

Project Name: Farmers' Marketplace

Project Members:

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Abstract:

The Business to Consumer Model has come a long way ever since its time of inception. While it has expanded into multiple types of goods, there is still a section of market that remains untapped: farming related equipments and tools.

Creating the E-commerce website this project helps to minimise the gap between farmer and vendor company who is seller on the platform. It provides list of manufacturing companies that offer farming related tools and equipments. It also provides a cart for ease of remembering the choices selected by farmer who is a customer. The customer can also view their order history to go back to the manufacturing company from whom they purchased the last batch of products. Two main technologies were used in this project: Java and React. Java was used for backend. React is used for client side rendering of the page, which offloads the load of rendering views to the client, and provides a fluid single page experience. MySQL has been used as database to store list of users, farmers and their products.

Implementation Technologies:

1. Spring Framework:

Spring Framework is a Java platform that provides comprehensive infrastructure support for developing Java applications. Spring handles the infrastructure so you can focus on your application.

Spring enables you to build applications from "plain old Java objects" (POJOs) and to apply enterprise services non-invasively to POJOs. This capability applies to the Java SE programming model and to full and partial Java EE.

1.1 Features of Spring Framework:

1. Lightweight

Spring is modular lightweight framework which allows you to selectively use any of its modules on the top of Spring Core.

2. Inversion of Control (IOC)

This is another top feature of Spring framework where application dependencies are satisfied by the framework itself. Framework creates the object in runtime and satisfies application dependencies.

3. Aspect Oriented Programming (AOP)

Aspect Oriented Programming (AOP) is very popular in programming world and in Spring it is well implemented. Developer can use Aspect Oriented Programming (AOP feature of Spring to develop application in which business logic is separated from system services.

4. Container

Spring provides their own container for managing the bean lifecycle.

5. MVC Framework

Spring MVC Framework is used for developing MVC based web applications.

6. Transaction Management

Spring framework provides generic Transaction Management layer which can be used with or without J2EE(JEE) environment.

7. JDBC Exception Handling

Spring provides their own abstraction of JDBC exception which further simplifies the exception handling in program.

1.2 Advantages of Spring Framework:

1. Solving difficulties of Enterprise application development

Spring is solving the difficulties of development of complex applications, it provides Spring Core, Spring IoC and Spring AOP for integrating various components of business applications.

2. Support Enterprise application development through POJOs

Spring supports development of Enterprise application development using the POJO classes which removes the need of importing heavy Enterprise container during development. This makes application testing much easier.

3. Easy integration other frameworks

Spring designed to be used with all other frameworks of Java, you can use ORM, Struts, Hibernate and other frameworks of Java together. Spring framework do not impose any restriction on the frameworks to be used together.

4. Application Testing

Spring Container can be used to develop and run test cases outside enterprise container which makes testing much easier.

5. Modularity

Spring framework is modular framework and it comes with many modules such as Spring MVC, Spring ORM, Spring JDBC, Spring Transactions etc. which can used as per application requirement in modular fashion.

6. Spring Transaction Management

Spring Transaction Management interface is very flexible it can configure to use local transactions in small application which can be scaled to JTA for global transactions.

2. The JDBC Template

The central class of the Spring JDBC abstraction framework is the **JdbcTemplate** class that includes the most common logic in using the JDBC API to access data, such as handling the creation of connection, statement creation, statement execution, and release of resource. The **JdbcTemplate** class can be found in the **org.springframework.jdbc.core** package.

The **JdbcTemplate** class instances are thread-safe once configured. A single **JdbcTemplate** can be configured and injected into multiple DAOs.

We can use the **JdbcTemplate** to execute the different types of SQL statements. **Data Manipulation Language (DML)** is used for inserting, retrieving, updating, and deleting the data in the database such as **SELECT**, **INSERT**, or **UPDATE** statements

2.1 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).

3. Hardware and Software Requirements (Minimum):

Hardware:

1. Intel i3 processor 3rd generation or later / AMD Ryzen 200 2nd generation or later
2. 2 GB ddr3 ram.
3. Windows 7 Home edition or later.
4. 200 GB Sata HDD Space
5. Data Connection 200 kbps

Software:

1. Eclipse 19-22
2. MySQL 5.7 with Workbench 8.0
3. Google Chrome version 79.0
4. Maven Dependencies

4. ER Diagram:

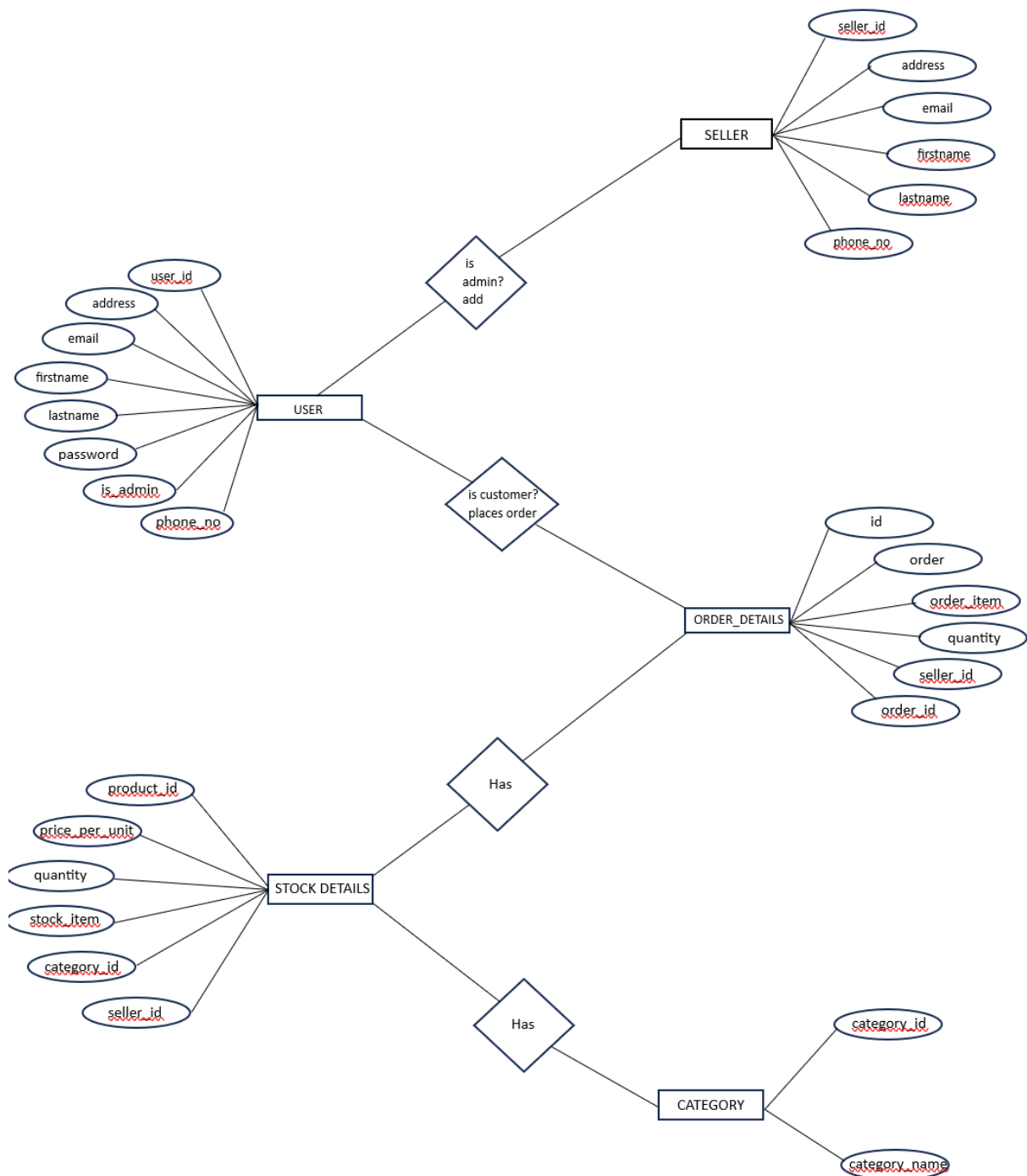


Figure 1: ER Diagram

5.Database Tables :

A. Tables related to user details :

a. Users table:

```
mysql> desc user;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| user_id    | int           | NO   | PRI | NULL    | auto_increment |
| address    | varchar(200)  | YES  |     | NULL    |                 |
| email      | varchar(50)   | YES  | UNI | NULL    |                 |
| firstname  | varchar(20)   | YES  |     | NULL    |                 |
| is_admin   | bit(1)        | YES  |     | NULL    |                 |
| lastname   | varchar(20)   | YES  |     | NULL    |                 |
| password   | varchar(30)   | YES  |     | NULL    |                 |
| phone_no   | varchar(15)   | YES  |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

b. Seller table:

```
mysql> desc seller;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| seller_id  | int           | NO   | PRI | NULL    | auto_increment |
| address    | varchar(200)  | YES  |     | NULL    |                 |
| email      | varchar(50)   | YES  |     | NULL    |                 |
| firstname  | varchar(20)   | YES  |     | NULL    |                 |
| lastname   | varchar(20)   | YES  |     | NULL    |                 |
| phone_no   | varchar(15)   | YES  |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

B .Tables related to Orders :

a. Stock Details order :

```
mysql> desc stock_details;
```

Field	Type	Null	Key	Default	Extra
product_id	int	NO	PRI	NULL	auto_increment
product_image	varchar(400)	YES		NULL	
price_per_unit	float	YES		NULL	
quantity	int	YES		NULL	
stock_item	varchar(50)	YES		NULL	
catogery_id	int	YES		NULL	
seller_id	int	YES		NULL	

7 rows in set (0.02 sec)

b. Order Table:

```
mysql> desc orders;
```

Field	Type	Null	Key	Default	Extra
order_id	int	NO	PRI	NULL	auto_increment
delivery_date	date	YES		NULL	
delivery_status	bit(1)	YES		NULL	
payment_status	bit(1)	YES		NULL	
place_order_date	date	YES		NULL	
user_id	int	NO	MUL	NULL	

6 rows in set (0.00 sec)

c. Order Details table:

```
mysql> desc order_details;
```

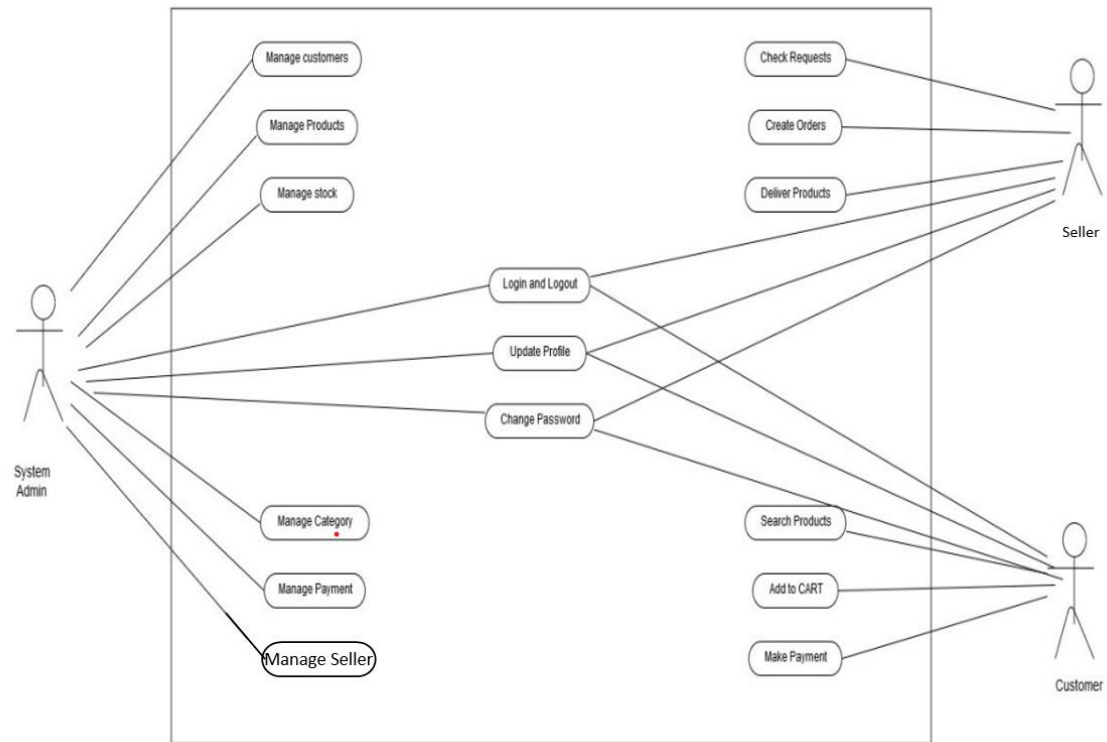
Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
amount	double	YES		NULL	
order_item	varchar(20)	YES		NULL	
quantity	int	YES		NULL	
seller_id	int	YES		NULL	
order_id	int	YES		NULL	

6 rows in set (0.00 sec)

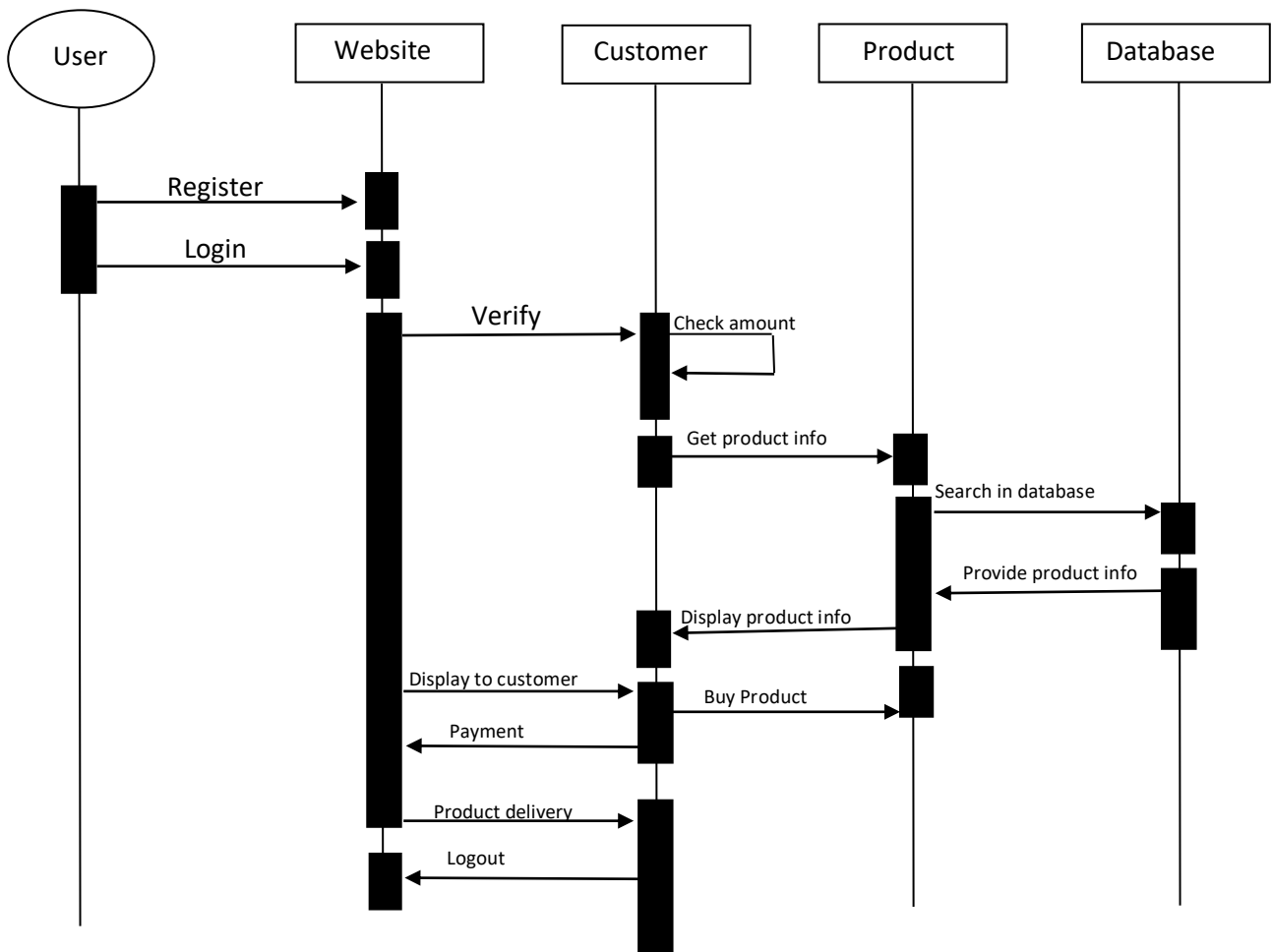
d. Category table :

```
mysql> desc category;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| category_id    | int           | NO   | PRI | NULL    | auto_increment |
| category_name  | varchar(255)  | YES  | UNI | NULL    |                |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

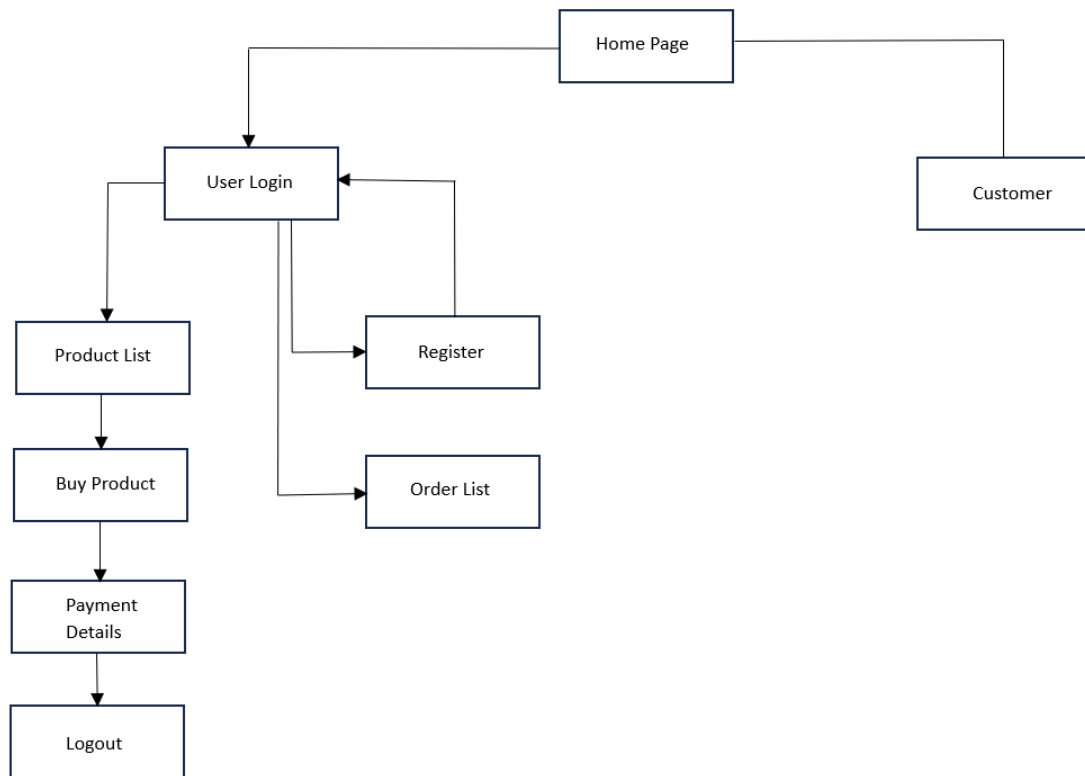
6.UML Diagram :



7. Sequence Diagram

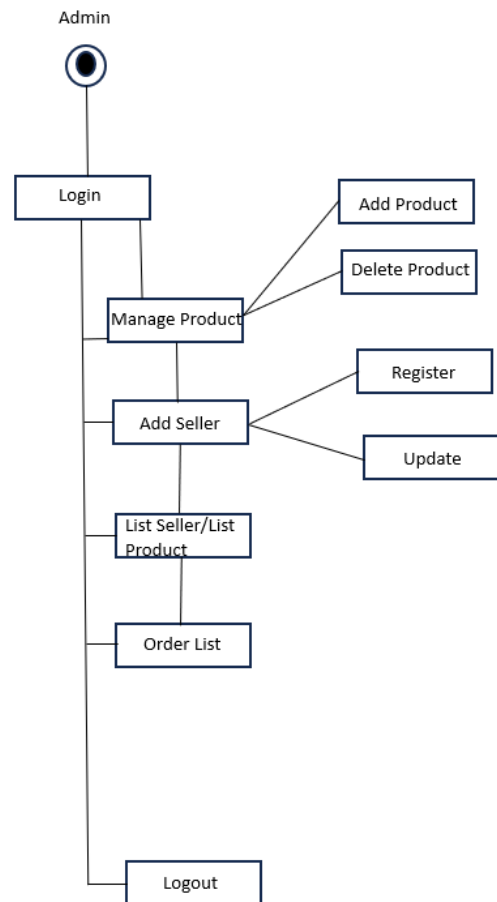
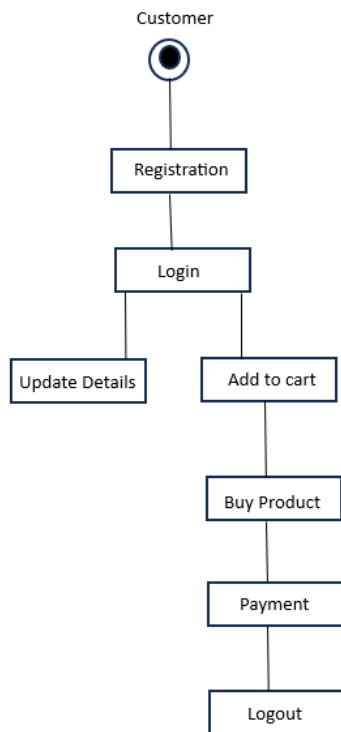


Component Diagrams



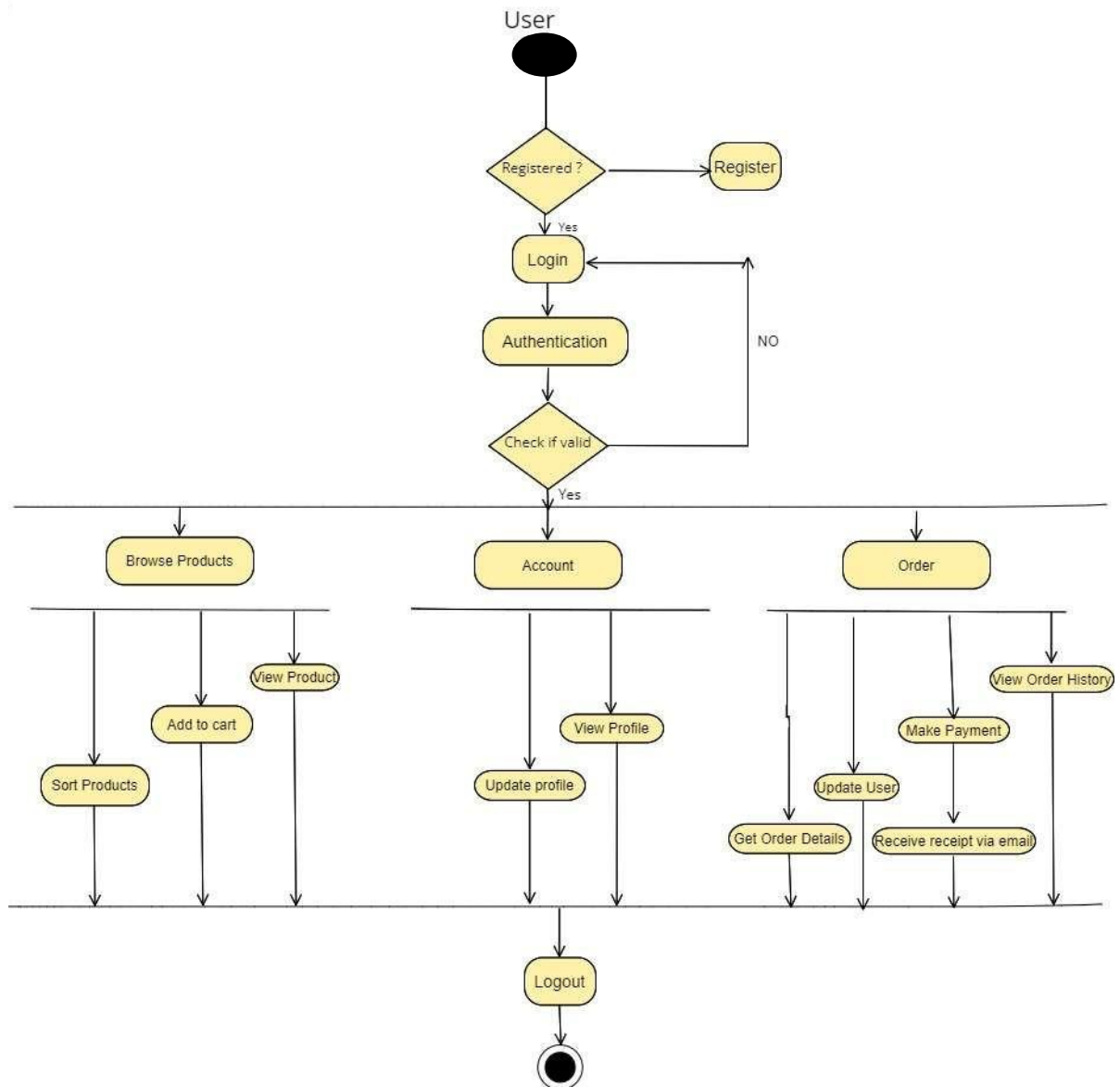
Component Diagram

State Diagram

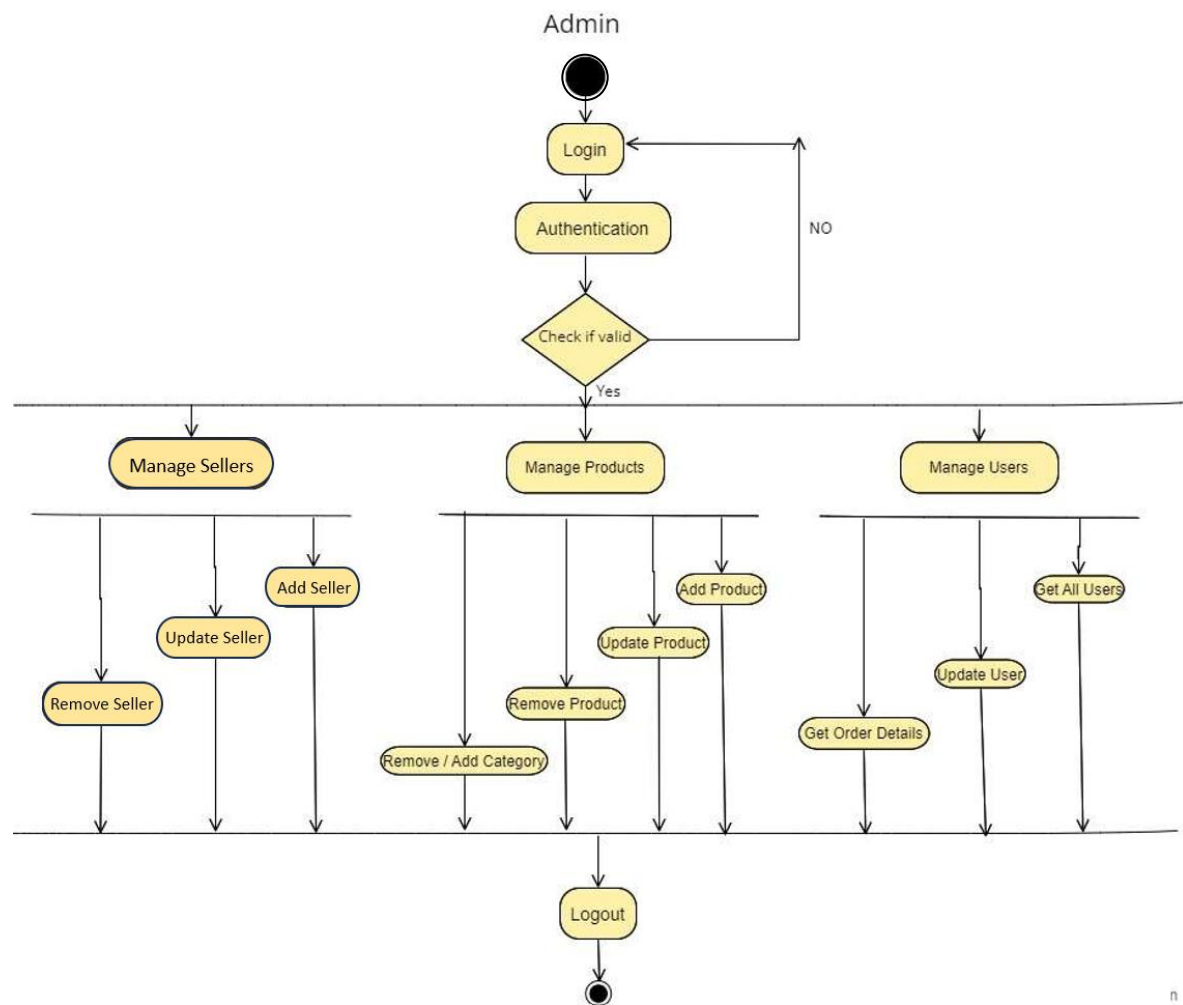


Activity Diagrams

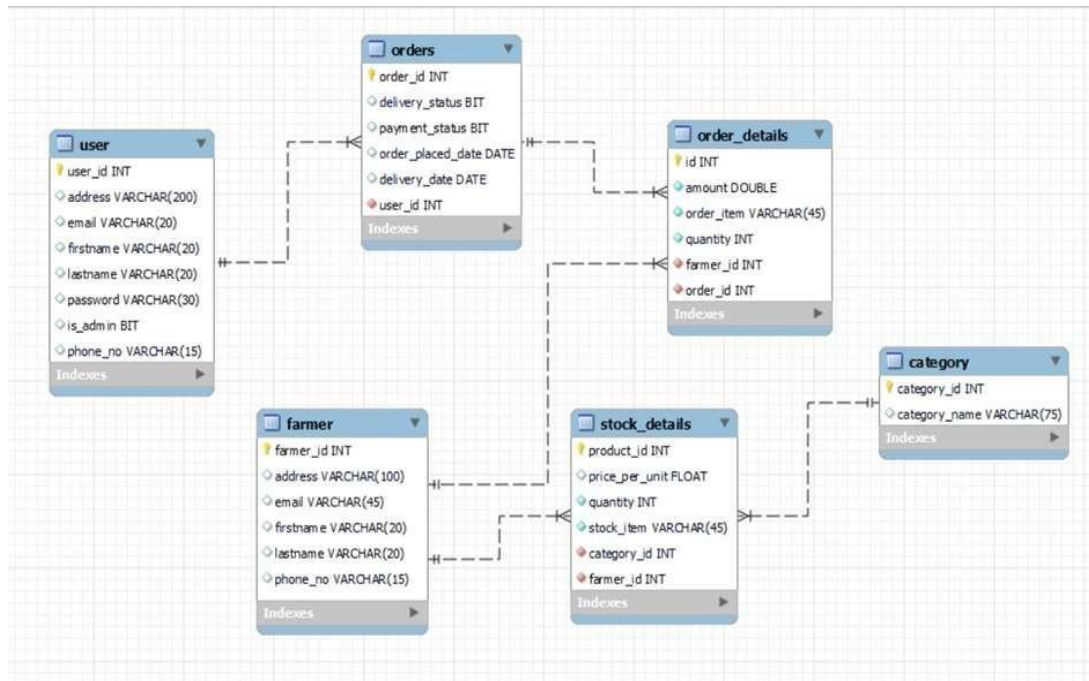
A. User diagram



B. Admin Diagram



Class Diagram



7.End to End Flow of Application :

User:

- ii. User will login to the portal or will have to register if he is not a registered user.
- iii. After registration User will login and Dashboard page will be displayed to him which will display the product .
- iv. From that page can User can click on the product that user want to purchase or user can add it to the cart.
- v. After adding to the cart user have to click on buy a product and have to give quantity of selected items.
- vi. Now user will fill the detail of card to complete the order. After filling all the detail user have to pay the amount and after that user can seen the order detail in order section.

Admin:

- i. Admin will login as Admin from the '**login**' page and will be able to add Seller or admin can update the detail of seller also admin can add new product of seller.
- ii. From Admin dashboard, admin can view product list ,registered user, product category, order list.
- iii. It is the job of Admin to add seller and this product to portal and can make change in product detail. Admin can also delete the seller registration ,if he provide bad quality products.
- iv. Admin has all controlled on portal.

Future Scope :

Using whatever we have learnt over the duration of this course, we tried to make our project as user-friendly and gave it as many features as possible in the limited time allotted for the project work. That said, there are certainly more features that can be added to our application. Some of those are mentioned below:

1. The most purchased and/or sponsored products can be highlighted as customer favorites to promote merchandise further.
2. Rating chart for Seller and Products.
3. Product Display based on Categories, distributing Manufacturing Company and respective ratings.
4. Discounts can be given on a per-user basis depending on the customer's purchase history as well as how many products they buy at the same time.
5. Customers can upvote/downvote/report feedbacks.
6. Additional payment means can be added other than cards.
7. In case the user forgets the password, a 'reset password' functionality can be added.
8. CAPTCHA can be added to login page.

Thank You!