Software Requirements Specifications
Of
Farmer Enhancer

Submitted by

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Certificate

This is to certify that the project entitled "**Farmer Enhancer**" is a bonafide work of

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submitted to Infoway Technologies, Pune in partial fulfillment of the requirement for the award of the Post Graduate Diploma in Advanced Computing.

Supervisor Guide **Faculty Guide**

Declaration

I declare that this written submission represents our ideas in our own words and where others ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principals of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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INTRODUCTION TO PROJECT

Farmer Enhancer is a distributed application, developed to provide a simple and easy way to trade agricultural products produced by the farmers and to educate farmers by providing this unique online platform. This application also provides an seed buying platform for farmers which helps in easy availability of various seeds. The application is maintained among the four stakeholders such as admin, farmer, exporter and seed supplier. In this application a farmer can add their products which he wants to sell to the exporter, also he can perform payment, feedback such operations. As it have user friendly interface, it is simple to understand by farmers, exporters and seed suppliers. Just user needs to follow step by step operations by watching options shown on user interface. To implement the project, some open source tools have been used such as, Visual Studio Code, Eclipse 2021, MySQL Workbench, Apache Tomcat as web server. The web programing language used to implement this project are React JS(To make our single page application), CSS(Cascading Style Sheets), JavaScript, Node JS, Spring boot, Spring JPA. MySQL is used as database server. For further enhancement or development of this software, Newsfeed related to agriculture will be considered.

1.1 Problem Definition :

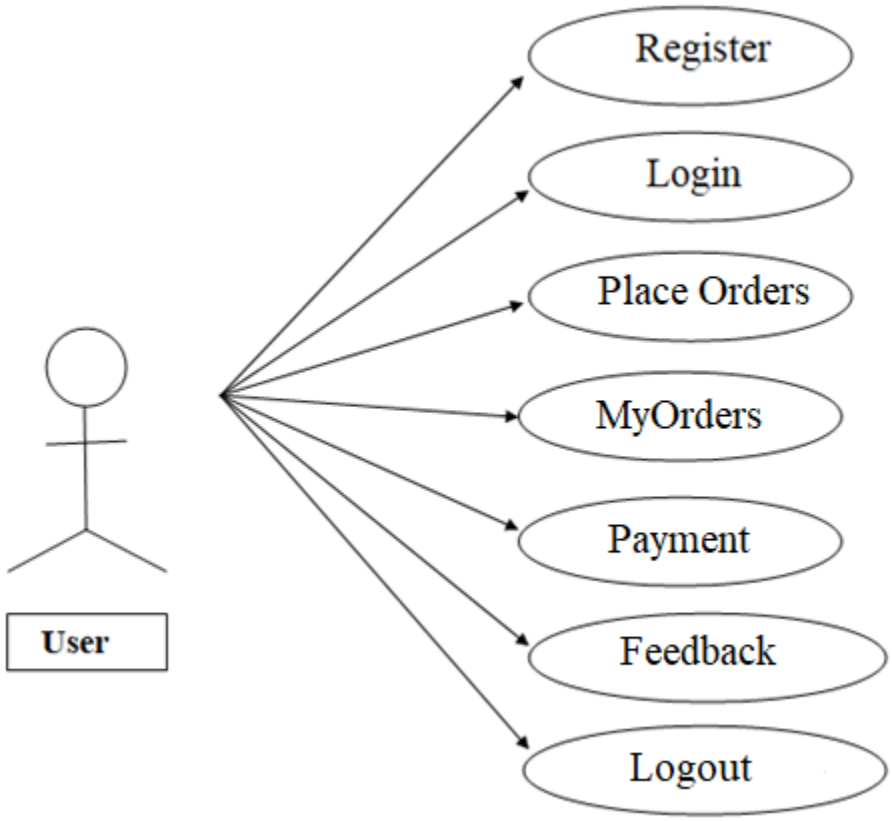
- Now adays, there isn't any online platform for farmers agro products to export them.
- Also there isn't any platform for getting various high brid seeds for harvesting.
- It becomes very difficult to retrieve or find the particular product for exporters. E.g.: To find out about required product exporters needs to follow old offline process or doing enquiry, calling farmers, the exporter has to go through various tasks, these results in waste age of time.
- It is manual and time consuming.
- There are more human errors.
- There is difficult to trade the large amount of product quantity.
- Searching becomes more difficult.
- Maximum chances of losing delivery on time.
- No security as delivery can be misplaced or damaged.
- Lastly, it was not offers a user friendly work environment.

1.2 Purpose and Scope :

- Working with current system is quite slower, complicated and time consuming task. Operations such as searching, adding, removing, deleting cannot be done efficiently. Hence organization needs new system with enhanced features. Features such as,
- It will make easy to save huge data base in computer.
- Unauthorized person cannot access the Database in computer.
- Admin can easily view all user details.
- Easy to search required product and buy them.
- User can add vehicle details if he want any for delivery.
- We have provided feedback system so users can have good communication between them.

2.System Analysis:

2.1 FUNCTIONAL REQUIREMENTS



2.2 User Account

First user has to fill the details using ‘sign up’ function. In this form user has been asked to fill their name, address, username, contact and password, and also there will be option to choose role where various roles are present called admin, farmer, exporter and seed supplier etc. according to that user has to select role.

The Farmer Enhancer Application then activates the login form. Here the user enters the User name and password and our application starts the authentication process in which the username and password are matched with the existing username and password in the database. If the password matches then it is allowed to the ‘sign in’ page else it will give alert to user as Invalid User name or password. After successful authentication the application activates user dashboards.

2.3 Registration and creation of user profile

The application shall require a user to register, in order to access further functionality. It will ask the user for the information such as name, password, address, contact number, role and username.

Existing user can directly login from sign in page by providing username and password. After successful login user can see their own dashboards as per their own role. A new user, on the other hand, would either have to register himself with the term by providing personal information without providing personal details user cannot access any of facility which is provided by this application.

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2.4 Farmer Account

To create farmer account first we need to register from register page. Farmer has to fill the details using signup page. In this form farmer needs to fill their name, address, username, contact, password and role as farmer. Existing farmer can directly login from sign in page by providing username and password. Farmer can view his/her own dashboard.

After successful login farmer can perform add products, delete products, view seed details, requisted orders, my orders and feedback.

2.5 Admin Account

To create Adimn account first we need to register from register page. Admin has to fill the details using signup page. In this form admin needs to fill their name, address, username, contact, password and role as admin. Existing admin can directly login from sign in page by providing username and password. Admin can view his/her own dashboard.

After successful login admin can perform view order list, view customer list, product list and feedback.

2.6 Exporter Account

To create exporter account first we need to register from register page. Exporter has to fill the details using signup page. In this form exporter needs to fill their name, address, username, contact, password and role as exporter. Existing exporter can directly login from sign in page by providing username and password. Exporter can view his/her own dashboard.

After successful login exporter can perform view products details, request goods and check my orders.

2.7 Seed Supplier Account

To create seed supplier account first we need to register from register page. seed supplier has to fill the details using signup page. In this form seed supplier needs to fill their name, address, username, contact, password and role as seed supplier. Existing seed supplier can directly login from sign in page by providing username and password. seed supplier can view his/her own dashboard.

After successful login seed supplier can perform add products, delete products and feedback.

3. Implementation Technologies:-

3.1 Spring Boot:

Spring Boot makes it easy to create stand-alone, production-grade applicationand provides the RAD (Rapid Application Development) feature.

We take an opinionated view of the Spring platform and third-party libraries so you can get started with minimum fuss. Most Spring Boot applications need minimal Spring configuration.

3.1.1 Features of Spring Boot:-

Web Development:

It is a well-suited Spring module for web application development. We can easily create a self-contained HTTP application that uses embedded servers like Tomcat, Jetty, or

Undertow. We can use the spring-boot-starter-web module to start and run the application quickly.

SpringApplication:

The SpringApplication is a class that provides a convenient way to bootstrap a Spring application. It can be started from the main method.

Application Events and Listeners:

Spring Boot uses events to handle the variety of tasks. It allows us to create factories file that is used to add listeners. We can refer it to using the ApplicationListener key.

Always create factories file in META-INF folder like META-INF/spring.factories.

Admin Support:

Spring Boot provides the facility to enable admin-related features for the application. It is used to access and manage applications remotely. We can enable it in the Spring Boot application by using spring.application.admin.enabled property.

Externalized Configuration:

Spring Boot allows us to externalize our configuration so that we can work with the same application in different environments. The application uses YAML files to externalize configuration.

Properties Files:

Spring Boot provides a rich set of Application Properties. So, we can use that in the properties file of our project. The properties file is used to set properties like server-port =8082 and many others. It helps to organize application properties.

YAML Support:

It provides a convenient way of specifying the hierarchical configuration. It is a superset of JSON. The SpringApplication class automatically supports YAML. It is an alternative of properties file.

Type-safe Configuration:

The strong type-safe configuration is provided to govern and validate the configuration of the application. Application configuration is always a crucial task which should be type-safe. We can also use annotation provided by this library.

Logging:

Spring Boot uses Common logging for all internal logging. Logging dependencies are managed by default. We should not change logging dependencies if no customization is needed.

Security:

Spring Boot applications are spring bases web applications. So, it is secure by default with basic authentication on all HTTP endpoints. A rich set of Endpoints is available to develop a secure Spring Boot application.

3.1.2 Advantages of Spring Boot:-

Spring Boot works well with several servlet containers:

Spring Boot works well with some of the most popular embedded servlet containers. Spring Boot uses Tomcat as its default, but you can easily swap it for Jetty, Undertow, Resin, and Wildfly. You get to choose the option that improves the specific types of functionality that concern you most.

Just as importantly, Spring Boot automatically identifies the servlet you set as the new default during the boot sequence. These Advantages of Spring Boot give you the flexibility to choose embedded servers that suit your needs best.

Bootstrapping saves memory space:

Spring Boot uses Boot Initializer to compile the source language. This bootstrapping technique makes it possible for users to save space on their devices and load applications quickly.

Decreased boilerplate code:

Spring Boot's in-memory database and embedded server (Tomcat) decrease or eliminate the boilerplate code typically needed to set up an application.

Without lots of boilerplate code, development teams can shorten their development times and update cycles, leading to more satisfied users and more productive employees. It's yet another of the advantages of Spring Boot that helps developers save time.

No XML configuration required:

Spring project developers can choose to use annotations or XML configurations. The option to avoid XML configurations appeals to a lot of software engineers who don't want to go through the extra steps required.

WAR files are not required:

While Spring Boot can use WAR (web application resource) files, they are not necessary. Instead, Spring Boot can rely on JAR (Java resource).

JAR has a shorter, simpler structure that makes them useful for developers and users. The lightweight files work quickly to connect applications with the tools they need to function.

The option to use either WAR or JAR also benefits development teams. If someone in the group doesn't have experience with JAR, they can rely on WAR. It might have a subtle effect on speed, but it helps developers bring their products to market as fast as possible.

POM dependency management:

Spring Boot doesn't force you to use a parent POM (project object model). Adding the spring-boot-dependencies artifact lets you manage dependencies without relying on a parent POM or XML file.

A large community of helpful users:

Like many open-source tools, Spring Boot has a large community of users full of people who enjoy sharing their insights and creations.

No matter what level of experience you have with Spring's ecosystem of products, you can find helpful tutorials and discussions online.

Another advantage of having such a large community of users is that you can often find existing code that closely resembles what you want to build.

Instead of starting from scratch, you can access the code and adjust it to meet your needs. GitHub's Spring Boot page is always a good place to start.

3.2 MySQL:

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.

Features of MySQL:

- MySQL is a database management system.

  A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- MySQL databases are relational.

  A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment.

- MySQL software is Open Source.

  Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything.

- The MySQL Database Server is very fast, reliable, scalable, and easy to use.

  MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

- MySQL Server works in client/server or embedded systems.

  The MySQL Database Software is a client/server system that consists of a multithreaded SQL server that supports different back ends, several different client programs and libraries, administrative tools, and a wide range of application programming interfaces (APIs).

4. Hardware and Software Requirements (Minimum):-

Hardware:

- Intel i3 processor 5th generation or later / AMD Ryzen 200 2nd generation or later
- 2 GB ddr3 ram.
- Windows 7 Home edition or later.
- 200 GB Sata HDD Space.
- Data Connection 200 kbps.

Software:

- Eclipse 4.7 Oxygen
- MySQL 5.7 with Workbench 8.0
- Google Chrome version 79.0
- Apache Tomcat Server 8.5
- Maven Dependencies

5. DESIGN

5.1 Database Design

The following table structures depict the database design.

Table1: User

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
address	varchar(255)	YES		NULL	
city	varchar(255)	YES		NULL	
created_on	datetime(6)	YES		NULL	
first_name	varchar(255)	YES		NULL	
last_name	varchar(255)	YES		NULL	
mobile_number	varchar(255)	YES		NULL	
password	varchar(255)	YES		NULL	
role	int	YES		NULL	
status	bit(1)	YES		NULL	
user_name	varchar(255)	YES		NULL	
zip	bigint	YES		NULL	

Table2: Product

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
exp_date	datetime(6)	YES		NULL	
image_url	varchar(255)	YES		NULL	
mfg_date	datetime(6)	YES		NULL	
price	bigint	YES		NULL	
product_name	varchar(255)	YES		NULL	
product_type	int	YES		NULL	
quantity	bigint	YES		NULL	
unit	bigint	YES		NULL	
user_id	bigint	YES	MUL	NULL	

Table3: Product Order

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
delivery_status	bit(1)	YES		NULL	
have_vehicle	bit(1)	YES		NULL	
order_date	datetime(6)	YES		NULL	
payment_status	bit(1)	YES		NULL	
price	bigint	YES		NULL	
quantity	bigint	YES		NULL	
total_price	bigint	YES		NULL	
unit	bigint	YES		NULL	
product_id	bigint	YES	MUL	NULL	
user_id	bigint	YES	MUL	NULL	

Table4: Vehicle

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
boarding_point	varchar(255)	YES		NULL	
dropping_point	varchar(255)	YES		NULL	
is_required	bit(1)	YES		NULL	
no_of_days	bigint	YES		NULL	
price	bigint	YES		NULL	
quantity	bigint	YES		NULL	
total_price	bigint	YES		NULL	
vehicle_name	varchar(255)	YES		NULL	
product_order_id	bigint	YES	MUL	NULL	

Table5: Exporter

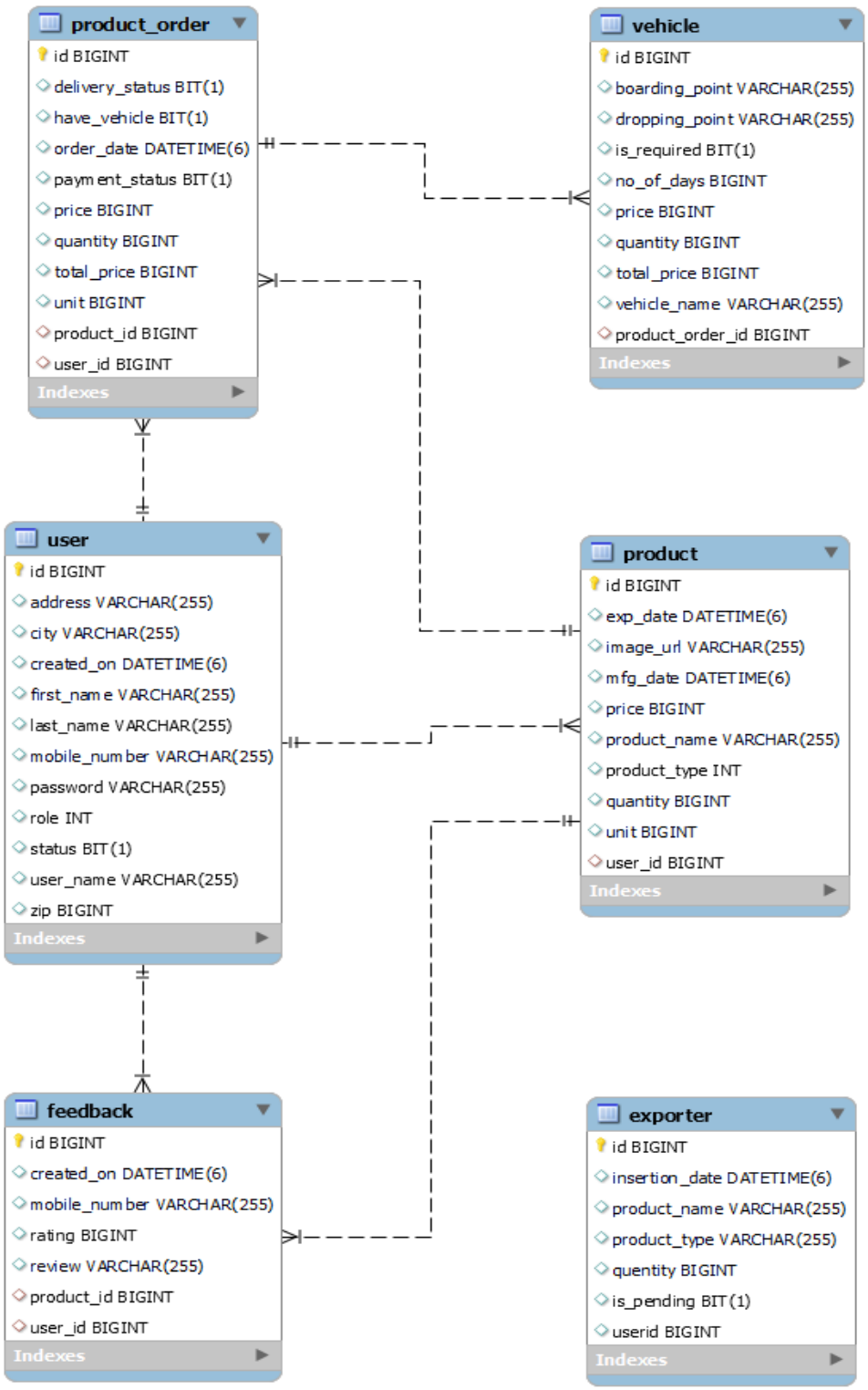
Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
insertion_date	datetime(6)	YES		NULL	
product_name	varchar(255)	YES		NULL	
product_type	varchar(255)	YES		NULL	
quentity	bigint	YES		NULL	
is_pending	bit(1)	YES		NULL	
userid	bigint	YES		NULL	

Table6: Feedback

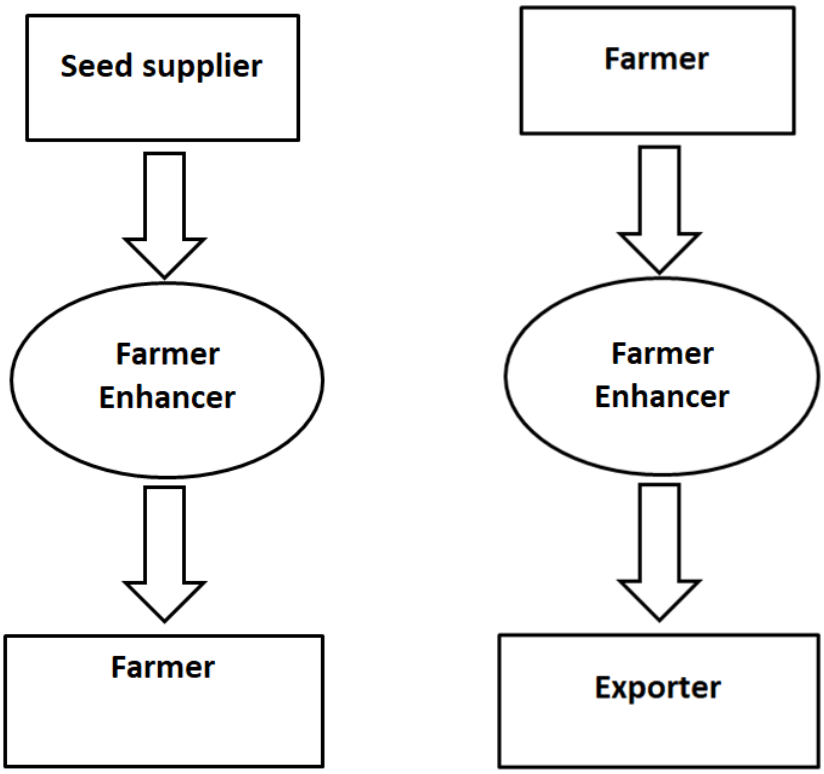
Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
created_on	datetime(6)	YES		NULL	
mobile_number	varchar(255)	YES		NULL	
rating	bigint	YES		NULL	
review	varchar(255)	YES		NULL	
product_id	bigint	YES	MUL	NULL	
user_id	bigint	YES	MUL	NULL	

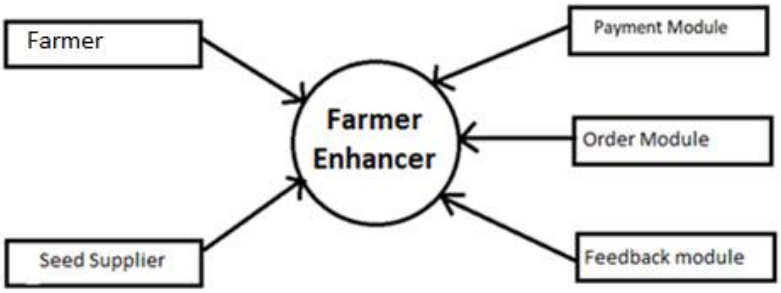
6. Analysis Diagram:

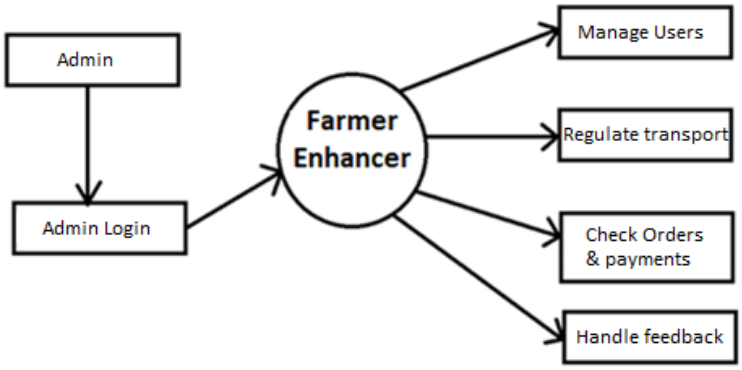
ClassDiagram

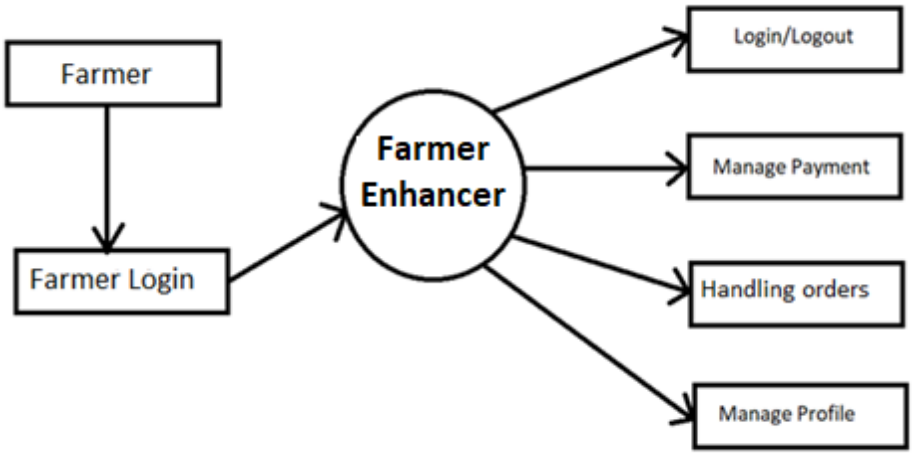


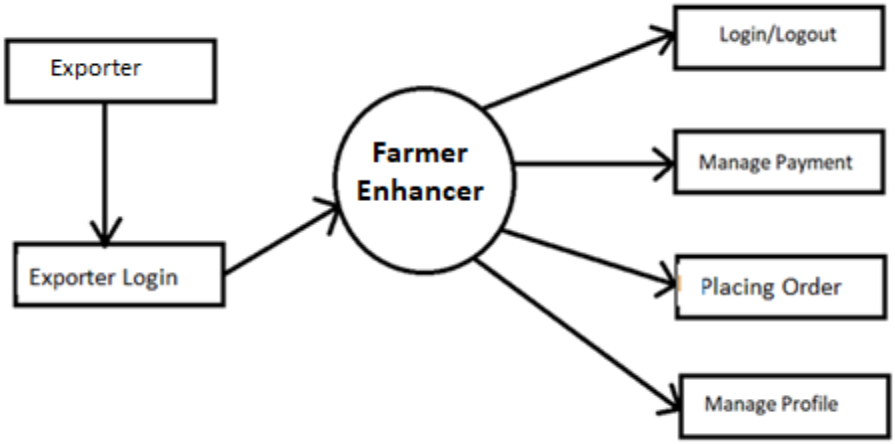
6.1 Data Flow Diagram

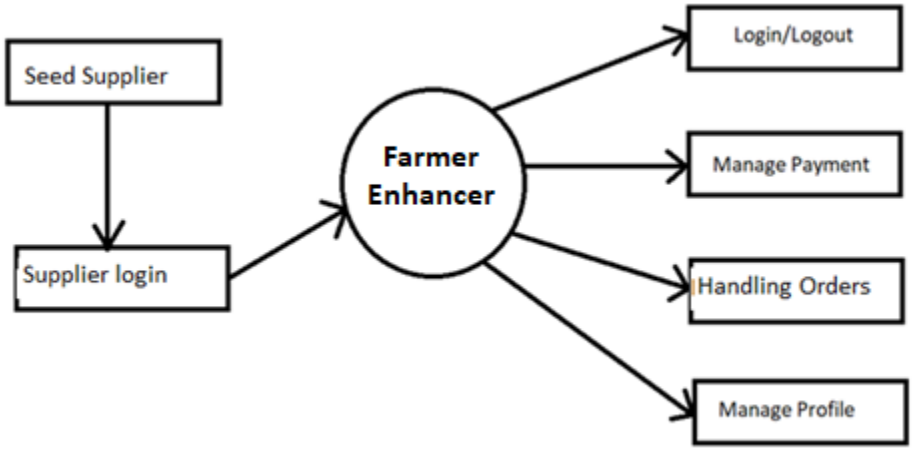







Farmer
Farmer Login
Farmer Enhancer
Login/Logout
Manage Payment
Handling orders
Manage Profile


Exporter
Exporter Login
Farmer Enhancer
Login/Logout
Manage Payment
Placing Order
Manage Profile


Seed Supplier
Supplier login
Farmer Enhancer
Login/Logout
Manage Payment
Handling Orders
Manage Profile

7. End to End Flow of Application:

User:

User can be admin, farmer, Exporter, seed supplier

- **User** will **Login** to the portal or will have to **Register** if he is not a registered user.
- After registration,**User** will login and Dashboard page will be displayed to him which will display the Product Category.
- From that page **User** can click on the button as per his requirement.
- After choosing category,**User**will select the required product from the list for sell or buywill enter the required details.
- A "**Payment form"** will be displayed on the Website showing all the payment options.
- On this dashboard, **User** will also be able to sell his products and also the products for that he will select "**product list**" page to add his products on website.
- **User** can see his "**Order list**" and will be able to give "**feedback"**.

Admin:

- Admin will **Login** to the portal or will have to **Register** if he is not a registered.
- After login, Admin dashboard will be visible and he will be able to see the "**Order list**".
- Admin will be also able to see "**User list**" here.
- Admin can see the review of the products.

8. Future Scope of Project:-

- Verification of users.
- Improvement in design.
- Mobile Application.
- We can add more products to sell or buy such as fruits, grains,seeds …etc.
- Chat BOT.

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