American International University-Bangladesh (AIUB)

Department of Computer Science
Faculty of Science &Technology (FST)
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Section: G
Group No: 3

Agro Management System

A software Engineering project submitted
By

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The project will be Evaluated for the following Course Outcomes

Requirements Analysis (functional, quality, and project requirements) [5Marks]	**Total Marks**	
System Design (UML, UI/UX design) [5Marks]		
Test and Project Management Planning [5Marks]		
Submission, Completeness, Spelling, Grammar and Organization [5Marks]		

Submission Date: 19/12/2020

System Features

1. **Registration**

Functional Requirements

1.1 The software shall allow users to registration with their email id, name, national id and phone number.

1.2 After that Users information have to be compelled to be registered within the system thus on establish every of them unambiguously and do the required group action. One person needs to put his all the details properly and precisely as it will be helpful in identifying them and believing that he is the real person.

1.3 Without registration, there are few options and pages one user can see which are landing on the home page and taking the features read but he won't be allowed to use those. For use, he will have to register.

Priority Level: High
Precondition: user have valid email id, name, national id and phone number

2. **Forgot password:**

Functional Requirements

2.1 There will be a module named as forgot the password and using this module user can recover their password in seconds. So here they need to only put their registered email Id click on enter.

2.2 One confirmation email will go to the email where they have the option to reset the password. In seconds one can use this module and get rid of forgetting password problem.

Priority Level: High
Precondition: user have valid email id

3. **Creating Profile:**

Functional Requirement

3.1 The software shall allow users to create a new profile in different module.

3.2 If the name of the profile is same as any other profile the software will notify to the user.

3.3 The user has to input a valid password for his/her profile, if the password is not valid the system will notify to the user.

Priority Level: High
Precondition: user have a proper internet connection.

4. **Sell Request :**

Functional Requirement

4.1 The software will show the products that are currently in our stock and which products we will need later on, alongside with the seasonal corps. This will give the farmer a clear idea which crops he should farm.

Priority Level: High
Precondition: user have a log into farmer account.

5. **Trending Products:**

Functional Requirement

5.1 This will show the farmer a ratio of the selling products from High to Low. The Farmer can also see the prices of various products.

Priority Level: High
Precondition: user have a log into farmer account.

6. Helpline:

Functional Requirement

6.1 A helpline will be provided for the Farmers from 09:00 am to 09:00 pm. If a Farmer faces any difficulties or need any information about crops, account, selling goods or any other help, he can reach us within the given time.

Priority Level: High
Precondition: user have a log into farmer account.

7. Profit Analysis:

Functional Requirement

7.1 The software will provide the Farmer an economical status of various products in the current market. That will give him a good idea of his profit while using our software. It will also give him an idea of his profit, while selling products using our software vs. selling products in the local market.

Priority Level: High
Precondition: user have a log into farmer account.

8. Searching Data:

Functional Requirement
8.1 The software shall allow users to search about the desired information.

8.2 If the searching data do not exist the software will show not existence notification.

Priority Level: High
Precondition: user have to log in first as a customer or donator.

9. Updating Data:

Functional Requirement

9.1 The software will allow admin and agent to update any information and product details.

Priority Level: High
Precondition: user have to log in as an admin or agent.

10. Deleting Data:

Functional Requirement

10.1 The software shall allow admin to delete the desired information.

10.2 If the data which the user want to delete is do not exist the software will show not existence notification and before deleting the data the software will ensure if the user really want to delete it or not by showing a yes/no notification.

Priority Level: High
Precondition: user have to log in as an admin or agent.

1.2 System Quality Attributes

System Quality Attributes Availability: The software will be available for 24/7. As the software will be online based it will be easy to do any kind of operations from anywhere at any time if any inconvenient issue occurs. Performance: The software loading time will be maximum 10 seconds. That's mean if a trained user command for an operation the output will be shown in maximum 10 seconds. Efficiency: 25 percent of the processor capacity and RAM available to the application shall be unused at the planned peak load conditions. So that user still can get instant response if the number of users is high. Integrity: Only admins have the privileges to change, create, update or delete any kind of information. Again, the software will terminate any kind of operation from the user if the user tried to hide their location or identity. Reliability: The software does not fail no more than five experimental run out of 1000. Robustness: The software will automatically log out the user after 10 minutes to avoid being hacked, because sometimes the user forgets to log out from the system. Again, the software saves data in every 10 seconds while the user is inserting something so that if the user got any inconvenient issue, he can just start his data insertion from where he left. Flexibility: The software is flexible enough add new features in future as it's a big project and functionality would change according to user's feedback. Usability: A trained user shall be able to submit a complete request for a creating, updating, deleting, searching an order or request within 1-2 minutes. Maintainability: A user can easily modify any information if it inserted wrong but for that he has to go through security phases. Reusability: We can reuse the system structure to build another management system for other school, college or universities. Testability: The maximum cyclomatic complexity of a module does not exceed 20. So, if the product will be modified often because it will undergo frequent regression testing to determine whether the changes damaged any existing functionality.

1.3 Project Requirements

Project Requirements As my project is a semi-detached project. So, Project complexity = 1.2 SLOC dependent coefficient= 0.35 SLOC not more than 8000. From this information we found, to complete this project we will need 37 labor working hours, 9 days and 4 employee and as we are going to build this project so our expected budget will be 34,320$.

2. SYSTEM DESIGN SPECIFICATION

The Use Case Diagram:

A use case diagram is a behavior diagram in UML. Users will start by "logging in" to the system with Username and Password. Customers can buy products, simply by searching and purchasing it online. Farmers can upload the products that they want to sell. Payments of all types can be done by Bkash, Credit card, Rocket or Cash on Delivery. Admin has to assign the workers and update or delete items from time to time. Agents will be assigned by Admin to deliver items to the customers.
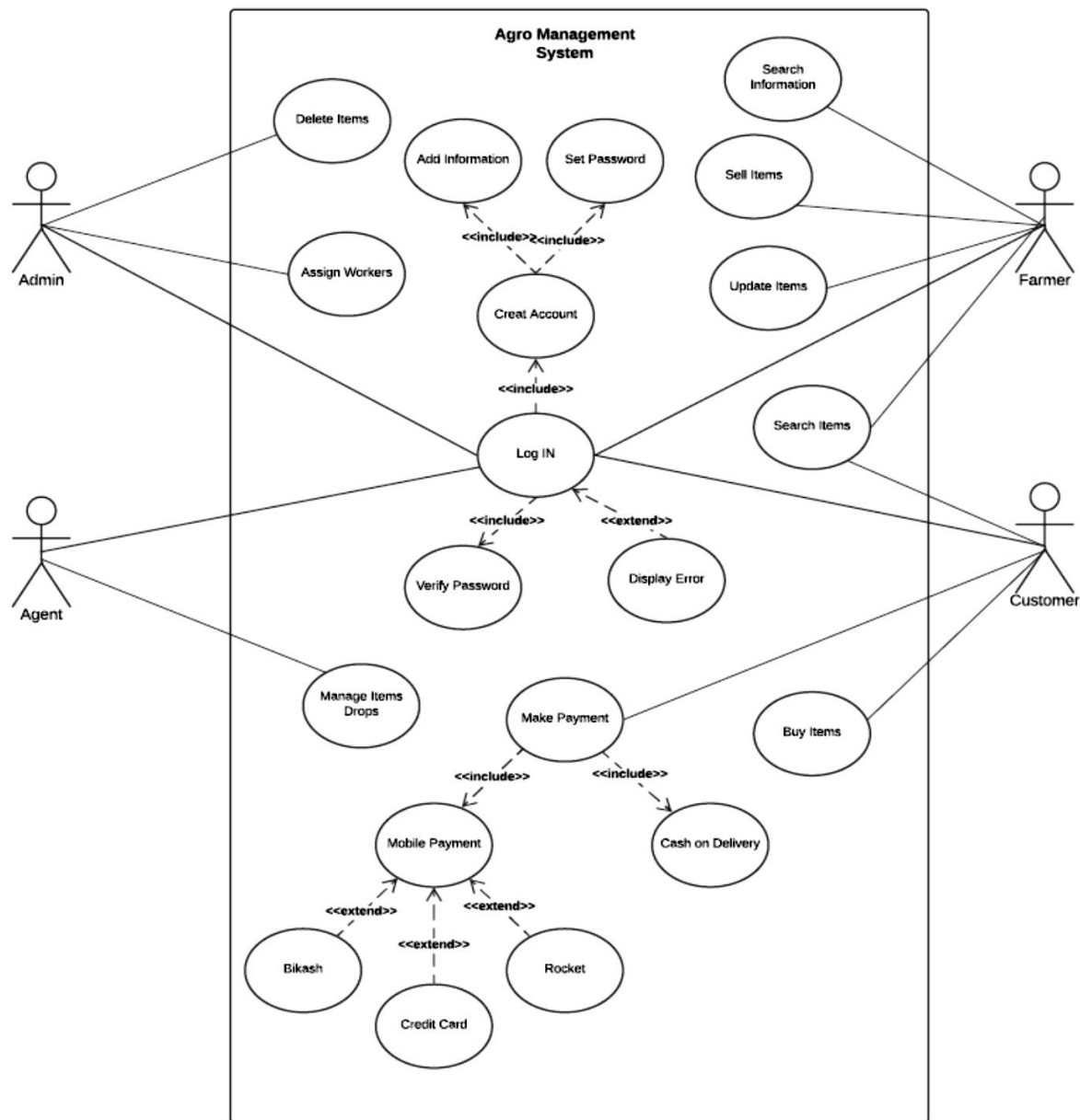
Activity Diagram:

A user attempt to login into the system. If the login is successful then the system decides if the account is for admin or agent or farmer or customer. If the login is failed the system checks whether it is for wrong input or there is no one in the system. So, the system wants the user to re check the information or create a new account and add necessary information. If the user is admin then he adds agent by providing necessary information. If the user is agent, he/she checks the pending requests. Then he/she gets to accept the product request one at a time. After accepting the product request, he/she gets all the details and gets to assign field team to collect the product and after that, when the product is received, he/she confirms it and then record all the product in the database. If the task could not be completed for any difficulties then he/she can cancel the task and look for another pending request. If the user is farmer, then he can choose the product and add them up in the product list. After adding the product he/she can add the price and confirm the adding. If the user is customer, then he/she can search for vegetable and add them on the cart. After adding all the vegetable, he/she can confirm it and select payment method. If the payment confirmation is unsuccessful, he/she needs to do the selecting payment process again.
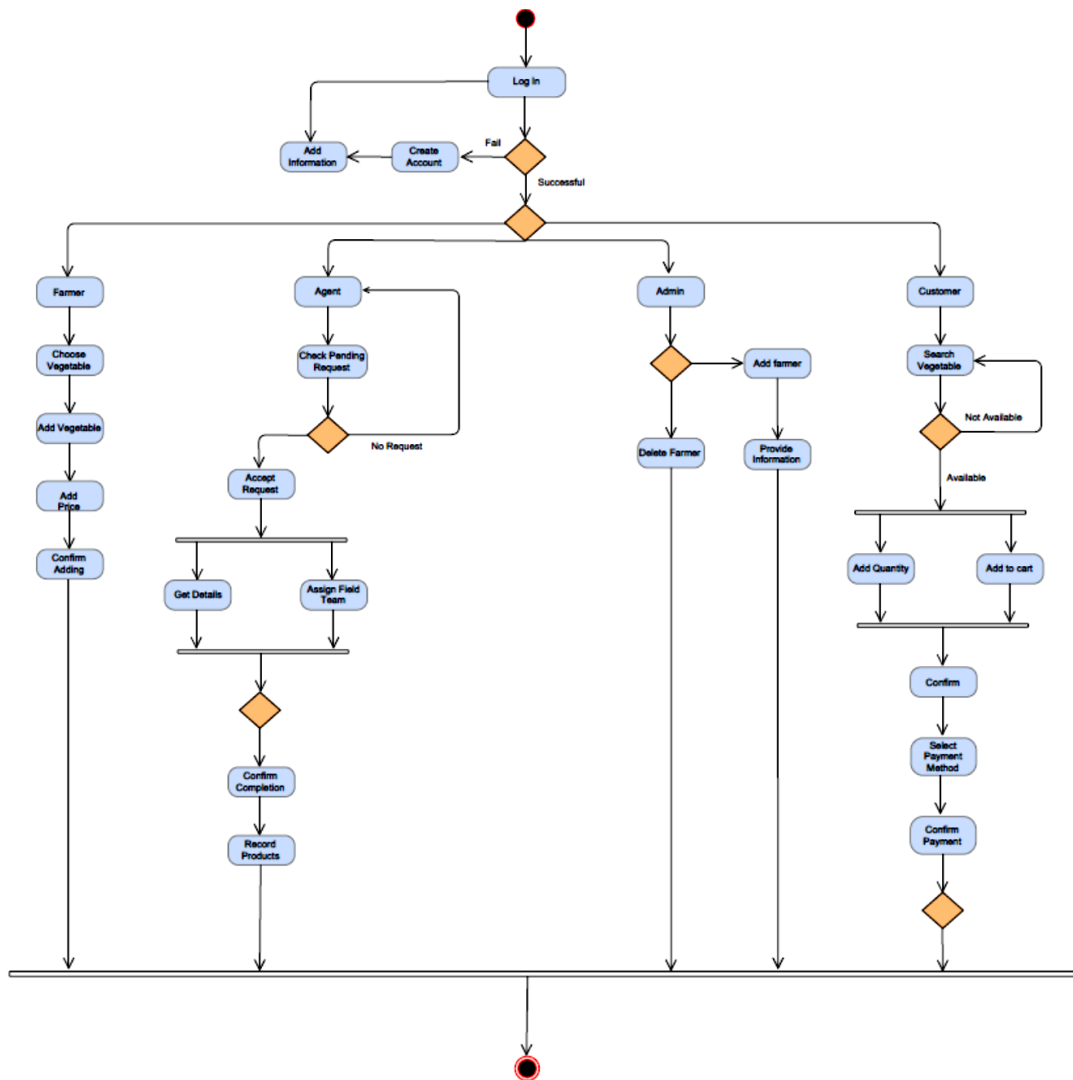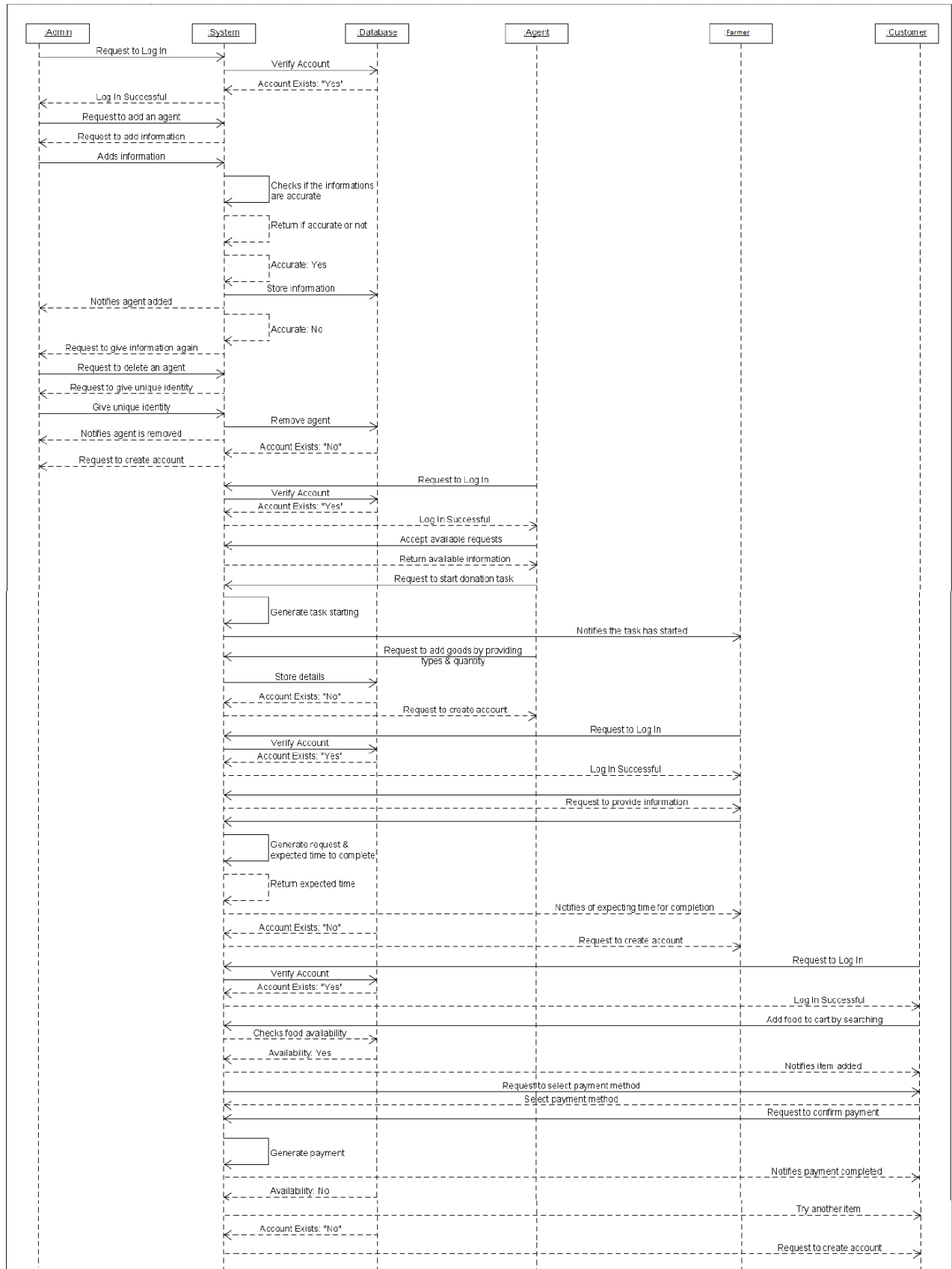
Sequence Diagram:

An admin request to log in into the system after verifying his/her identity. System confirms if the account exists or not. If the account is available system notifies the admin and after that admin gets option of adding agent and removing agent from system. If the login verification is unsuccessful, the system notifies that no account found and request to try again. If the admin chose to add an agent then he requests to add agent and then adds information about the agent which get stored into the system. If all the information is accurate then system notifies that the agent is added in the database. On the other hand, if he chooses to remove an agent, then he requests to remove an agent by providing unique identity so that the system can check into the database and identify him. If the system finds the requested agent, then the system replies with the confirmation that the agent has been found and removed from the database. In case of not finding, the system notifies the admin and request to enter information again.

An agent, a farmer and a customer do the same thing for logging into the system. By verifying identity, they can log in to the system. If an agent logs in, he checks for available requests and request to accept those requests one by one. The system then generates the available information related to that request and sends all the information to that agent.

A farmer after logging in successfully add product and check the demanding product and give all the necessary information. The system notifies him that the product is add and farmer can add the price of the product and confirm it.

A customer after logging in successfully, add foods into the cart by searching for it. If the food is available system notifies him and sends confirmation that it has been added into the cart. After adding all the goods, he requests to confirm the purchase. Then the system requests him to provide payment method. Customer provides the payment method information and confirm it. System after that, generates expected delivery time and notifies the customer. If the requested food is unavailable, the system notifies him and sends alternative options.

Admin	:System	:Database	:Agent	:Farmer	:Customer

Request to Log In →

Verify Account →

Account Exists: "Yes" ⇠

← Log In Successful

Request to add an agent →

← Request to add information

Adds information →

Checks if the informations are accurate

Return if accurate or not

Accurate: Yes

Store information →

← Notifies agent added

Accurate: No

← Request to give information again

Request to delete an agent →

← Request to give unique identity

Give unique identity →

Remove agent →

← Notifies agent is removed

Account Exists: "No" ⇠

← Request to create account

Request to Log In →

Verify Account →

Account Exists: "Yes" ⇠

Log In Successful →

Accept available requests →

Return available information →

Request to start donation task →

Generate task starting

Notifies the task has started →

Request to add goods by providing types & quantity →

Store details →

Account Exists: "No" ⇠

Request to create account →

Request to Log In →

Verify Account →

Account Exists: "Yes" ⇠

Log In Successful →

Request to provide information →

Generate request & expected time to complete

Return expected time

Notifies of expecting time for completion →

Account Exists: "No" ⇠

Request to create account →

Request to Log In →

Verify Account →

Account Exists: "Yes" ⇠

Log In Successful →

Add food to cart by searching →

Checks food availability →

Availability: Yes ⇠

Notifies item added →

Request to select payment method →

Select payment method →

Request to confirm payment →

Generate payment

Notifies payment completed →

Availability: No ⇠

Try another item →

Account Exists: "No" ⇠

Request to create account →

Class Diagram:

UI/UX Design :
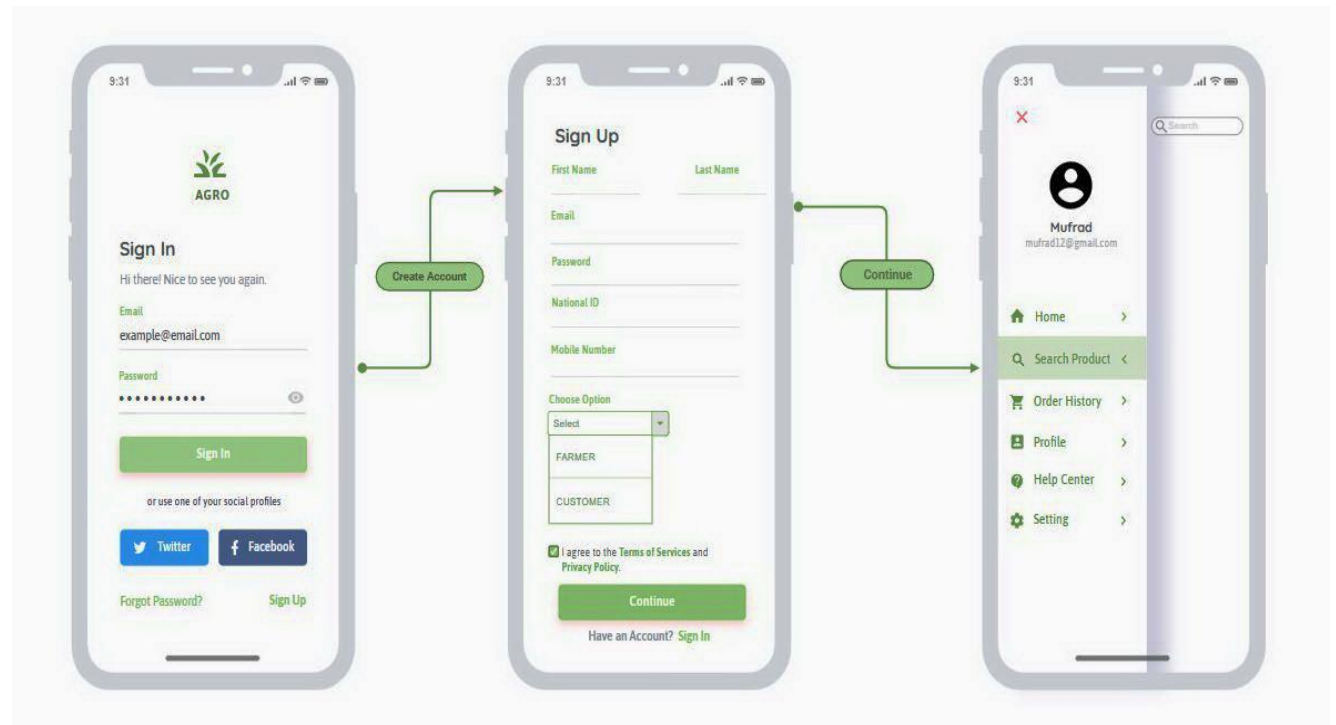
Test Case:

Functional Case :

Project Name: Agro Management System	Test Designed by: Md. Tanvir Shahriar
Test Case ID: FR_1	Test Designed date: 19-12-20
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Registration Session	Test Execution date:

Test Title: Verify the users with valid information
Description: Test mobile application registration feature.
Precondition (If any): User must have valid email id and phone number

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Click Sign up. 3. Enter First Name. 4. Enter Last Name. 5. Enter Phone Number. 6. Enter Email Id. 7. Enter password. 8. Choose Category. 9. Click Submit.	First Name: Camellia Last Name: Chowdhury Phone Number: 01682860185 Email Id: camellia@gmail.com Password: 12345 Category: Agent	User should register successfully		

Post Condition: User information successfully documented in database and successfully login to account.

Project Name: Agro Management System	Test Designed by: Md. Tanvir Shahriar
Test Case ID: FR_2	Test Designed date: 19-12-2020
Test Priority (Low, Medium, High): Medium.	Test Executed by:
Module Name: Forget Password Session	Test Execution date:
Test Title: Verify user new password.	
Description: Test mobile application forget password feature.	
Precondition (If any): User must have valid email id or phone number.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Click Forget Password. 3. Enter Email id or Phone number. 4. Enter Confirmation Code. 5. Enter New Password. 6. Click Submit.	Phone Number: 01682860185 Code: 1456 New Password: 236587	User should login into the application		

Post Condition: User is successfully login to account.

Project Name: Agro Management System	Test Designed by:Md. Tanvir Shahriar
Test Case ID: FR_3	Test Designed date: 19-12-2020
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Panel	Test Execution date:

Test Title: Verify login with valid username and password.

Description: Admin, Farmer, Customer panel features

Precondition (If any): User must have valid username and password

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Enter username. 3. Enter password. 4. Click login. 5. Select Any Panel Features	Username: Camellia Password: 12345	User will be directed to their own panel and will be shown available options.		

Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database.

Project Name: Agro Management System	Test Designed by:Md. Tanvir Shahriar
Test Case ID: FR_4	Test Designed date: 19-12-2020
Test Priority (Low, Medium, High): High.	Test Executed by:
Module Name: Data Control Session	Test Execution date:
Test Title: Verify Data Control.	
Description: Test to control the data flow of this mobile application.	
Precondition (If any): User must have to log in as an admin	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Login into the application as an admin.	Check the system.	Admin would successfully access the database.		

Post Condition: Admin is successfully maintaining the data relevant and make it work optimistically.

Project Name: Agro Management System			Test Designed by: Md. Tanvir Shahriar	
Test Case ID: FR_5			Test Designed date: 19-12-2020	
Test Priority (Low, Medium, High): High.			Test Executed by:	
Module Name: Searching Data Session			Test Execution date:	
Test Title: Verify the Searching data				
Description: Test mobile application searching data feature.				
Precondition (If any): User must have to login				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Login into the application. 3. Enter Desire information. 4. Click Search.	Search: Any desire item	System would provide all the information about that specific item from the database.		
Post Condition: User has been provided by his/her desire item				

Project Name: Agro Management System	Test Designed by: Md. Tanvir Shahriar
Test Case ID: FR_6	Test Designed date: 27-08-20
Test Priority (Low, Medium, High): High.	Test Executed by:
Module Name: Update Data Session	Test Execution date:

Test Title: Verify the update data feature.

Description: Test mobile application updating data feature.

Precondition (If any): User must have to log in as an admin or agent

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Login into the application as admin or agent. 3. Click update. 4. Enter Product name. 5. Enter Product id. 6. Enter Product price 7. Enter Expire date	Product Name: Abcd Product Id: Ab_012 Product Price: **** Expire Date: **-**-****	System would store information about that particular item.		

Post Condition: Admin has successfully stored the new product data.

Project Name: Agro Management System			Test Designed by:Mohammed Afridul Haque	
Test Case ID: FR_7			Test Designed date: 19-12-20	
Test Priority (Low, Medium, High): High.			Test Executed by:	
Module Name: Delete Data Session			Test Execution date:	
Test Title: Verify the delete data feature.				
Description: Test mobile application deleting data feature.				
Precondition (If any): User must have to log in as an admin or agent				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the mobile application. 2. Login into the application as admin or agent. 3. Click delete. 4. Enter Product name. 5. Enter Product id. 6. Enter Product price 7. Enter Expire date	Product Name: xxxx Product Id: xy_012 Product Price: ………. Expire Date: **-**-****	System would delete the information about that particular item.		
Post Condition: Admin has successfully deleted product data from the database.				

Project Name: Agro Management System		Test Designed by: Mohammed Afridul Haque
Test Case ID: NFR_1		Test Designed date: 19-12-20
Test Priority (Low, Medium, High): High		Test Executed by:
Module Name: Performance Testing		Test Execution date:
Test Title: Evaluates the overall performance of the system		
Description: Test the application's performance		

Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1. Validates that the system meets the expected response time. 2. Evaluates that the significant elements of the application meet the desired response time. 3. Validates that the system performs as expected when concurrent users access the application and get the expected response time. 4. Test on low memory or low disc space on clients/servers that reveal the defects which cannot be found under normal conditions. 5. When the software is subject to large amounts of data, checks the limit where the software fails.	1.JMeter (To verify the Load and Performance of the application) 2. JIRA (It is used for defect tracking.)	The application full fill the expected requirements of speed, scalability, and stability.		

Project Name: Agro Management System		Test Designed by: Mohammed Afridul Haque	
Test Case ID: NFR_2		Test Designed date: 19-12-20	
Test Priority (Low, Medium, High): High		Test Executed by: QA testers or real time users	
Module Name: Usability Testing		Test Execution date:	
Test Title: Evaluates the system and checks if it is fit for human use.			
Description: Test the application is ready for use or not			
Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1. Identifying the users to perform the Usability Test 2. Designing the tasks that the users are going to perform on the application. 3. Analyze the results 4. Facilitating the testing.	1.Monitoring Tool (Skype, Go to Meeting) 2. Task Based (Open Hallway, User Testing) 3. Feedback /Survey (Concept Feedback, Five Second Test) 4. User Movement Recorders (Feng GUI, Click Heat)	The application is easy to use and satisfying for the users.		

Project Name: Agro Management System	Test Designed by: Mohammed Afridul Haque
Test Case ID: NFR_3	Test Designed date: 19-12-20
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Compatibility Testing	Test Execution date:
Test Title: Test the application's compatibility	
Description: Evaluates that the application is compatible with other hardware and software with minimum and maximum configuration.	

Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1. Test each hardware with minimum and maximum configuration. 2. Test with different browsers. Test cases are the same as those that were executed during functional testing. 3. In case the number of hardware and software are too many, then we can use OATS techniques to arrive at the test cases to have maximum coverage.	2.1 1. Lambda Test (This tool test applications on real browsers running on real operating systems and machines.) 2.2 2. Sauce Labs 2.3 3. Fictionizes (This tool eliminates the need to use third-party providers for your cross-browser automation.)	The application is compatible with other hardware and software with minimum and maximum configuration.		

Project Name: Agro Management System	Test Designed by: Mohammed Afridul Haque
Test Case ID: NFR_4	Test Designed date: 19-12-20
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Instability Testing	Test Execution date:

Test Title: Test the application's instability

Description: Evaluates and confirms if the software installs and uninstalls correctly.

Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1. Validates that the system components are installed correctly on the designated hardware. 2. Validates that the navigation on the new machine updates the existing installation and older versions. 3. Validates that with insufficient disc space, there is no unacceptable behavior.	2.4 1. Appium 2.5 2. Calabash 2.6 3. Frank 2.7 4. Robotium 2.8 2.9 2.10	The application is compatible with other hardware and software with minimum and maximum configuration.		

Project Name: Agro Management System			Test Designed by:Mohammed Afridul Haque	
Test Case ID: NFR_5			Test Designed date: 19-12-20	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: User Interface Testing			Test Execution date:	
Test Title: Evaluates the GUI.				
Description: Evaluates the graphical user interface				
Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1.Test the intended functionality of the application 2. Test the clear demarcation of different sections on screen 3. Test the check Font used in an application is readable 4. Test the alignment of the text is proper 5. Testing the size, position, width, height of the elements.	2.11 1. Selenium (Selenium is one of the most common and widely used Testing tools for functional and UI testing.) 2.12 2. Ranrex (It is a commercial tool used for the automation of user interface) 2.13 3. Squish (Squish is the commercial and cross-platform tool available in the market for the GUI Testing of applications	The application has a solid graphical user interface		

Project Name: Agro Management System			Test Designed by: Mohammed Afridul Haque		
Test Case ID: NFR_6			Test Designed date: 19-12-20		
Test Priority (Low, Medium, High): Medium			Test Executed by:		
Module Name: Recovery Testing			Test Execution date:		
Test Title: Test the application's recovering capability					
Description: Evaluates that the application terminates gracefully in case of any failure and the data is recovered appropriately from any hardware and software failures.					
Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)	
1. Check the power interruption, to the client while doing CURD activities. 2. Evaluates the Invalid database-pointers and keys. 3. Database process is aborted or prematurely terminated. 4. Database pointers, fields and keys are corrupted manually and directly within the database. 5. Physically disconnect the communication, power turn off, turn down the routers and network servers.	1.Webserver Recovery Tool 2. Web Recovery Professional 3. Recovery tracer 2.14 2.15 2.16 2.17	The application has the capability of recovering from any hardware and software failure.			

Project Name: Agro Management System		Test Designed by:Mohammed Afridul Haqe		
Test Case ID: NFR_7		Test Designed date: 19-12-20		
Test Priority (Low, Medium, High): Medium		Test Executed by:		
Module Name: Security Testing		Test Execution date:		
Test Title: Test the security of the application				
Description: Security Testing includes the testing of authentication, authorization, integrity, and availability.				

Test Steps	Test Tool	Expected Results	Actual Results	Status (Pass/Fail)
1. Test the Accessibility 2. Test the Protection Level of Data 3. Test for Malicious Script 4. Test the Access Points 5. Test the Session Management	2.17.1.1 1. ImmuniWeb® MobileSuite (It is one of the best and accurate tools used in the market for mobile application security.) 2.17.1.2 2. SonarQube (It is an open-source security testing tool) 2.17.1.3 3. ZED Attack Proxy (ZAP) (It is an open-source security testing tool that can run on multiple platforms.) 2.18	The application has the capability of secure from any hardware and software failure.		