. It will help in keeping the transparency between the whole seller, retailer and also the farmers and help in eliminating monopoly and inflation.

In present system there is no proper guidance for the farmers about how to sell their produce online. The farmers do not have much exposure to different vendors in the market. The new proposed system will help farmers to globalize their products. It is going to broaden the horizons for the farmers as well as the vendors. The farmers and vendors after registering can access the details and make transactions in a secured way. This application will be very user friendly and can generate reports about sales and purchases, which will be very helpful for the farmers to analyze their crop sales.

There are different modules in the system. The administrator will be able to access all the records and in position to make any required changes to the system. The farmers after registering into the system can sell his products. The farmers can make the required changes if needed and can also rate the vendors. The vendors after registering into the system can buy the items for sale

by the farmers. The vendors can view the transaction details are make the payment in a secure way and can also rate the farmers and his services.

DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

<Student name>

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CHAPTER 1

INTRODUCTION

Background of the Problem

Coming from a family with farming background I always personally felt it was very difficult for the farmers to survive in now a days. There are many natural calamities a farmer has to worry about like the hail, damaging winds, tornadoes, drought, flooding and infestation.

They get a paycheck only once a month not to mention no vacation or off time with long working days. They cannot even hire any help easily. The ever increasing regulation and the lack of consumer knowledge and high cost of farm equipment has made it very difficult for the small farmers to survive.

The shortage of labor has driven us for the invention of the machinery. This led a path to the bigger farms to mechanize on a huge scale. It has been very difficult for the small family owned farmers to keep up with these big mechanized farms. It has become unable to withhold production like big farms can and resulting in the rise in the market demand.

Statement of the problem

Farmers expenditure to generate the crop is the same but he is bringing in less money now than before as he has to cut in the middleman, the packer, the processor, the bank and the list goes on. There is no more bad news to the farmers than the growing pile of the unsold and unstable produce in storage. The farmers are ending up with abundance of stock. It also adds the expense due to storage.

Small farmers are finding it difficulty to sustain with these big farms that have low paid workers. Small farmers have very limited equipment, which results to inefficient method of production. In many cases, the small farmers are ending up as a sub-contractor to these giant associations.

The narrowed market and the monopolistic industry have driven the small farmer down and only big farms can sustain this business market. The mechanization of the farms is not just the purchase of a tractor it involves acquiring new equipment, higher investment and even more resources and planning.

The mechanization and big corporate farms have driven the small farmers out of business. The present system is driving all the business away from small farmers and is in desperate need of a new system. There has been a steady drop in generating income and has been growing constantly. The profit margin for the small farmers has been drooping

constantly. Small family owned farmers who are not able to mechanize and ending up with huge competition with the mechanized farms

Objectives of the project

The proposed system will be cutting of all the middleman. The new proposed system will help farmers to globalize their products. It is going to broaden the horizons for the farmers as well as the vendors. It will cut all the middleman and can make the transactions directly with the vendors. The farmers and vendors after registering can access the details and make transactions in a secured way. This application will be very user friendly and can generate reports about sales and purchases, which will be very helpful for the farmers to analyze their crop sales.

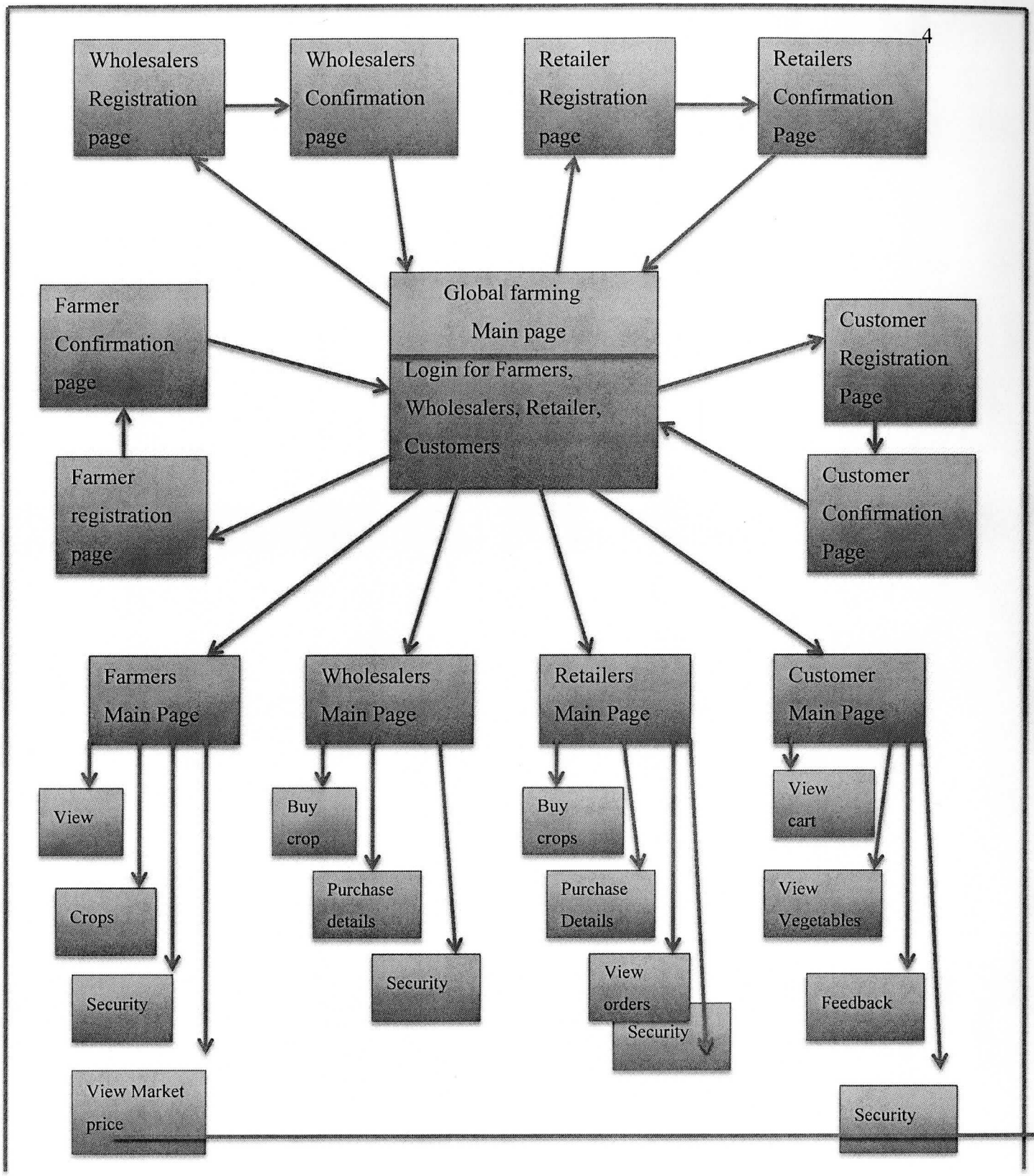


Figure 1: Top-Level Diagram of the Global Farming System

CHAPTER 2

SYSTEM REVIEW

The global farming project is a web portal where all the farmers, retailers, wholesalers and customer needs can be met. The main objective of this project is to build a website which will help farmers from across the world to sell their produce.

The home page has four main tabs, they are Home, Login, about us and Contact us. The home tab is for the home page of the site. The login page is the page where the users can authenticate their identity. The users can enter login and password and if authenticated they will login into their respective pages. If the users are not registered they can enter the details like the username, password, security questions, full name, date of birth and address to create an account. There are four different types of users farmers, wholesalers, retailers and customers.

In this website the farmer has to register first and open an account. Once an account has been created he can login and perform various actions. Farmer can view market price, add and alter crops, view the sale details, security and logout. The farmer can perform various operations under the crops tab like add the crop name, quantity, price and hit the submit button which will save this crop details by the farmer. Wholesaler to purchase can view the farmer's crop. The view tab will help the farmer to keep tabs on what crops of his that is on sale. There are lot of security measures taken to make sure the information and details are safe and not being hacked. The user can change the password at any time if wanted. Finally the logout tab to logout from the user account safely.

The wholesaler has to register first and open an account. Once an account has been

created he can login and perform various actions. Wholesaler can buy crop, view purchase details, change password and logout. The wholesaler's to purchase can view the farmer's crop. The Buy crop tab will help the wholesaler to purchase crops from farmers. There are lot of security measures taken to make sure the information and details are safe and not being hacked. The user can change the password at any time if wanted. Finally the logout tab to logout from the user account safely.

The retailer has to register first and open an account. Once an account has been created he can login and perform various actions. Retailer can buy crop, view purchase details, view orders, change password and logout. The retailer's to purchase can view the wholesaler's stock. The Buy crop tab will help the retailer to purchase crops from wholesaler. The customer's can use the purchase details tab to view the purchase orders made. There are lot of security measures taken to make sure the information and details are safe and not being hacked. The user can change the password at any time if wanted. Finally the logout tab to logout from the user account safely.

The customer has to register first and open an account. Once an account has been created he can login and perform various actions. Customer's can view vegetables, view cart, change password, feedback and logout. The customer to purchase can view the retailer's stock. The view vegetables tab will help the customer to view all the stock on sale by the retailer. The customer can use the view cart tab to view the purchase orders made. There are lot of security measures taken to make sure the information and details are safe and not being hacked. The user can change the password at any time if wanted. There is a feedback tab to leave a feedback about the

retailer's service. Finally the logout tab to logout from the user account safely.

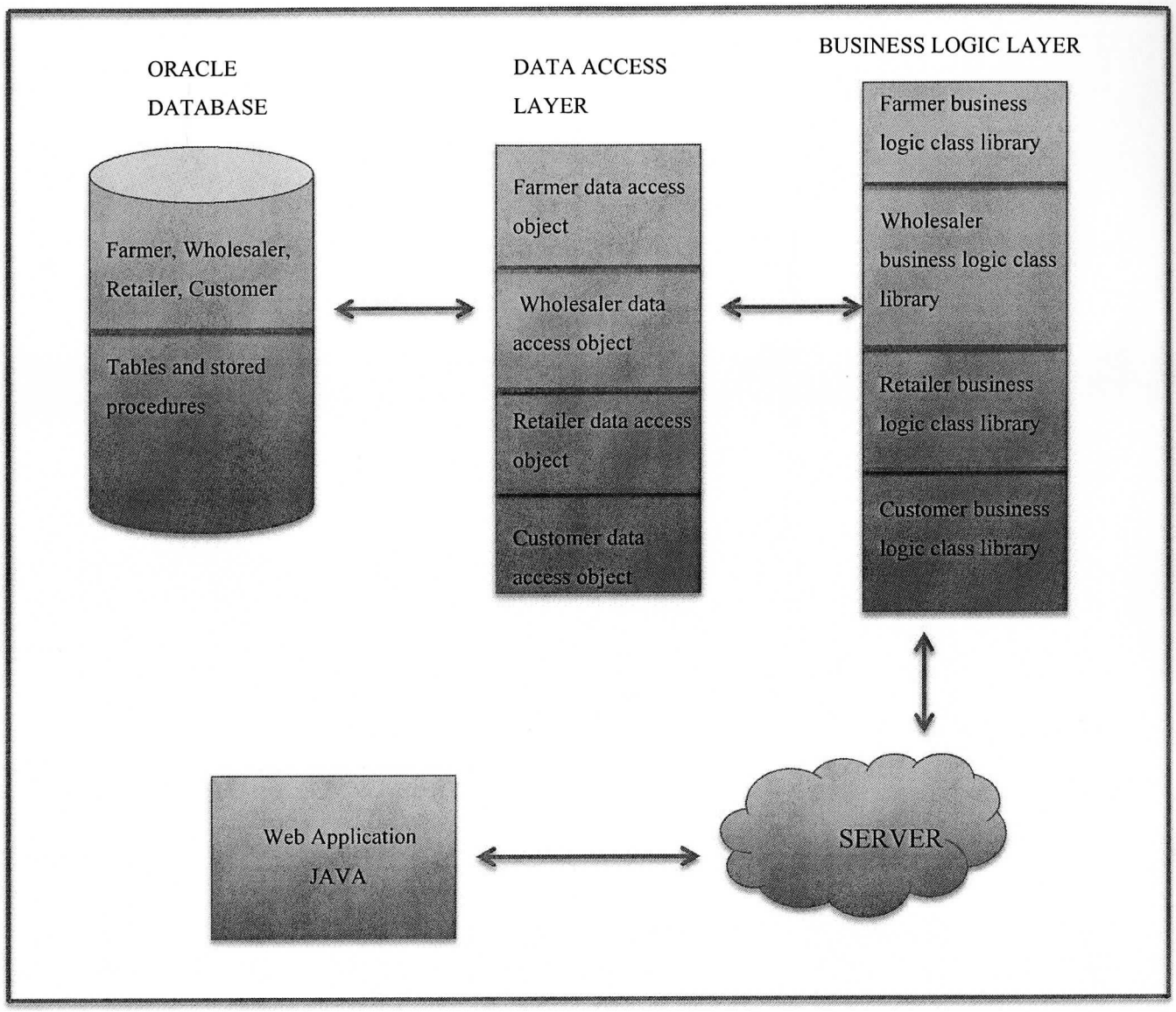
The presentation layer also called as the client layer comprises of components that are dedicated to presenting the data to the user. For example: Windows/Web Forms and buttons, edit boxes, Text boxes, labels, grids, etc.

The business rules layer encapsulates the business rules or the business logic of the encapsulations. To have a separate layer for business logic is of a great advantage. This is because any changes in Business Rules can be easily handled in this layer. As long as the interface between the layers remains the same, any changes to the functionality/processing logic in this layer can be made without impacting the others. A lot of client-server apps failed to implement successfully as changing the business logic is a painful process

The data access layer comprises of components that help in accessing the Database. If used in the right way, this layer provides a level of abstraction for the database structures. Simply put changes made to the database, tables do not affect the rest of the application because of the Data Access layer. The different application layers send the data requests to this layer and receive the response from this layer.

The database layer comprises of the Database Components such as DB Files, Tables, Views, etc. The Actual database could be created using SQL Server, Oracle. In an n-tier application, the entire application can be implemented in such a way that it is independent of the actual Database. For instance, you could change the Database Location with minimal changes to Data Access Layer. The rest of the Application should remain unaffected.

Figure 2: High Level Technical Diagram



CHAPTER 3

SYSTEM DESIGN

The project is developed in phases. There are five phases

Phase 1: planning and analysis of the project

Phase 2: Design of the project

Phase 3: Implementing the project

Phase 4: Testing the project

Phase 5: Delivering the project

Phase 1: planning and analysis of the project

The planning stage, which is the first stage, is mainly for initiating the project and feasibility analysis is conducted. It takes a lot of planning and analysis to determine the feasibility of the project. Understanding and evaluating the technical feasibility is a very tricky job. A detailed design of the system will help us evaluate the technical feasibility better. Many factors weigh into understanding the technical feasibility like performance, costs and technology to be developed.

Many factors have to be considered while analyzing the technical feasibility like understanding the different technologies involved in the proposed system and find out weather the current system processes the required technology.

A through analysis in the planning stage is very essential as it can increase customer satisfaction and improve the quality. It can also improve the accuracy of operation by keeping better record and documentation. It can also helps in faster retrieval of information.

In the analysis stage we have to determine what technology are required in the development of the new system. Is the selected system user friendly and can be accepted by all the people. We have to make sure the proposed system will be sufficient for any future growths.

We have to make sure that the new system will be more user friendly and adaptable by more people so it is more acceptable by the users. The new system will reduce the time usage and be more feasible. We have to make sure the project will be more economically feasible. When we compare the cost and benefits we should always have a higher beneficial factors and make sure the project will be more economically viable.

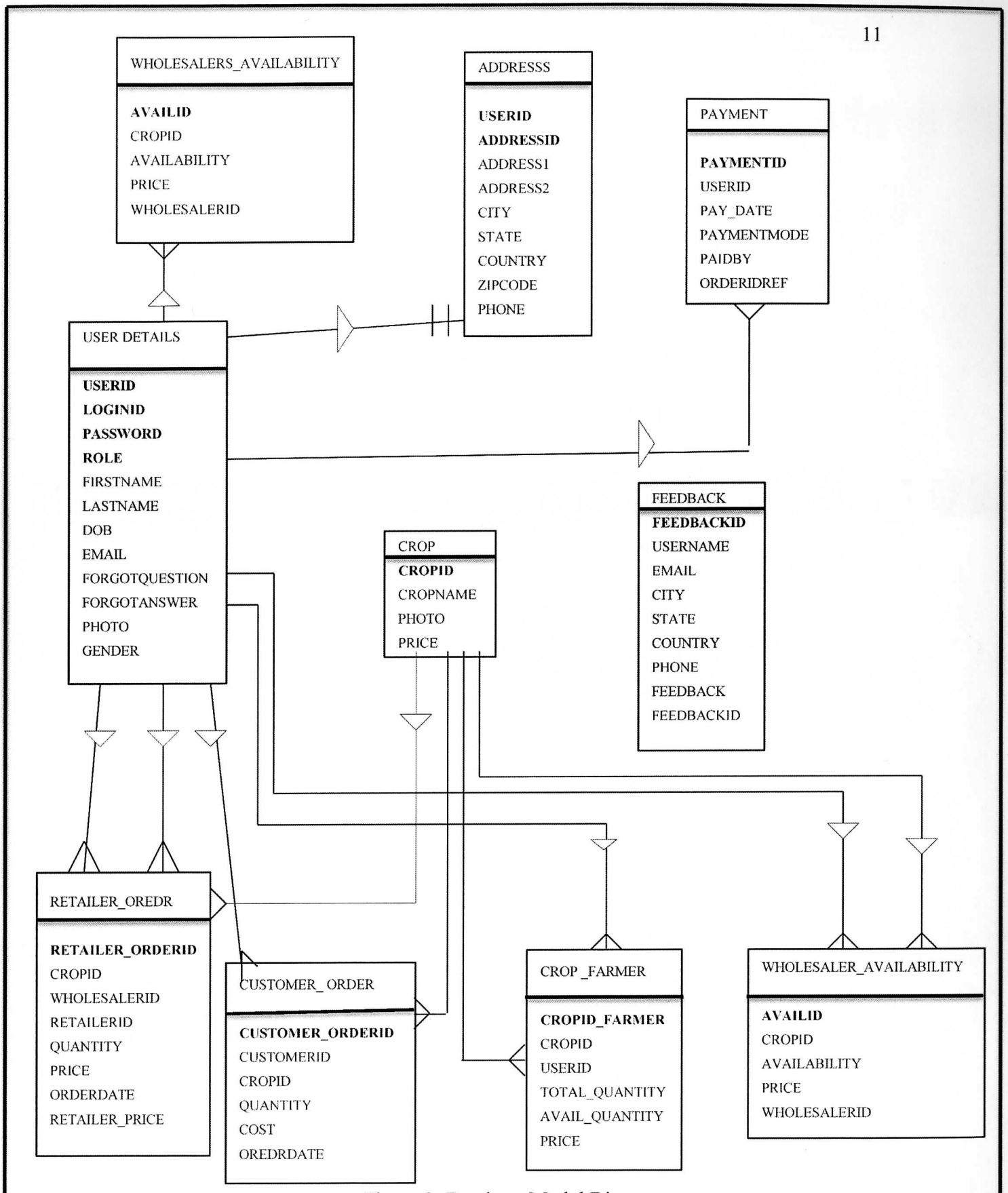


Figure 3: Database Model Diagram

Phase 2: Design of the project

After the analysis phase all the requirements are assigned priority and most important requirements are grouped together. The analysis phase takes these requirements as inputs and goes through the design phase followed by implementation phase and an application is developed.

In the second stage the analysis stage the current system is analyzed to gather all the user requirements. This process continues until all the user requirements are met and development yields a final stable product. We have to validate all the options.

From the beginning of this project it is understood that the final user involvement in the project is critical for the success of the project. Using a familiar language is a good idea. By using familiar language will help in speeding up the development process as there is no learning curve involved and as there is also a project time scheduled to be met. Following the analysis phase a new design is developed and implemented. Development process was planned in a phased manner to suit users and developer schedule.

Phase 3: Implementing the project

The administrative user interface will maintain the different users details, the interface helps the administration with all the transactional states like which users sending the mails, and which users receiving whishing mails, users details information history. There are many different modules in this project

- Administrator
- Farmers
- Wholesaler
- Retailer
- Customer

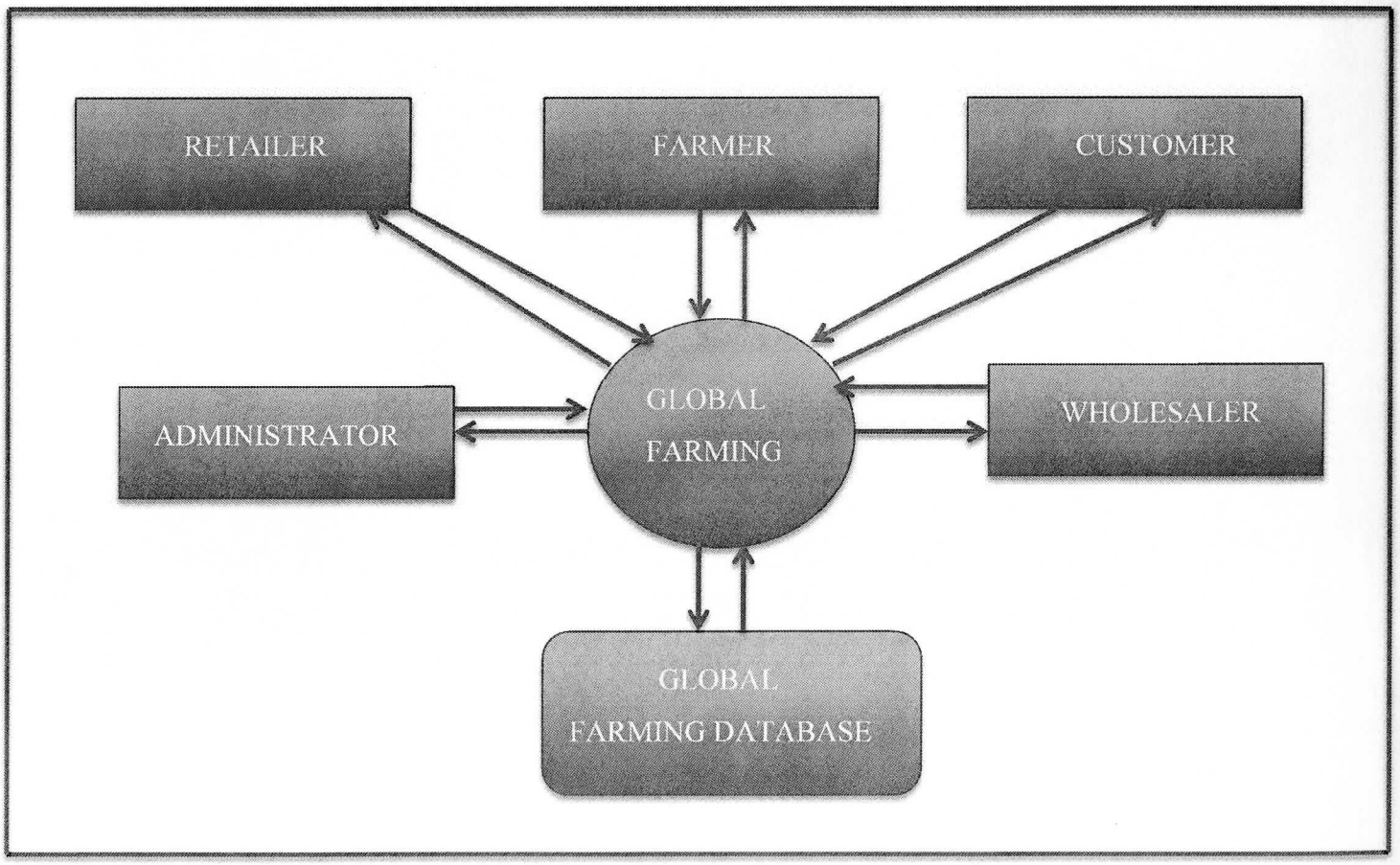


Figure 4: Context Flow Diagram

Administrator: The administrator should be able to see the record of all the users. Administrator can add the crops and view feedbacks from buyers.

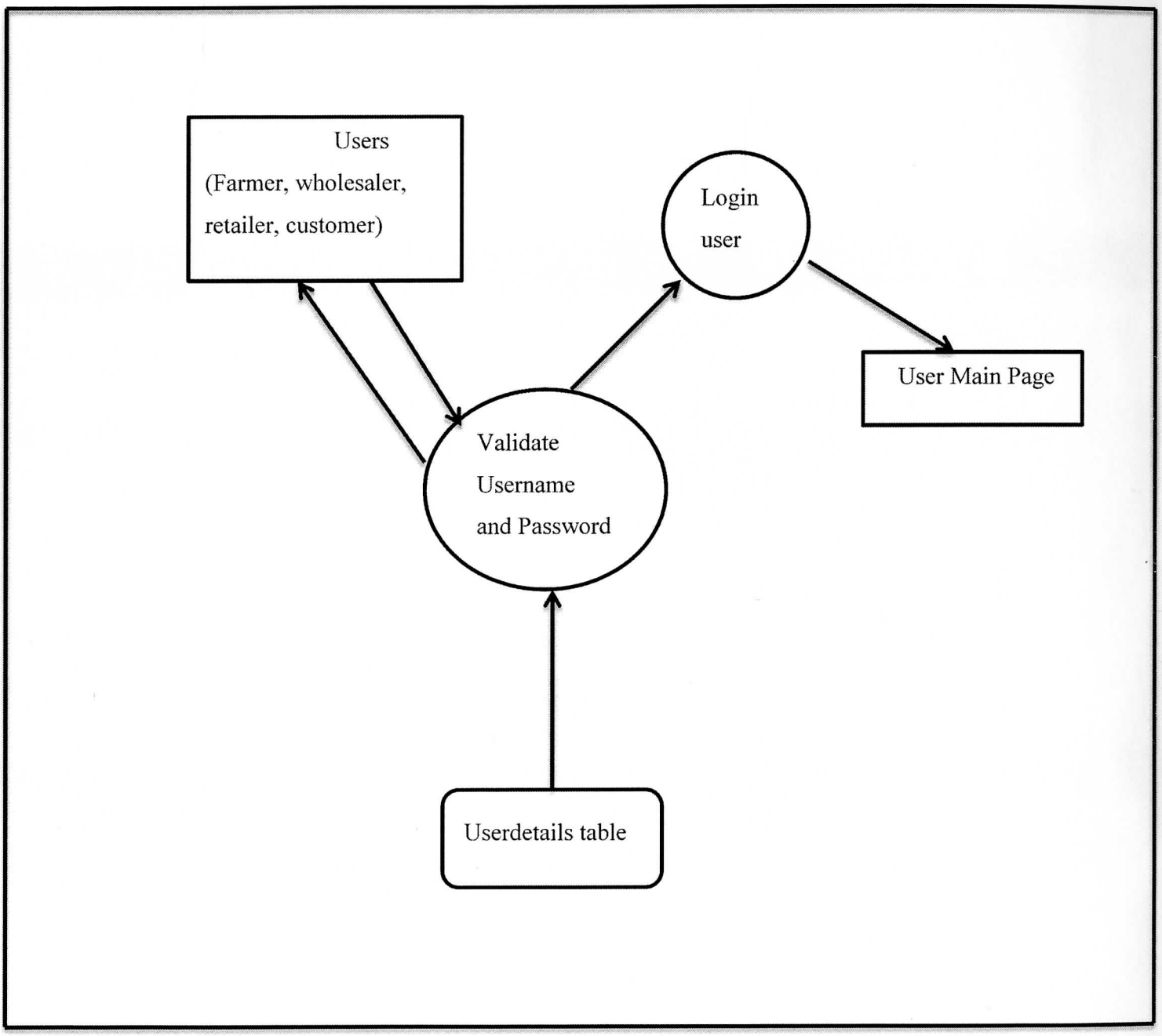


Figure 14: Low Level Diagram-User Login

Farmers: In this website the farmer has to register first and open an account. Once an account has been created and authenticated he can list all the produce grown in his farm. The farmer has to enter the produce name, quantity and the asking price for his crop. The wholesalers can buy from the farmers through the website. The farmer can make alterations and delete the listed data. Farmers can view their transaction details as well.

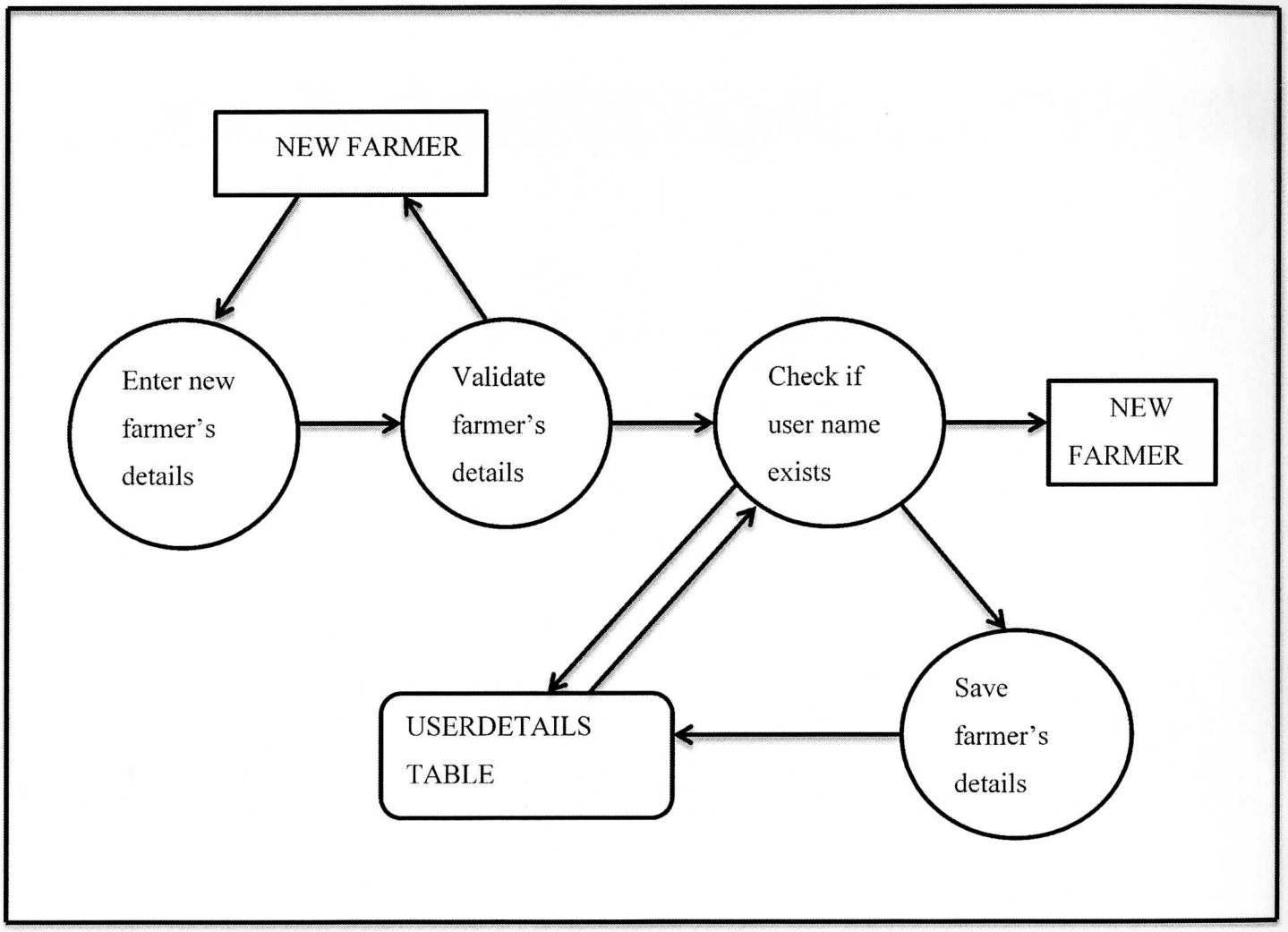


Figure 15: Low Level Diagram-Farmer's Registration

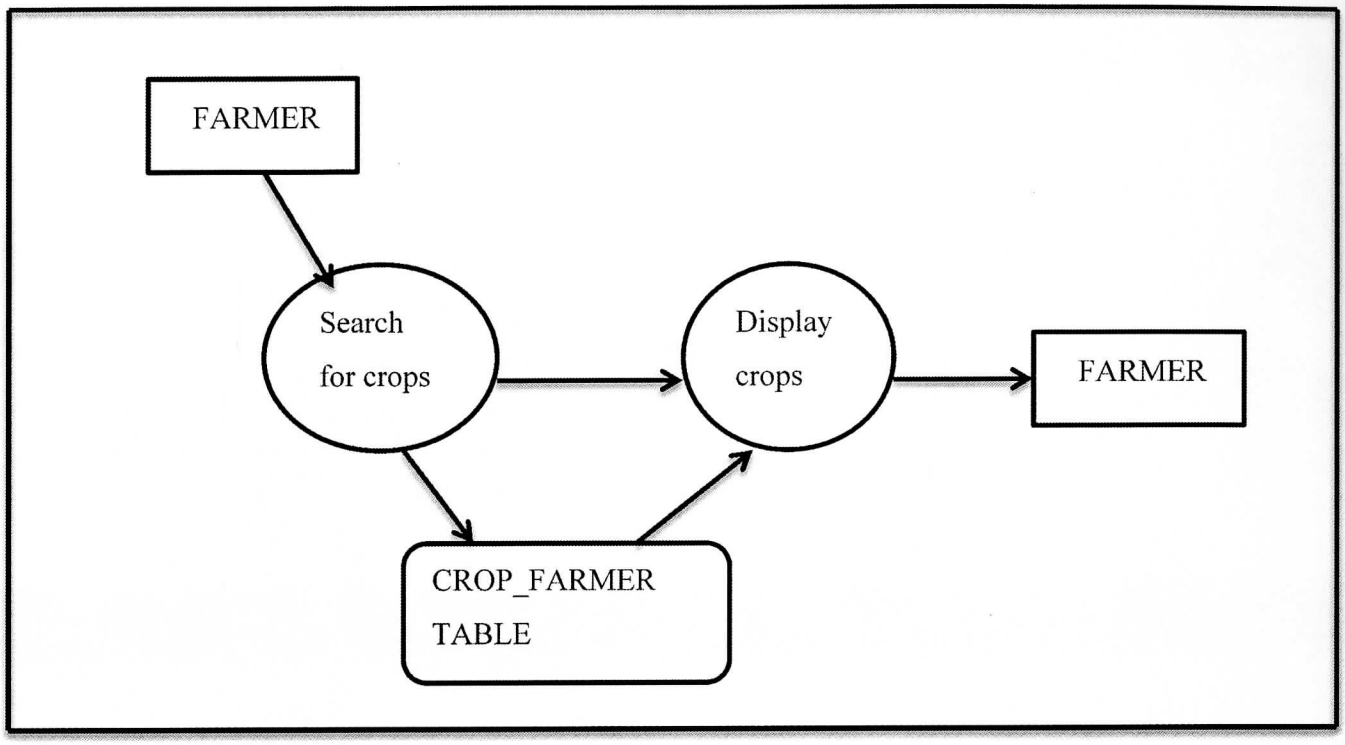


Figure 16: Low Level Diagram for viewing market price

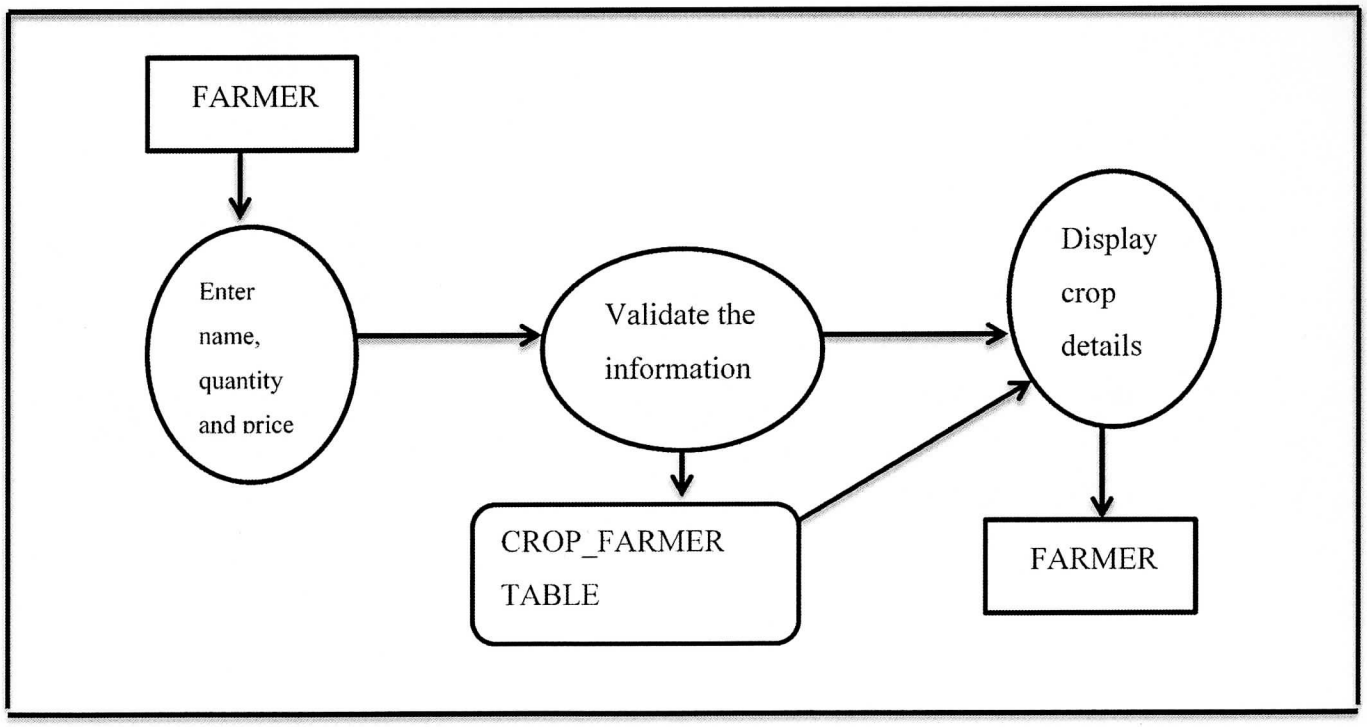


Figure 17: Low Level Diagram for entering crop details

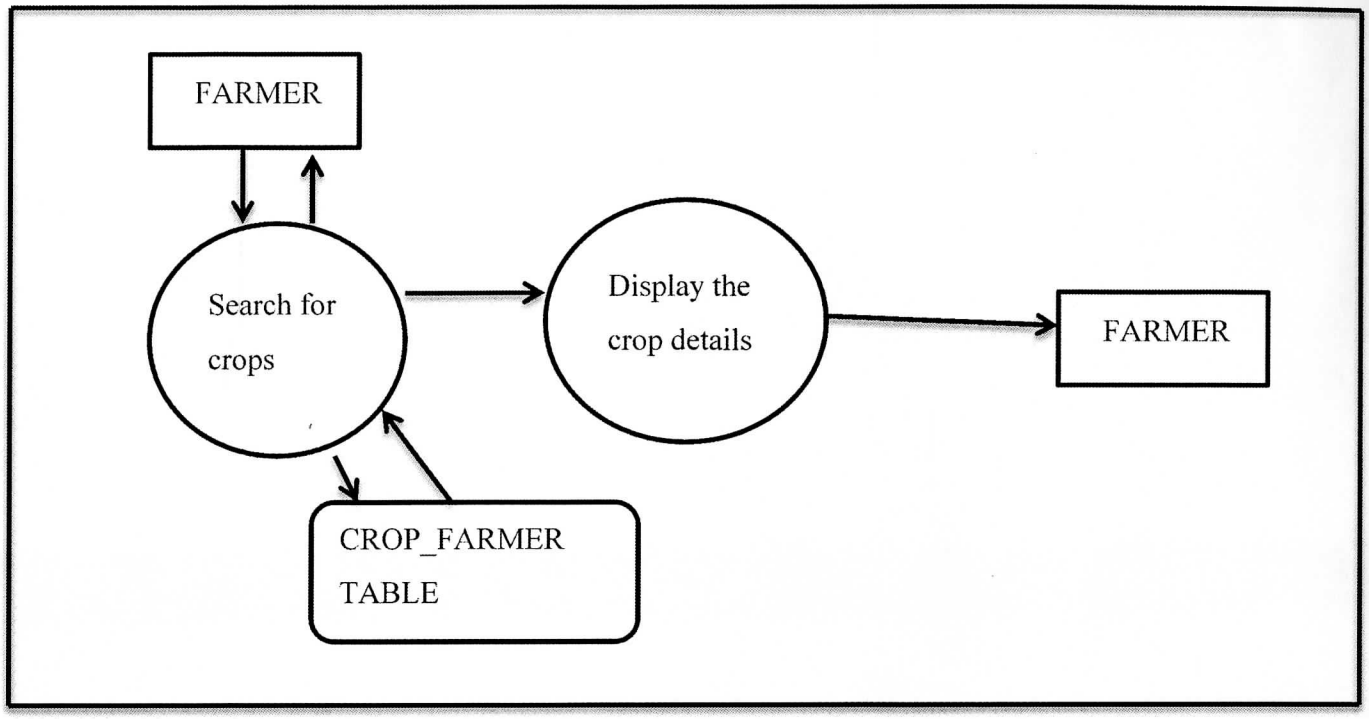


Figure9: Low Level Diagram for viewing crop details

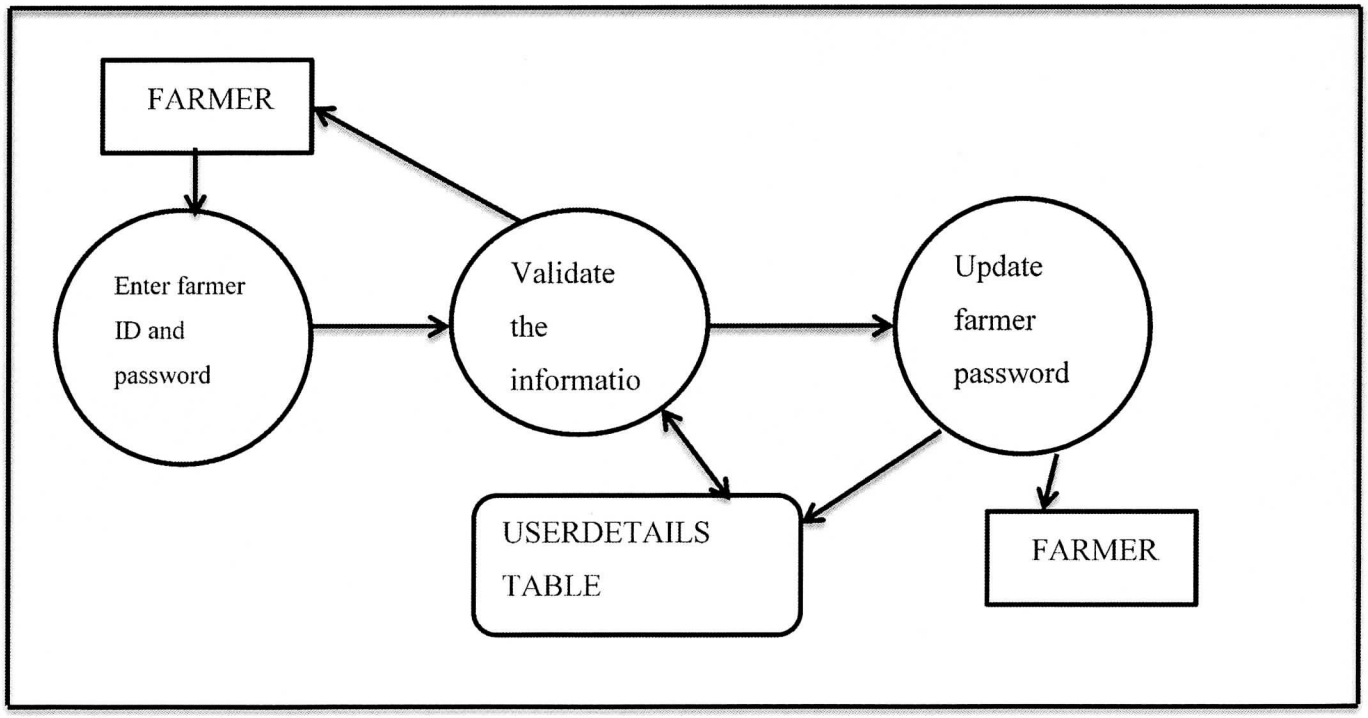


Figure 10: Low Level Diagram for changing the password

Wholesaler: Once an account has been created he can login and perform various actions. Wholesaler can buy crop, view purchase details, change password and logout. The wholesaler's to purchase can view the farmer crop. The Buy crop tab will help the wholesaler to purchase crops from farmers. There are lot of security measures taken to make sure the information and details are safe and not being hacked. The user can change the password at any time if wanted. Finally the logout tab to logout from the user account safely.

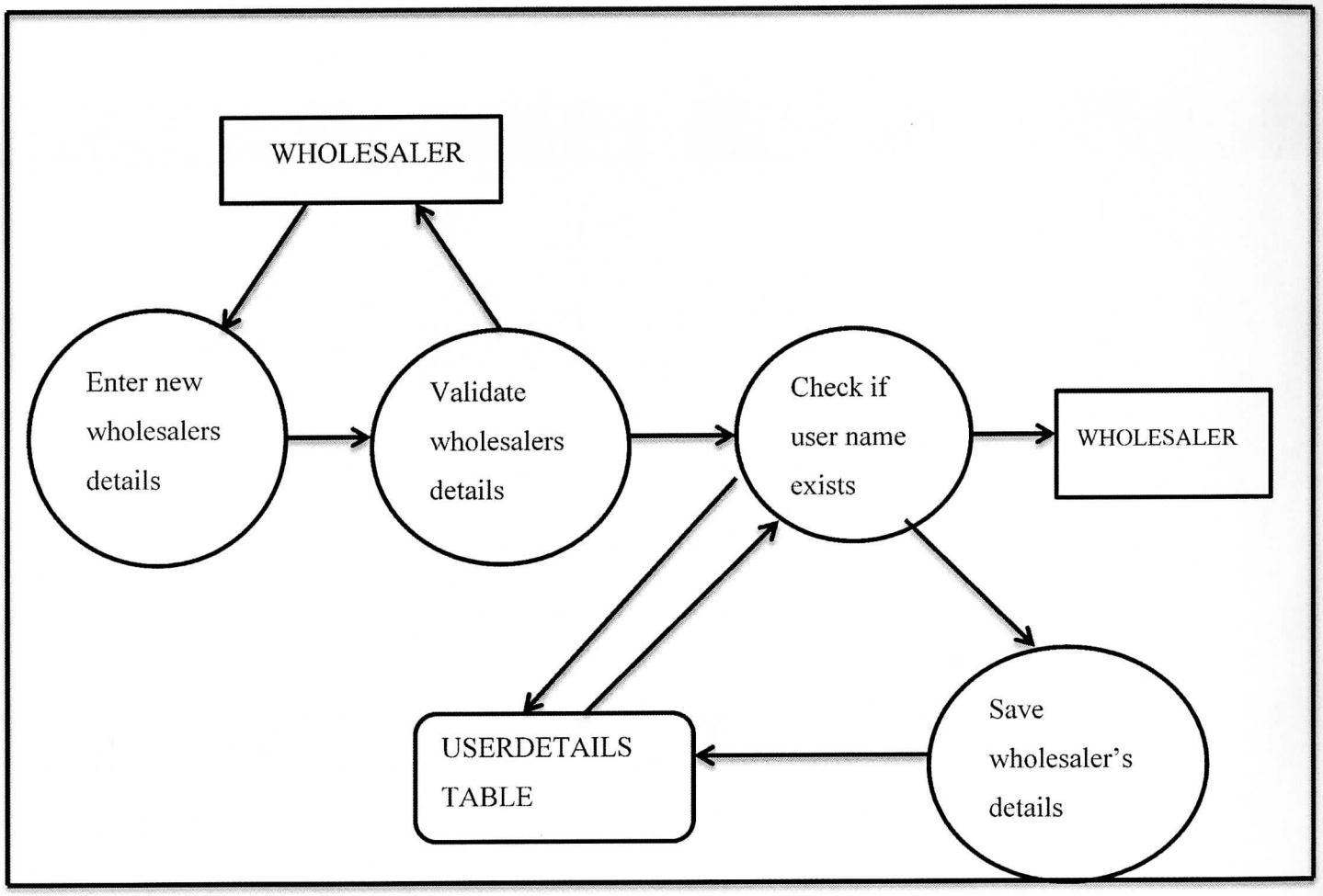


Figure 11: Low Level Diagram-Wholesaler Registration

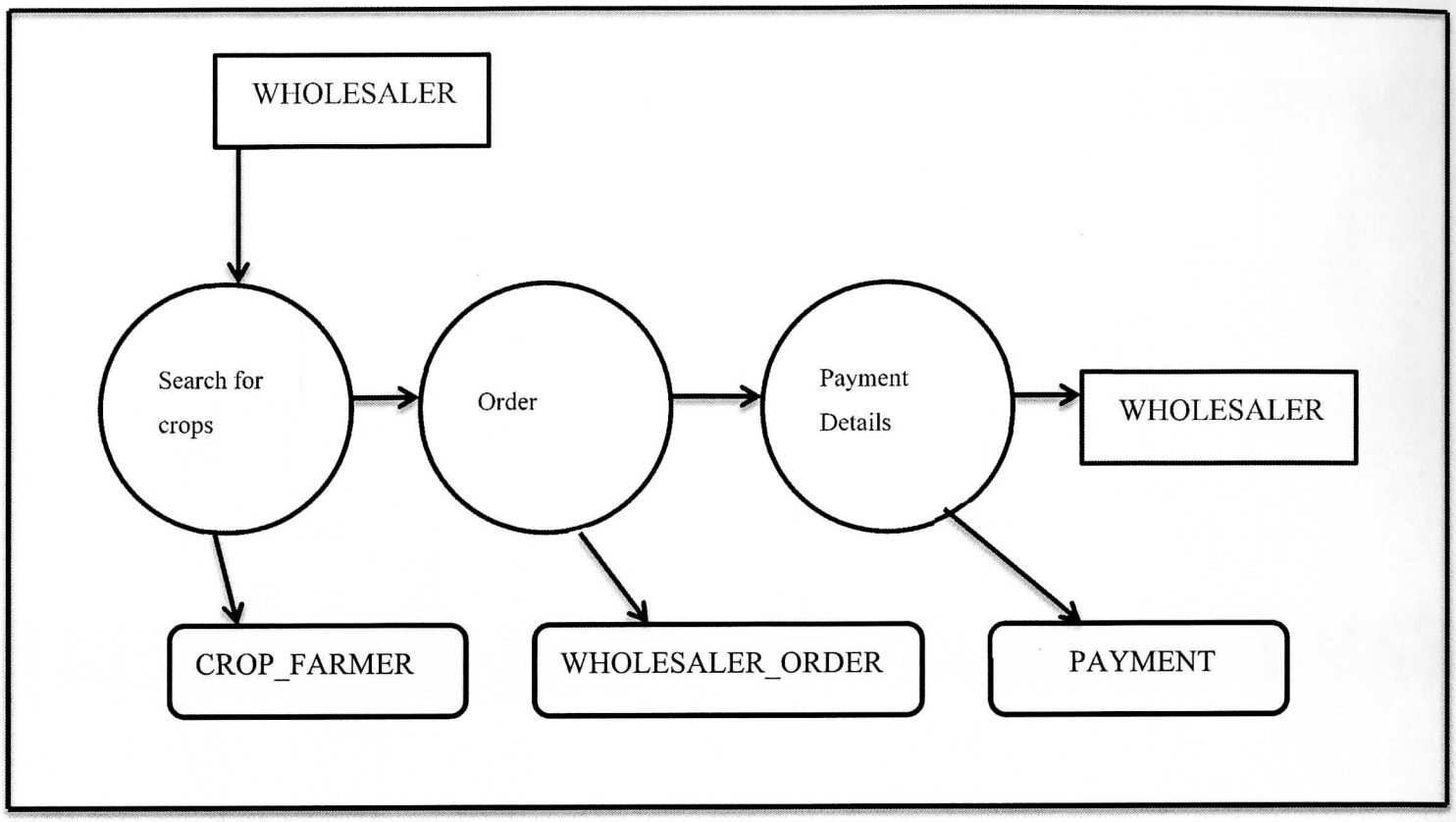


Figure 18: Low Level Diagram-Wholesaler buying crops.

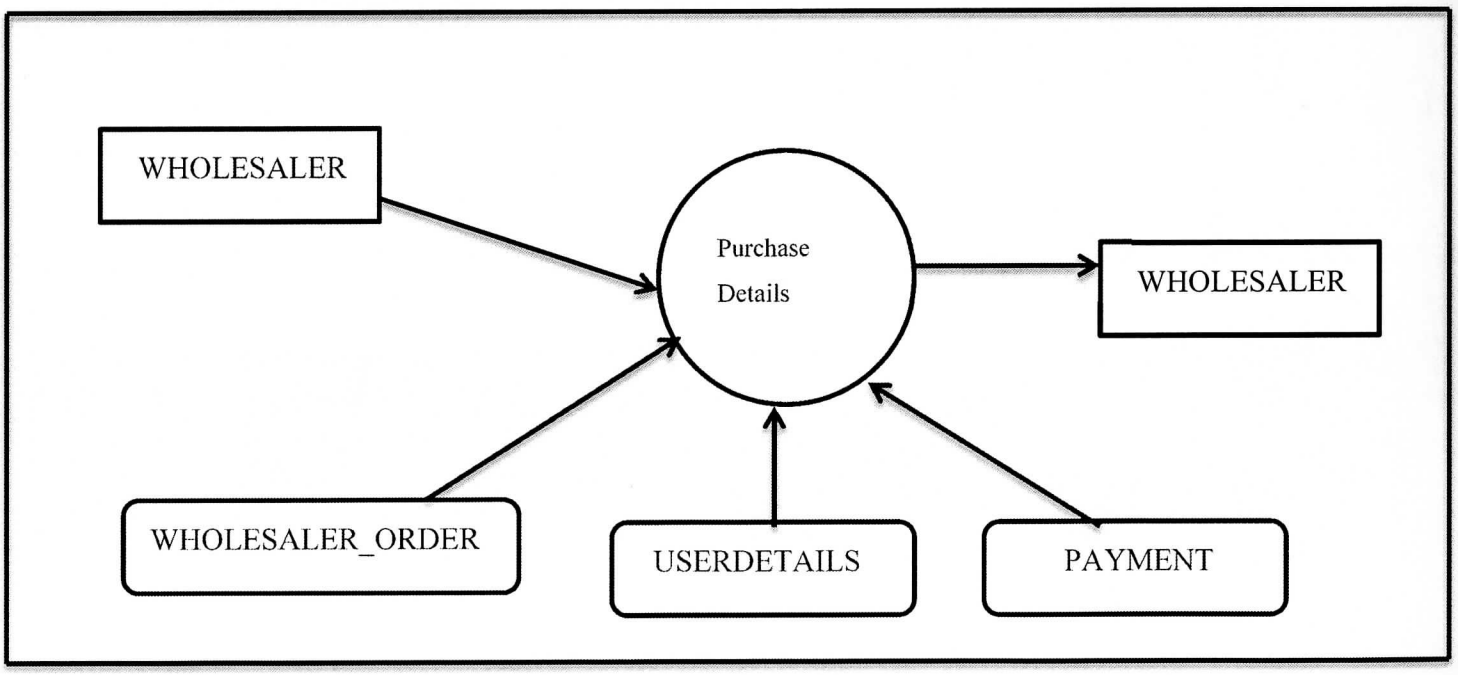


Figure 19: Low Level Diagram-Wholesaler purchase details.

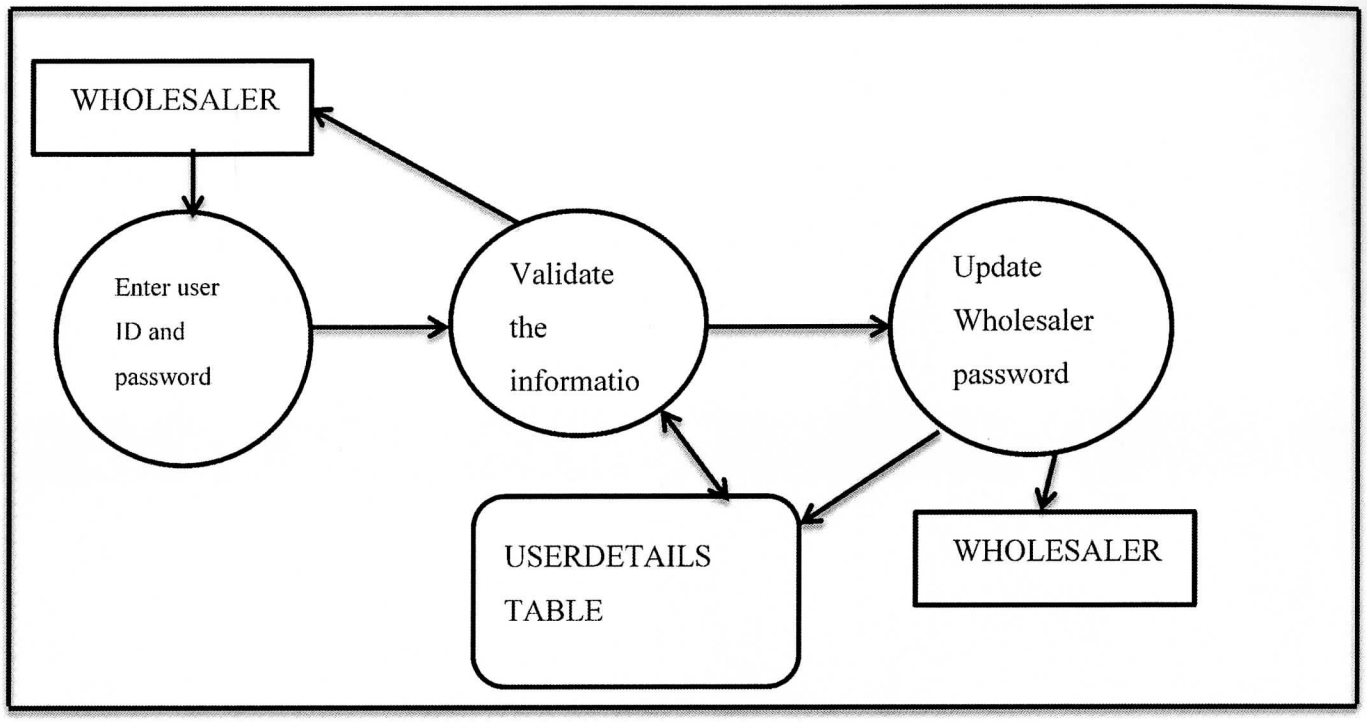


Figure 14: Low Level Diagram for changing the password

Retailer: Retailers can buy products from wholesalers. And can view details of purchase details. Based on customer order request retailer can supply goods to Customer.

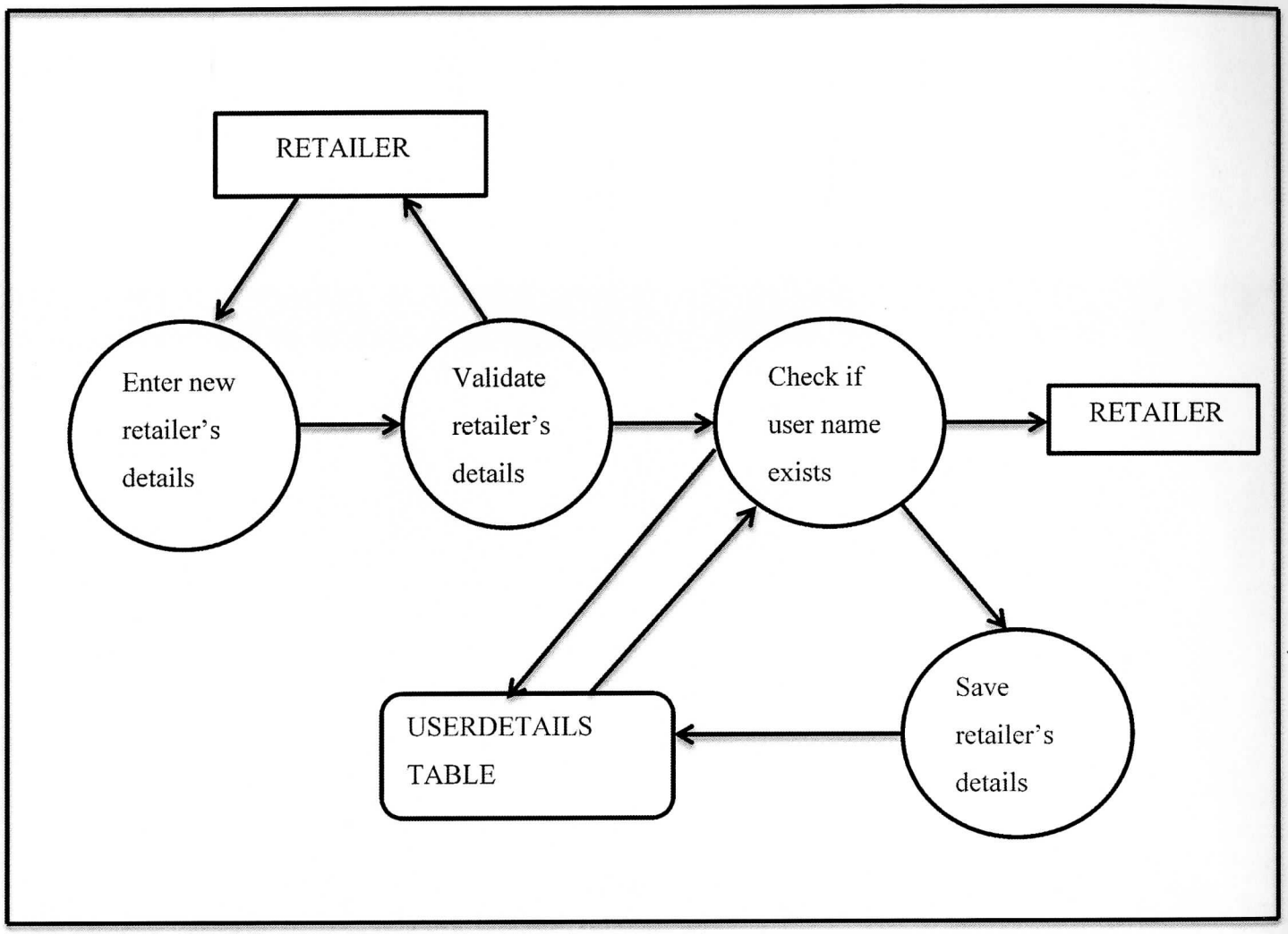


Figure 15: Low Level Diagram-retailer Registration

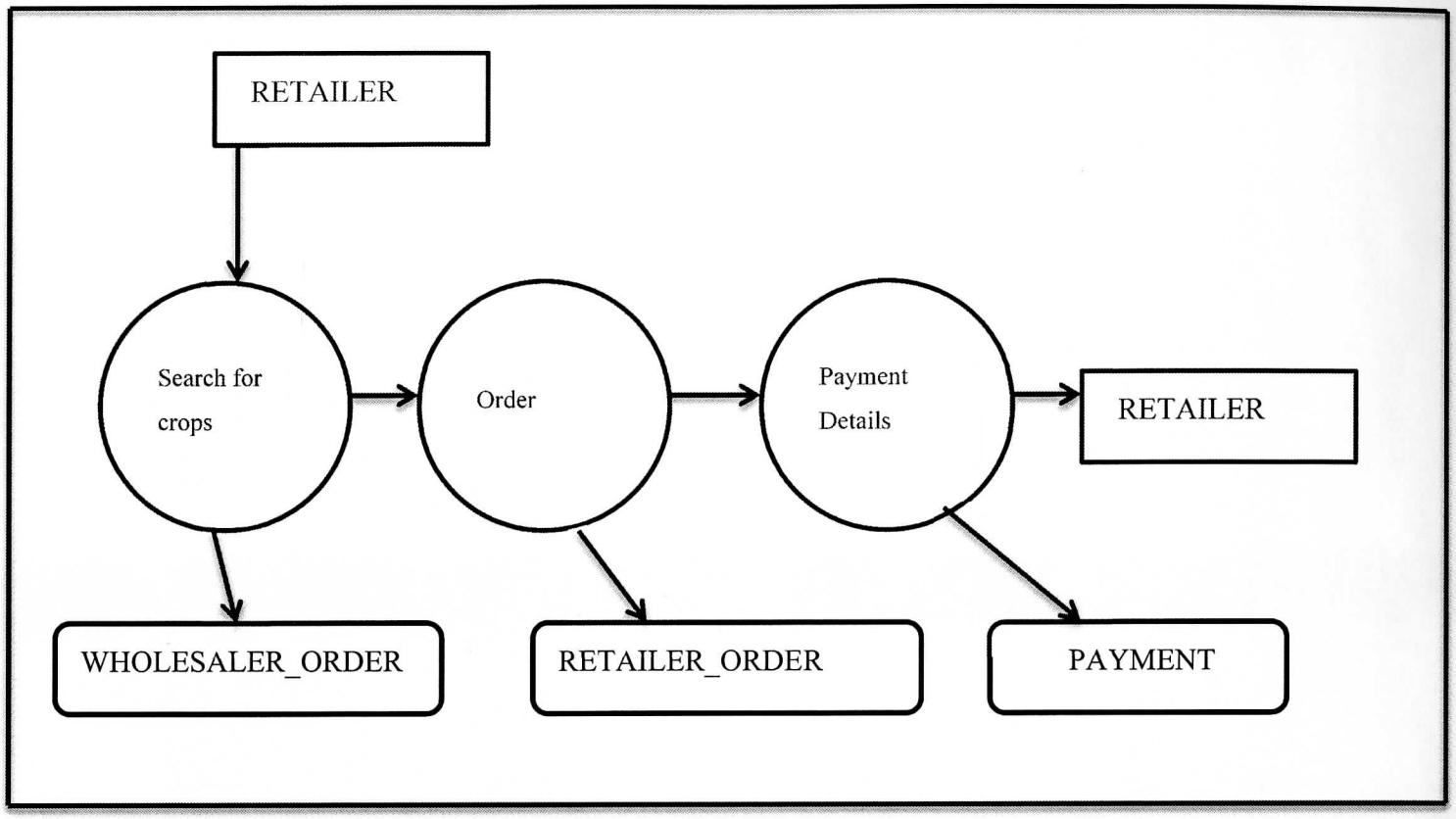


Figure 20: Low Level Diagram-Retailer buying crops.

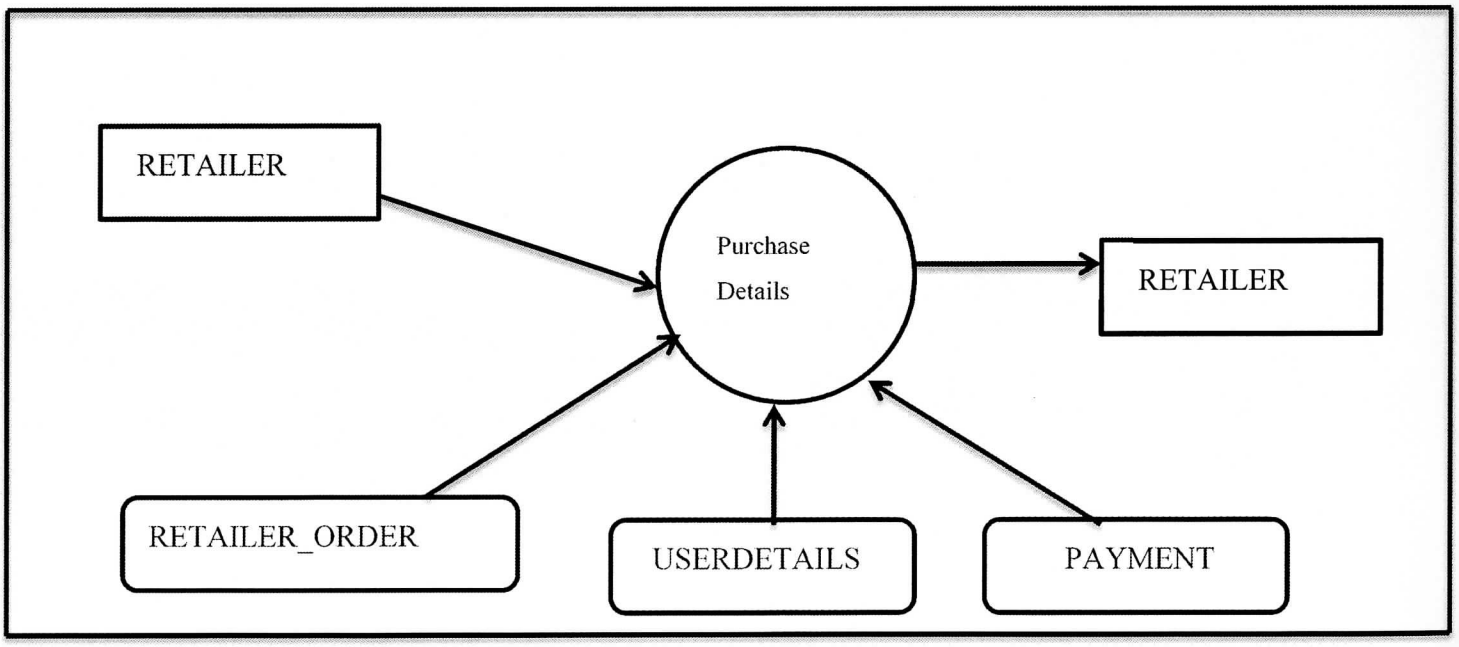


Figure 21: Low Level Diagram-Retailer purchase details.

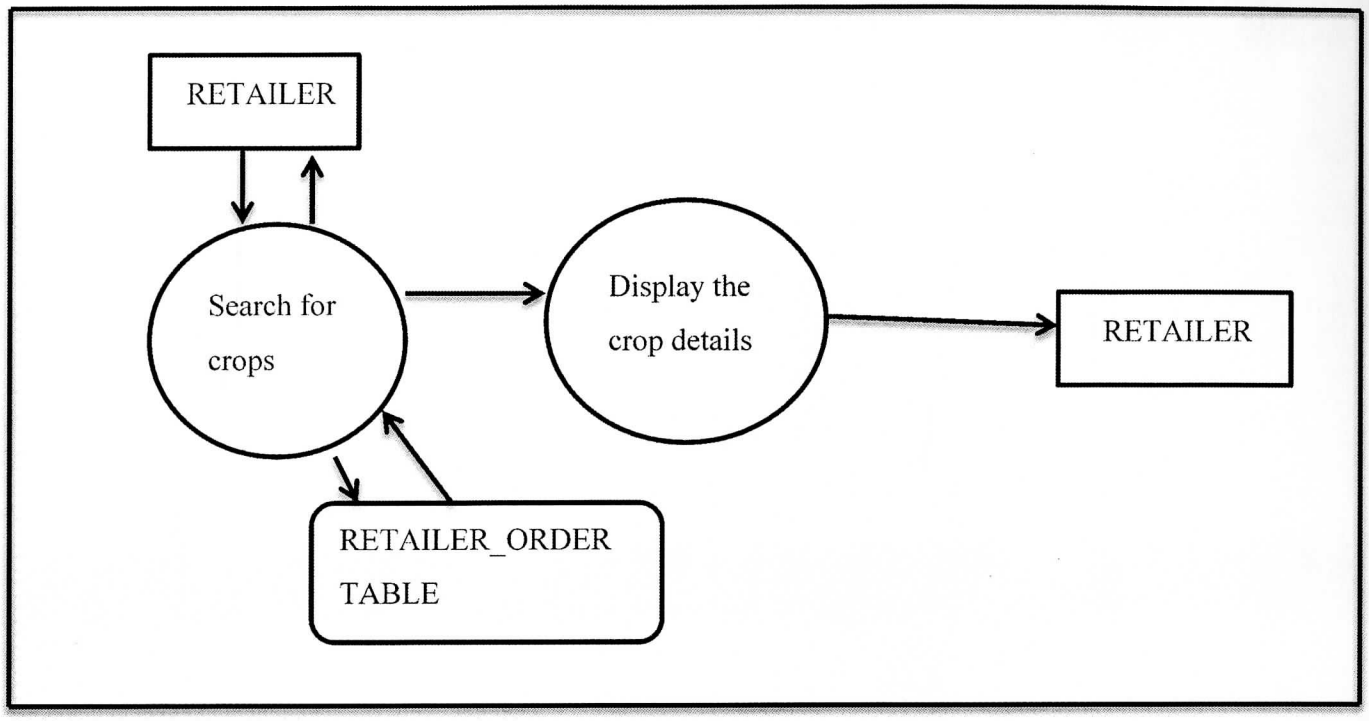


Figure 18: Low Level Diagram for viewing crop details

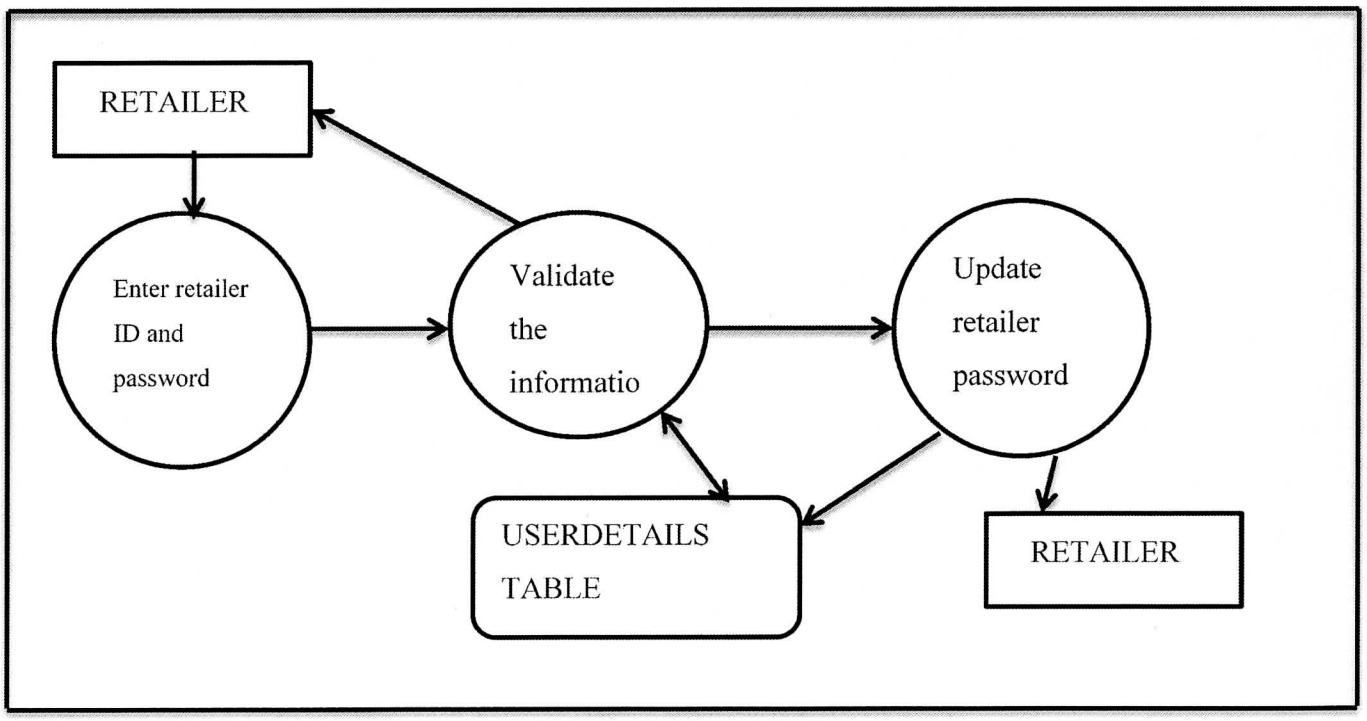


Figure 19: Low Level Diagram for changing the password

Customer: Customer can make order through this website to the local retailer. Customer can place order through this site. While ordering goods customer can use cart to before placing an order to retailer.

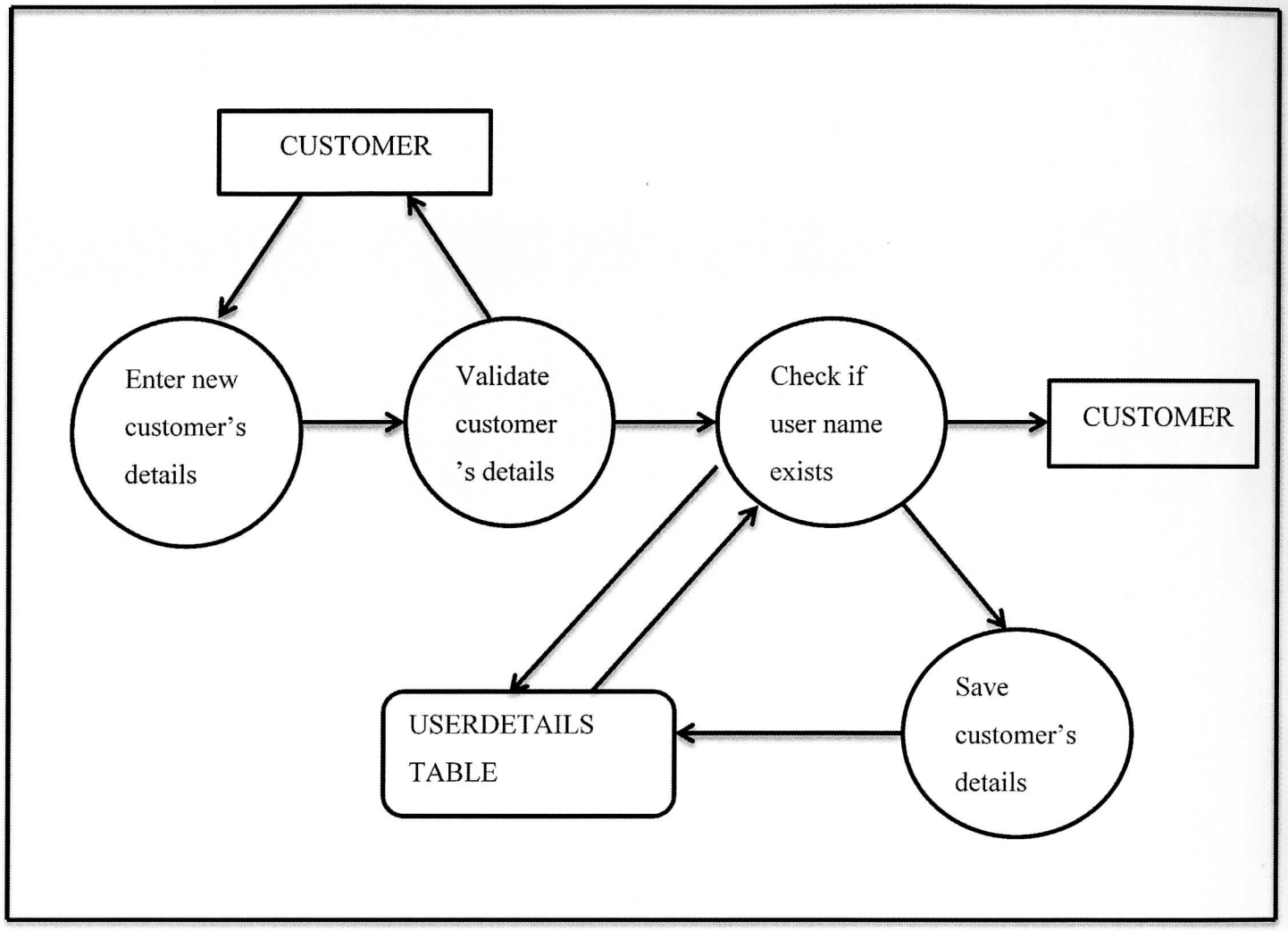


Figure 20: Low Level Diagram-customer Registration

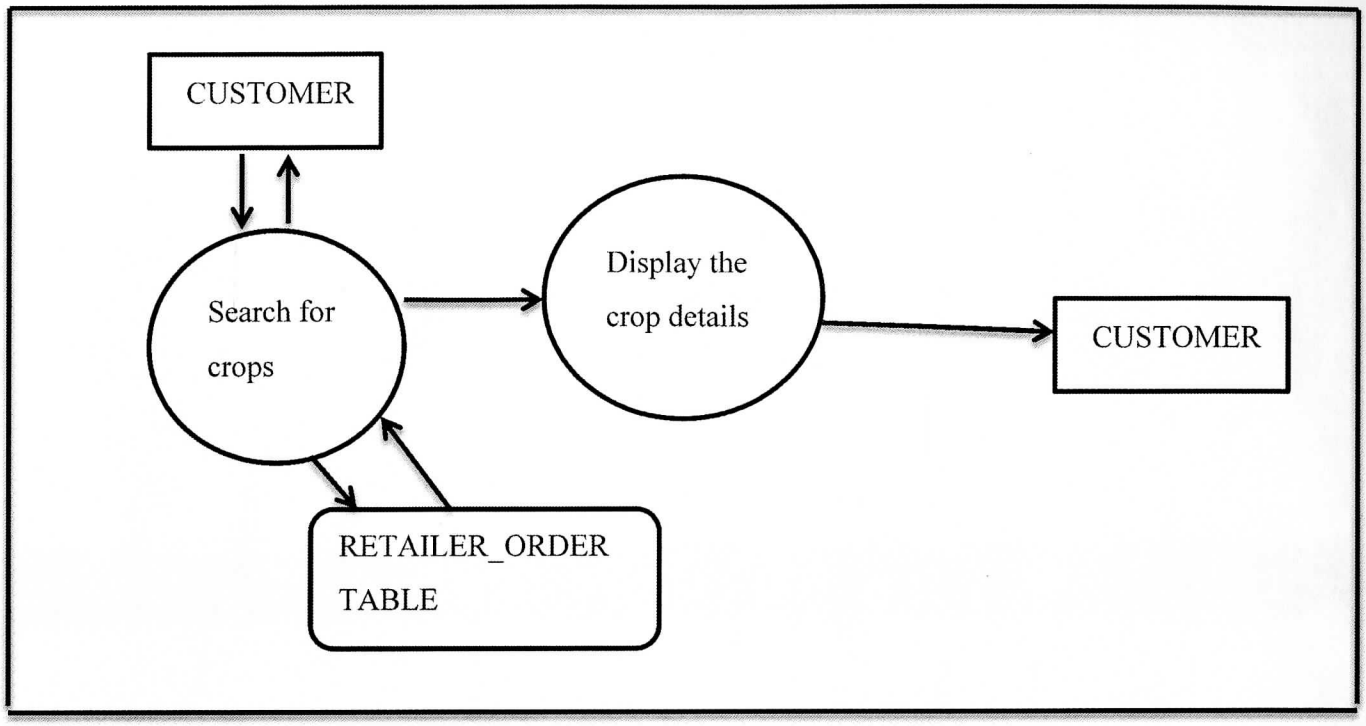


Figure 22: Low Level Diagram for viewing crop details

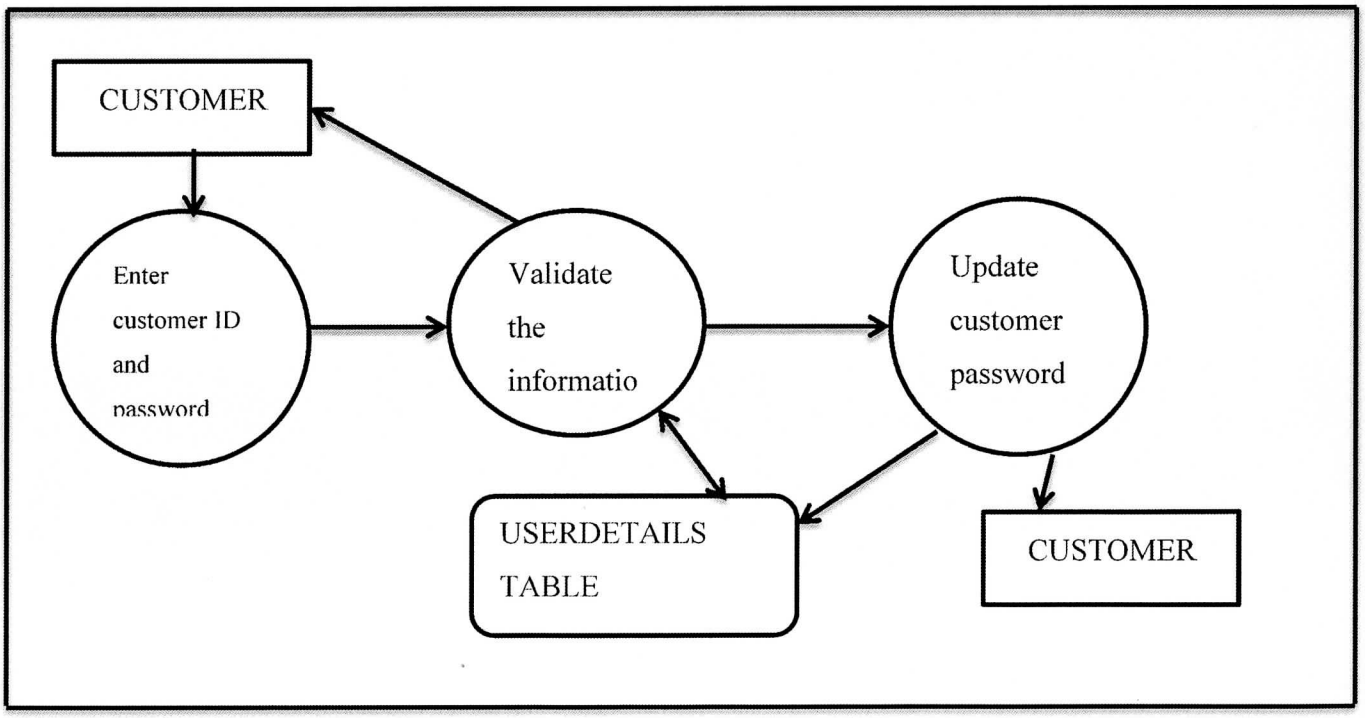


Figure 22 : Low Level Diagram for changing the password

Security And Authentication Module: The user details should be verified against the details in the user tables and if it is valid user, they should be entered into the system. Once entered, based on the user type access to the different modules to be enabled / disabled and individual user can change their default password or old password

Phase 4: Testing the project

Software Testing is the process used to identify the accuracy, completeness, security, and quality of developed product. Testing is basically like a technical investigation, performed to reveal quality level of the project. Testing is the process of executing a system with the intent of finding an error. It is a process in which errors are identified, isolated, subjected for rectification and ensured that product is error free in order to produce the quality end product.

When the product is testing in the testing phase and it fails to succeed then the software does not do what the user expects. A failure is a programming error that may or may not actually mean as a failure. It can mean that there are bugs in the code that needs to be fixed. Software testing is the technical investigation of the product under test to provide a quality and error free product.

A common practice of software testing is to be performed after the functionality is developed but before it is shipped to the customer. Another practice is to start software testing at the same moment the project starts and it is a continuous process until the project finishes. It is commonly believed that the earlier a defect is found the cheaper it is to fix it. This project has come across many different levels of testing like the Unit Testing, Module Testing, Integration Testing, System Testing and User Acceptance Testing.

Phase 5: Delivering the project

The end product the Global Farming project was successfully designed and is tested for accuracy and quality. It fulfilled its main objective of this project that is to build a website which will help farmers to sell their products. It could be a great platform for all the buyers and farmers to interact Online and manage sales. It not only helps farmers but also the retailers, wholesalers and regular customers to get the best services and information. During this development of this project we have accomplished all the objectives and this project and it meets the needs of the organization. This project developed will be used in searching, retrieving and generating information that is requested.

The developed project will be used in searching, retrieving and generating information for the concerned requests. The software is developed using Java as front end and Oracle as back end in Windows environment. This project will help in easy retrieval of information with reduced errors. It is very user-friendly portable and flexible for further enhancements.

The new proposed system will help farmers to globalize their products. It is going to broaden the horizons for the farmers as well as the vendors. The farmers and vendors after registering can access the details and make transactions in a secured way. This application will be very user friendly and can generate reports about sales and purchases, which will be very helpful for the farmers to analyze their crop sales.

CHAPTER 4

CASE STUDY (RESULTS AND DISCUSSION)

Table 1: Hardware and Software Configuration

HARDWARE CONFIGURATION
PROCESSORS: INTEL XEON PROCESSOR E5430 MEMORY: 16 GB HARD DISK: 150 GB OPERATING SYSTEM: WINDOWS OPERATING SYSTEM VERSION: 7
SOFWARE CONFIGURATION
DATABASE: ORACLE11G SERVER DEPLOYMENT: TOMCAT 6.0 INTEGRATED DEVELOPMENT ENVIRONMENT: MY ECLIPSE 11 USER INTERFACE: HTML CLINT-SIDE SCRIPTING: JAVASCRIPT PROGRAMMING LANGUAGE: JAVA

TABLES

There are 10 tables in the database they are address, drop, crop_farmer, customer_order, feedback, payment, retailer_oredr, userdetails, wholesalers_order and wholesaler_availability.

```
SQL> select table_name from user_tables;

TABLE_NAME
------------------------------
ADDRESS
CROP
CROP_FARMER
CUSTOMER_ORDER
FEEDBACK
PAYMENT
RETAILER_ORDER
USERDETAILS
WHOLESALERS_ORDER
WHOLESALER_AVAILABILITY

10 rows selected.
```

Figure 23: Global Farming Tables list Screenshot

```
SQL> desc address;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 USERID                                    NOT NULL NUMBER
 ADDRESSID                                 NOT NULL NUMBER
 ADDRESSS1                                          VARCHAR2(200)
 ADDRESS2                                           VARCHAR2(200)
 CITY                                               VARCHAR2(30)
 STATE                                              VARCHAR2(30)
 COUNTRY                                            VARCHAR2(30)
 ZIPCODE                                            VARCHAR2(10)
 PHONE                                              NUMBER
```

Figure 24: address Table Screenshot

```
SQL> desc crop;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 CROPID                                    NOT NULL NUMBER
 CROPNAME                                           VARCHAR2(50)
 PHOTO                                              BLOB
 PRICE                                              NUMBER(10,2)
```

Figure 25: crop Table Screenshot

```
SQL> desc crop_farmer;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 CROPSID_FORMER                            NOT NULL NUMBER
 CROPID                                             NUMBER
 USERID                                             NUMBER
 TOTAL_QUANITITY                                    NUMBER
 AVAIL_QUANTITY                                     NUMBER
 PRICE                                              NUMBER(9,2)
```

Figure 26: crop_farmer Table Screenshot

```
SQL> desc customer_order;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 CUSTOMER_ORDERID                          NOT NULL NUMBER
 CUSTOMERID                                         NUMBER
 CROPID                                             NUMBER
 QUANTITY                                           NUMBER
 COST                                               NUMBER(10,2)
 ORDERDATE                                          DATE
```

Figure 27: customer_order Table Screenshot

```
SQL> desc feedback;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 FEEDBACKID                                NOT NULL NUMBER
 USERNAME                                           VARCHAR2(30)
 EMAIL                                              VARCHAR2(45)
 CITY                                               VARCHAR2(30)
 STATE                                              VARCHAR2(30)
 COUNTRY                                            VARCHAR2(30)
 PHONE                                              VARCHAR2(11)
 FEEDBACK                                           VARCHAR2(500)
 FEEDBACKDATE                                       DATE
```

Figure 28: feedback Table Screenshot

```
SQL> desc payment;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 PAYMENTID                                 NOT NULL NUMBER
 USERID                                             NUMBER
 PAY_DATE                                           DATE
 PAYMENTMODE                                        VARCHAR2(30)
 PAIDBY                                             VARCHAR2(50)
 ORDERIDREF                                         NUMBER
```

Figure 29: payment Table Screenshot

```
SQL> desc retailer_order;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 RETAILER_ORERID                           NOT NULL NUMBER
 CROPID                                             NUMBER
 WHOLESALERID                                       NUMBER
 RETAILERID                                         NUMBER
 QUANTITY                                           NUMBER
 PRICE                                              NUMBER(10,2)
 ORDERDATE                                          DATE
 RETAILER_PRICE                                     NUMBER(12,2)
```

Figure 30: retailer_order Table Screenshot

```
SQL> desc userdetails
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 USERID                                    NOT NULL NUMBER
 LOGINID                                   NOT NULL VARCHAR2(30)
 PASSWORD                                  NOT NULL VARCHAR2(30)
 ROLE                                      NOT NULL VARCHAR2(20)
 FIRSTNAME                                          VARCHAR2(30)
 LASTNAME                                           VARCHAR2(30)
 DOB                                                DATE
 EMAIL                                              VARCHAR2(50)
 FORGOTQUESTION                                     VARCHAR2(50)
 FORGOTANSWER                                       VARCHAR2(50)
 PHOTO                                              BLOB
 GENDER                                             VARCHAR2(20)
```

Figure 31: Userdetails Table Screenshot

```
SQL> desc wholesaler_availability;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 AVAILID                                   NOT NULL NUMBER
 CROPID                                             NUMBER
 AVAILABILITY                                       NUMBER
 PRICE                                              NUMBER(12,2)
 WHOLESALERID                                       NUMBER
```

Figure 32: Wholesaler_availability Table Screenshot

```
SQL> desc wholesalers_order;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 ORDERID                                   NOT NULL NUMBER
 USERID                                             NUMBER
 CROPID                                             NUMBER
 ORDER_QUANTITY                                     NUMBER
 ORDER_DATE                                         DATE
 TOTALPRICE                                         NUMBER(10,2)
 WHOLESALERID                                       VARCHAR2(50)
```

Figure 33: Wholesaler_order Table Screenshot

OUTPUT SCREENS

Figure 34: The home page

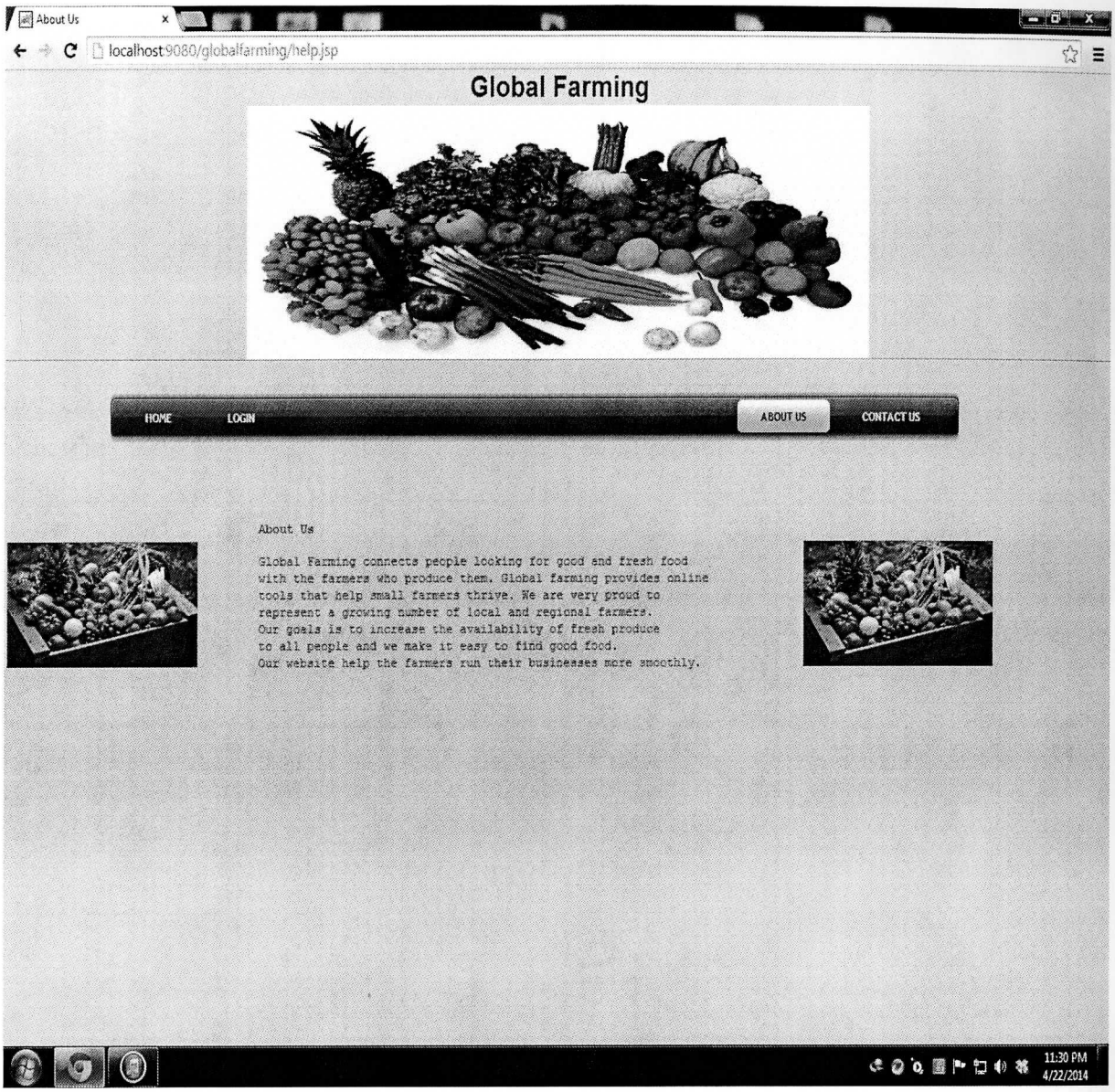


Figure 35: GLOBAL FARMING ABOUT US PAGE

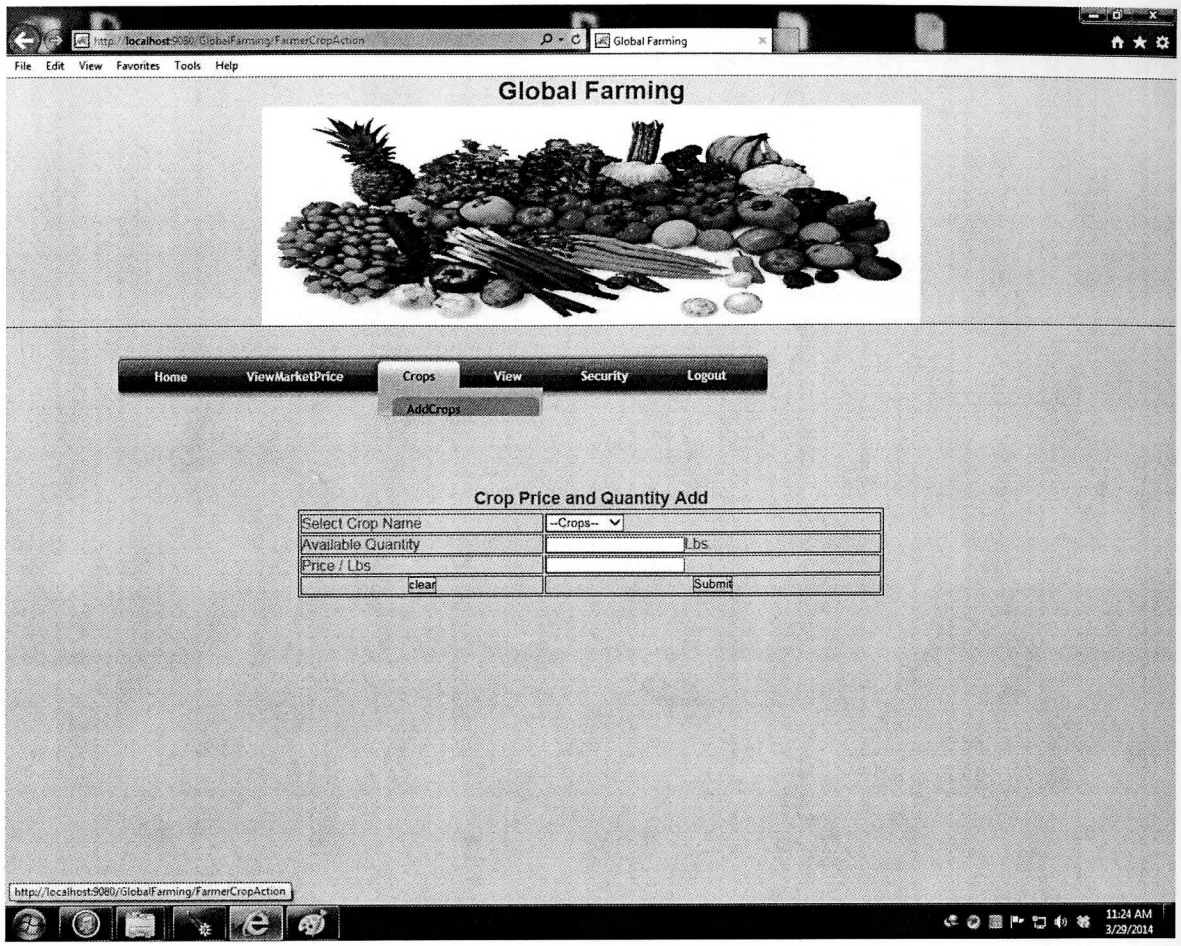


Figure 36: The farmer crops page to add crops

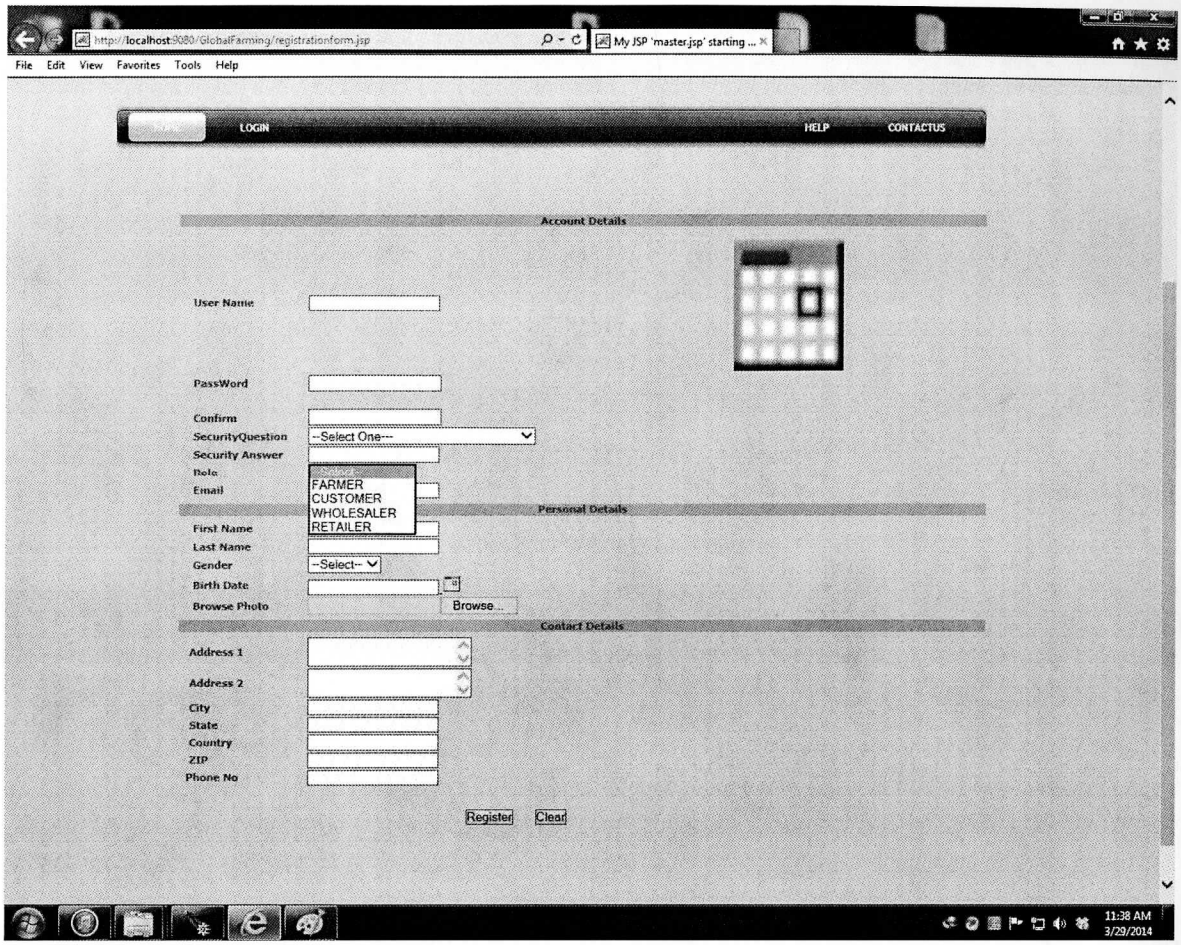


Figure 37: The registration page to create an account

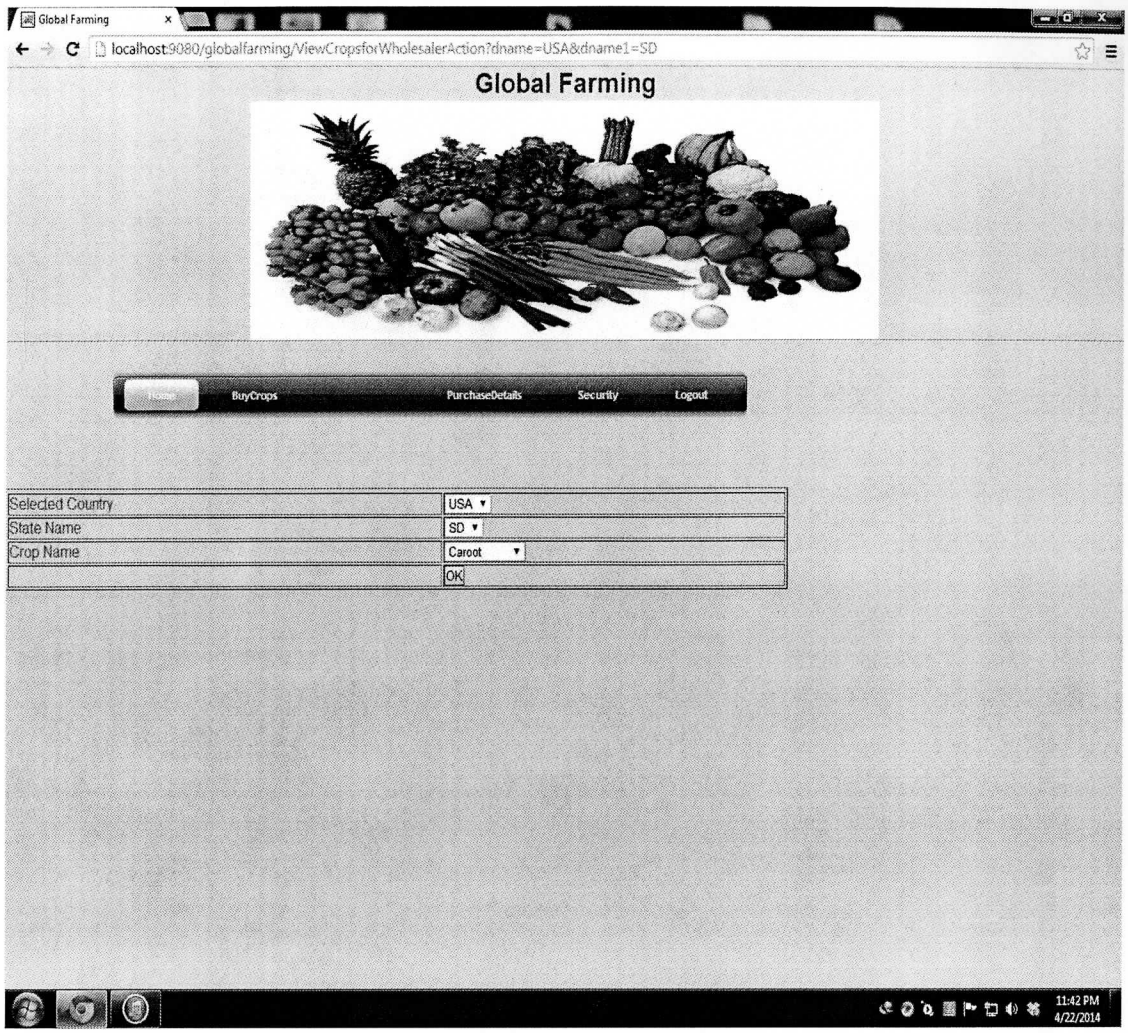


FIGURE 38: WHOLESALERS BUY CROP PAGE

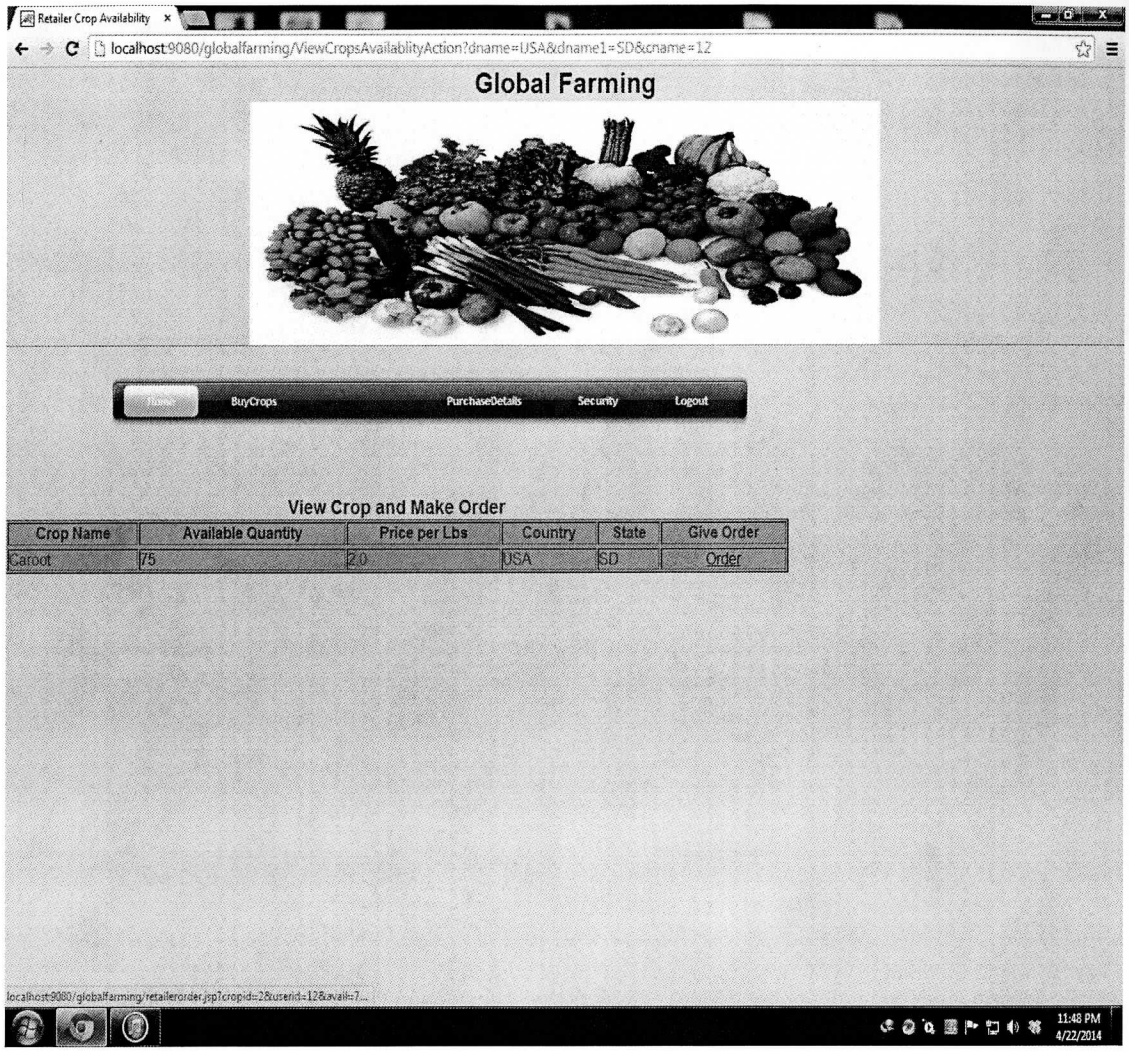


FIGURE 39: RETAILER VIEW CROP PAGE

CHAPTER 5

CONCLUSIONS

This Global Farming application has been computed successfully and was also tested successfully. It is user friendly, and has various options, which can be utilized by the user to perform the desired operations. The Global farming was successfully designed and is tested for accuracy and quality and accomplished all the objectives.

The developed project will be used in searching, retrieving and generating information for the concerned requests. The software is developed using Java as front end and Oracle as back end in Windows environment. The goals that are achieved by the software are:

- Efficient management of records.
- The simplicity of the operations.
- Less processing time and getting required information.
- User friendly screens to enter the data.
- Portable and flexible for further enhancement.
- Easy retrieval of information

REFERENCES

Schild, H. (2011) . Java the complete reference. McGraw-Hill Osborne.

Loney, K. (2008) . Oracle Database 11g The Complete Reference. McGraw-Hill Osborne.

McLaughlin, M. (2008) . Oracle Database 11g PL/SQL Programming. McGraw-Hill Osborne.

Pribyl, B., & Feuerstein, S. (2009). Oracle PL/SQL Programming. O'Reilly Media.

Data Flow Diagram. (n.d.). Wikipedia, The Free Encyclopedia. Retrieved April 9, 2014, from http://en.wikipedia.org/wiki/Data_flow_diagram

Thomas W. Gray, PhD and Charles A. Kraenzle, PhD. (2002). Problems and Issues Facing Farmer Cooperatives. Retrieved May 6, 2013, from http://www.rurdev.usda.gov/supportdocuments/rr192.pdf

Farmers face difficulties in modern times. (2013 , Dec 13). Retrieved Jan 6, 2014, from http://vietnamnews.vn/society/248637/farmers-face-difficulties-in-modern-times.html

http://www.byproduce.com

http://www.localfoodmarketplace.com/redhills/

http://www.localharvest.org

APPENDICES

WORK BREAKDOWN STRUCTURE (WBS)

1.0 Concept

- 1.1 Evaluate current system.
- 1.2 Define requirements
  - 1.2.1 Define user requirements
  - 1.2.2 Define application requirements
  - 1.2.3 Define application system requirements
- 1.3 Evaluate applicable programming language.
- 1.4 Develop project plan.
- 1.5 Update advisor about the status of the project.

2.0 Develop the system modules.

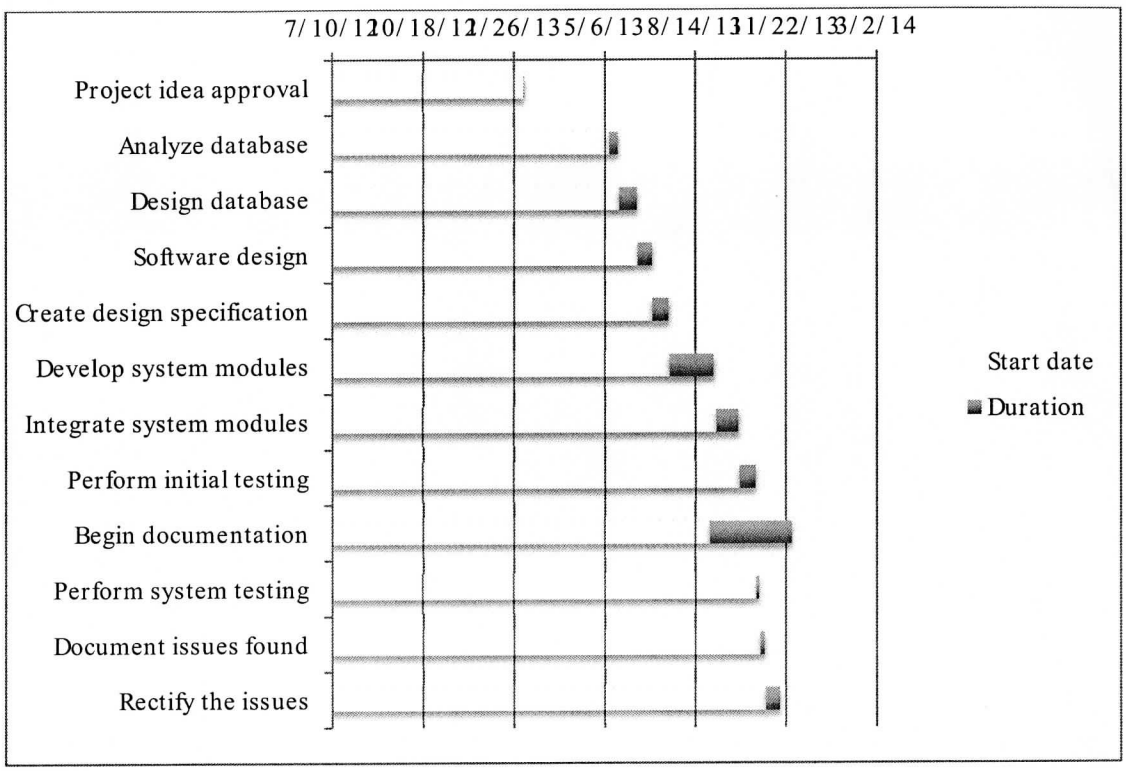
3.0 Implementation of the developed project.

4.0 Testing the project.

5.0 Documentation.

6.0 Roll Out.

GANTT CHART


7/10/12
0/18/12/26/13
5/6/13
8/14/13
1/22/13
3/2/14
Project idea approval
Analyze database
Design database
Software design
Create design specification
Develop system modules
Integrate system modules
Perform initial testing
Begin documentation
Perform system testing
Document issues found
Rectify the issues
Start date
Duration