

Capstone Project1 – Part -2/3

Answer 1: Below are the quarterly audits for this project:

Stage	Requirement Gathering Phase-15weeks (Week 1 to Week15)
Completed	10weeks (Week 1 to Week 10)
Checklist	BRD template-Documents outlining the Business Requirements.
	Comprehensive reports from requirement elicitation sessions.
	Identification and removal of duplicate requirements.
	Grouping of Functionalities/Features - Client Sign-off
	Email communication-Record of all related email communications.

Stage	Requirement Analysis Phase-13weeks (Week 16 to Week29)
Completed	7weeks (Week 16 to Week 23)
Checklist	UML diagrams for system design.
	Business to functional requirement mapping
	Client sign off documents-Signed approval documents from the client.
	RTM document version control
	Record of email communication, including To, CC, and BCC.

Stage	Design Phase-10weeks (Week 30 to Week 40)
Completed	7weeks (Week30 to Week 36)
Checklist	Utilization of tools-Documents of the tools and technologies used.
	Documented evidence on client communication
	Documentation of meeting minutes with stakeholders.
	Record of email communication, including To, CC, and BCC.

Stage	Development Phase-30weeks (Week 40 to Week 70)
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Completed	20weeks (Week40 to Week 60)
Checklist	JAD session report-: Documentation of Joint Application Development sessions.
	End user manual preparation document-Prepared manuals for end users.
	BA and developer MOM (Minutes of Meeting)
	Record of email communication, including To, CC, and BCC.

Stage	Testing Phase-30weeks (Week 58 to Week 78)
Completed	20weeks (Week 58 to Week 78)
Checklist	Test case summary-Comprehensive summary of test cases executed.
	Training reports to end user
	Lessons learnt document
	Record of email communication, including To, CC, and BCC.

Answer 2:

Given the scenario, I would use the following elicitation techniques to gather comprehensive requirements for the project:

1. BA Approach Strategy

Elicitation Techniques: Requirement Elicitation is the process of digging out information from the stakeholders.

Interviews: Conduct interviews with Mr. Henry, Mr. Pandu, Mr. Dooku, Peter, Kevin, and Ben to understand their requirements and challenges.

Workshops: Organize workshops with stakeholders and the APT IT SOLUTIONS team to gather detailed requirements and brainstorm solutions.

Focus Group: Arrange focus groups with farmers from different regions to validate requirements and understand user needs.

Document Analysis: Review existing documentation, previous reports, and relevant research to gather background information and identify gaps.

2. Stakeholder Analysis (RACI/ILS):

RACI-Define roles and responsibilities using the RACI matrix. **R:** Responsible **A:** Accountable **C:** Consulted **I:** Informed

Task	Mr. Vandanam	Ms. Juhi	Java Developers	Mr. Mike	Mr. John	Testers	Sangeeta (BA)
Requirement Gathering	A	I	I	I	I	I	R
Design	R	A	I	I	I	I	C
Development	I	A	R	C	C	I	I
Network Set up	I	I	I	R	I	I	I
DB Management	I	I	I	I	R	I	I
Testing	I	I	I	I	I	R	I
UAT	I	I	I	I	I	R	C
Final Sign Off	A	I	I	I	I	I	I

3. Following are the key documents to ensure clear communication, comprehensive requirement gathering, and successful project delivery.

1. **Business Requirements Document (BRD):** Capture all business requirements and objectives.
2. **Functional Requirements Document (FRD):** Detail the functional specifications of the application.
3. **System Design Document:** Provides a blueprint of the system architecture and design.
4. **Requirements Traceability Matrix (RTM):** Ensures all requirements are tracked throughout the project lifecycle.
5. **Test Plan and Test Cases:** Defines the testing strategy and detailed test cases.
6. **User Manuals:** Provide guidance for end-users to effectively use the application
7. **Meeting Minutes and Stakeholder Communication**
8. **Change Request Form**
9. **Status Reporting**
10. **Client Acceptance Form**
11. **Project Closure Document**

4. Below are the steps that we follow to sign off a document:

- 1 **Draft:** Create the initial draft of the document.
- 2 **Internal Review:** Review with the project team and make revisions.

3 **Stakeholder Review:** Share with key stakeholders and gather feedback.

4 **Revise:** Incorporate feedback and finalize the document.

5 **Approval:** Obtain written or electronic approval from stakeholders.

6 **Sign-off:** Get formal sign-off on the document.

7 **Distribution:** Share the signed-off document with the team.

8 **Record Keeping:** Store signed-off documents for future reference.

5. Below is the process to take approvals from the Client,

1. **Prepare Documents:** Approval Form or Client Sign-off Sheet which contains project details.

2. **Share with Client:** Send the documents to the client for review.

3. **Schedule Meeting:** Arrange a meeting to discuss the documents.

4. **Gather Feedback:** Collect the client's feedback and make necessary changes.

5. **Get Approval:** Obtain written or electronic approval from the client.

6. **Record Approval:** Keep a record of the approval for reference.

6. **Communication Channels** to be used to ensure effective communication throughout the project:

Email, meetings, **Project Management Tools:** Teams/slack, Daily meetings, status report.

7. **Change Request:**

❓ **Submit Request:** Use a change request form to submit details of the change.

❓ **Impact Analysis:** Assess the impact on timeline, budget, and scope.

🔍 **Review:** Discuss with the project team and stakeholders.

🔍 **Approval:** Obtain approval from key stakeholders.

🔍 **Update:** Implement the approved change and update relevant documents.

🔍 **Communicate:** Inform all stakeholders about the change.

8. **Update the progress of the project to the Stakeholders**

🔍 **Weekly Reports:** Send brief weekly progress reports via email.

🔍 **Monthly Meetings:** Hold monthly meetings to discuss updates and address concerns.

🔍 **Dashboard:** Use a project dashboard to provide real-time status updates.

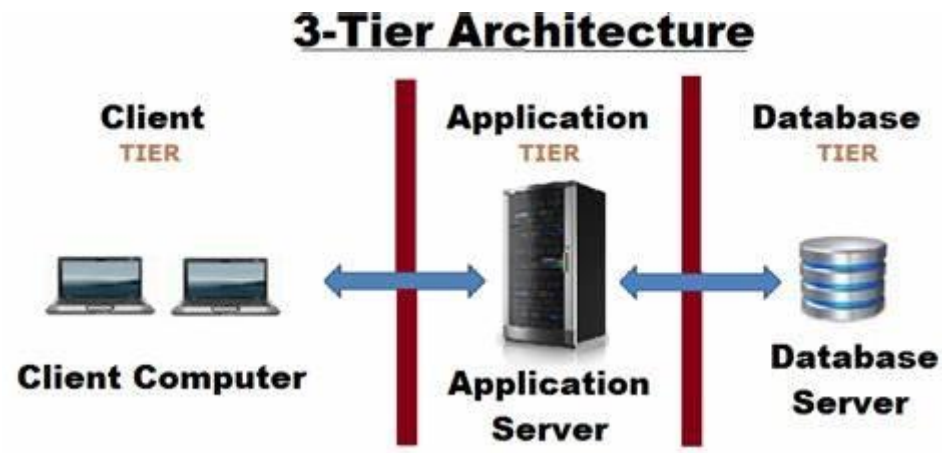
🔍 **Status Calls:** Arrange quick status calls for urgent updates.

9. **Take signoff on the UAT- Client Project Acceptance Form**

- **Complete UAT:** Conduct and complete User Acceptance Testing with the client.
- **Gather Feedback:** Collect feedback and address any issues.
- **Prepare Form:** Fill out the Client Project Acceptance Form with UAT results.
- **Review with Client:** Present the form to the client for review.
- **Obtain Signature:** Get the client's signature on the form.
- **Record:** Keep a copy of the signed form for project records.

Answer No. 3: 3-Tier Architecture:

The 3-Tier Architecture, also known as the three-layer architecture architectural pattern for designing and developing applications, particularly client-server applications. It divides an application into three distinct layers or tiers: the presentation tier, the application tier, and the data tier. Each tier has its own responsibilities and can be developed, updated, or scaled independently without affecting the other tiers.



1. **Application Layer (Presentation Layer):** The presentation tier is the user interface layer where the end user interacts with the application. It is responsible for displaying information and collecting information from the user. This tier can run on a web browser, desktop application, or graphical user interface.

The top layer that the users interact with. It includes web browsers, mobile apps, or desktop applications. It displays information to the user and sends user commands to the Business Logic Layer.
2. **Business Logic Layer** The middle layer is the core of the application. It processes the information collected in the presentation tier using business logic and rules. Think of this layer as the brain of the application. It processes user inputs, makes decisions, and performs calculations. The application tier is usually developed using languages such as Python, Java, Perl, PHP, or Ruby, and communicates with the data tier through API call. Examples: Payment gateways, printers, mail servers, Application servers, Web servers.
3. **Data Layer (Data Storage Layer):** The data tier, sometimes referred to as the database tier or back-end, is where the application's data is stored and managed. The bottom layer where the data is stored and managed. This layer is responsible for storing and retrieving data. This is where all the information is saved and managed. It ensures data is stored securely and can be accessed when needed. Examples: database, file storage system, data warehouse. This tier can use relational database management systems (RDBMS) like PostgreSQL, MySQL, Oracle, or NoSQL databases.

4. BA Approach Strategy for Framing Questions.

I'll use the 5W 1H and Use Cases approaches, and explain why these are ideal for this project.

Using the **5W 1H** approach helps you gather comprehensive information by asking the right questions. Then, **Use Cases** allow you to document specific interactions, ensuring the application is user-friendly and meets the actual needs of the farmers.

1. 5W 1H (Who, What, When, Where, Why, How)

Why Choose This Approach:

- **Comprehensive:** This approach ensures that you gather all necessary information by asking questions that cover all aspects of the project.
- **Clarity:** It helps you to frame clear and specific questions, making it easier for stakeholders to understand and respond.

Explanation:

- **Who:** Identifies the stakeholders and users involved.
Example: Who will use the online agriculture store? Who are the key stakeholders involved?
- **What:** Defines the requirements and features needed.
Example: What features are essential for the online store? What challenges do farmers currently face?
- **When:** Sets timelines and deadlines.
Example: When do you need the project to be completed? What are the key milestones?
- **Where:** Determines the locations or platforms involved.
Example: Where will the data be stored? Where will the application be hosted?
- **Why:** Understands the purpose and objectives.
Example: Why is this feature important? Why are these challenges critical to address?
- **How:** Explains the processes and methods.
Example: How will farmers place orders on the app?

2. Use Cases:

Use Cases describe how users will interact with the system to achieve specific goals. They provide a step-by-step description of user interactions and system responses.

Why Choose This Approach:

User-Centric: Focuses on how users will interact with the system, ensuring the application meets their needs.

Detailed: Provides step-by-step scenarios that help in understanding the user experience and system functionality.

Communication Tool: Serves as a clear and understandable tool for communicating requirements to stakeholders and development teams.

Example:

- **Use Case Title:** Place an Order for Fertilizers
- **Actors:** Farmer (User), System
- **Preconditions:** Farmer is logged into the system.
- **Main Flow:**
 1. Farmer browses the list of available fertilizers.
 2. Farmer selects the desired fertilizer.
 3. System displays product details.
 4. Farmer adds the fertilizer to the cart.
 5. Farmer proceeds to checkout.
 6. System processes the order and confirms the purchase.
- **Postconditions:** Order is successfully placed and a confirmation message is displayed to the farmer.

Answer 5: Elicitation Techniques:

1. Brainstorming (B) Brainstorming can be done individually or in groups. It is usually used in requirement elicitation to gather good number of ideas from a group of people by conducting brainstorming sessions.

2. Document Analysis (D) : Reviewing existing documentation to gather information and requirements. It is useful for understanding current processes and identifying gaps.

3. Research (R): Conducting research to gather information from external sources. helps in understanding industry standards, best practices, and competitor analysis.

4. Focus Groups (F): Facilitating group discussions with selected participants to gather feedback and insights. It is a means to elicit ideas about a specific product, service in an interactive group environment.

5. Observation (O): Watching users perform their tasks to understand their processes and challenges. Provides real-world insights into user behaviours and pain points.

6. Workshops (W): Workshops comprise 6-10 stakeholders, working together to identify requirements.

7. Joint Application Development (JAD): It involves collaboration between stakeholders and system analysis to identify needs.

8. **Interviews (I)**: Conducting one-on-one or group interviews to gather detailed information from stakeholders.

9. **Prototyping(P)**: Creating visual or functional prototypes to gather feedback on requirements and design. Helps in visualizing requirements and identifying potential issues early.

10. **Questionnaire(Q)**: Distributing structured questionnaires or surveys to collect information from a large audience. Efficient for gathering quantitative data and insights from a broad group of stakeholders.

11. **User Stories (U)**: Writing short descriptions of a feature from the user's perspective. Helps in capturing user needs and facilitating discussion during development.

Answer 6. Elicitation Techniques for this Project:

For this project, the best elicitation techniques would be **Interviews, Prototyping, and Document Analysis**. Here's why these techniques are particularly suitable:

Interviews:

- Screen mockups can support the requirements gathering process when introduced at the right time. Interviews with key stakeholders (Mr. Henry, Mr. Pandu, Mr. Dooku, and the farmers) provide direct and detailed insights into their specific needs and challenges.
- This allows for a deeper understanding of the project requirements and enables real-time clarification of doubts.

Prototyping:

- Prototyping provides a visual and functional representation of the online agriculture product store.
- This helps stakeholders (farmers, manufacturers) understand how the final product will look and function, leading to more accurate feedback.
- Allows stakeholders to interact with a tangible model of the application, providing immediate feedback on design and functionality. This helps in refining the product to better meet user needs.
- Helps in identifying usability issues early in the development process, allowing for necessary adjustments before full-scale development begins.

Document Analysis:

Document Analysis is one of the compulsory elicitation techniques for any project. Helps in reviewing/evaluating existing documents such as previous reports, user manuals, market research, and similar project documentation and understanding the current processes and identifying gaps that the new system needs to address.

Answer 7: 10 Business Requirements:

Based on the given scenario, here are the identified business and stakeholder requirements:

S No.	Requirement ID	Requirement Category	Description	Priority
1	BR001	Search	Farmers should be able to search for available products in fertilizers, seeds, and pesticides.	3
2	BR002	Upload and Display	Manufacturers should be able to upload and display their products in the application.	2
3	BR003	Login	Users should have a login functionality using their email ID and password.	1
4	BR004	Account Creation	New users should be able to create an account by submitting their email ID and creating a password.	1
5	BR005	Browse	Farmers should be able to browse the product catalogue without logging in.	2
6	BR006	Registration	New users should be able to register by providing their email ID and creating a secure password.	3
7	BR007	Payment Gateways	Farmers should be able to buy products using an easy-to-use payment gateway with COD, UPI, Credit/Debit card options.	1
8	BR008	Add to Cart	Farmers should be able to add products to their cart before purchasing.	2
9	BR009	Order Confirmation	Users should receive an email confirmation regarding their order status after placing an order.	2
10	BR010	Delivery Tracking	The application should have a delivery tracker to track the whereabouts of orders.	2

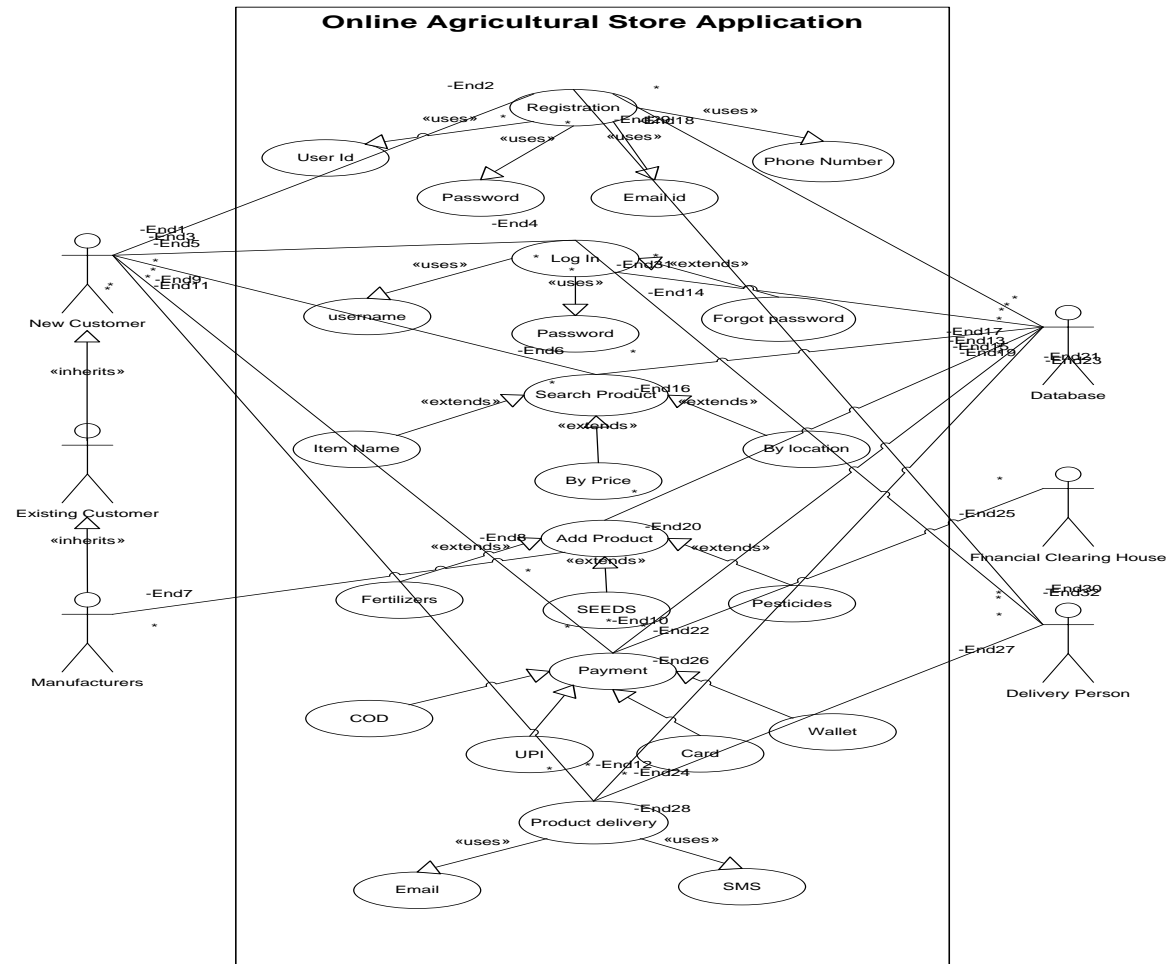
Answer 8. Here are the assumptions for the project:

- **Internet Access:** All users have internet access to use the online platform.
- **Simple Registration:** Users can easily register and log in securely.
- **Multiple Payments:** The platform will support COD, Credit/Debit cards, and UPI payments.
- **Self-Managed Listings:** Manufacturers can upload and manage their product listings easily.
- **Accurate Tracking:** The delivery tracking feature will provide real-time updates.

Answer 9: This project Requirements Priority: Critical path Technique

S No.	Requirement ID	Requirement Category	Description	Priority
1	BR004	Account Creation	New users should be able to create an account by submitting their email ID and creating a password.	10
2	BR003	Login	Users should have a login functionality using their email ID and password.	9
3	BR006	Registration	New users should be able to register by providing their email ID and creating a secure password.	8
4	BR007	Payment Gateways	Farmers should be able to buy products using an easy-to-use payment gateway with COD, UPI, Credit/Debit card options.	7
5	BR002	Manufacturers Upload	Manufacturers should be able to upload and display their products in the application.	6
6	BR001	Farmer Search for Products	Farmers should be able to search for available products in fertilizers, seeds, and pesticides.	5
7	BR008	Add to Cart	Farmers should be able to add products to their cart before purchasing.	4
8	BR009	Order Confirmation	Users should receive an email confirmation regarding their order status after placing an order.	3
9	BR010	Delivery Tracking	The application should have a delivery tracker to track the whereabouts of orders.	2
10	BR005	Browse	Farmers should be able to browse the product catalog without logging in.	1

Answer 10: Use Case Diagram



Answer 11: Use Case Specs - Use case Specs are detailed descriptions of how users interact with a system to achieve specific goals.

Use Case ID	UC001	
Use Case Name	Login	
Created by	Sangeeta	Last Updated By: 28th Jan,2025
Date Created	15th Jan,2025	Last Revision Date: 24th Jan,2025
Actor	Farmer, Manufacturer	
Description	Allows users to log in using their email ID and password.	
Pre-condition	User has a registered account.	
Post Condition	User is successfully logged in.	
Normal Flow of events/Basic flow/Happy Flow	<p>User navigates to the login page.</p> <p>User enters email ID and password.</p> <p>System verifies credentials.</p> <p>System logs the user into their account.</p>	
Alternative Flow	<p>User navigates to the login page.</p> <p>User clicks on "Forgot Password".</p> <p>System prompts the user to enter their registered email ID.</p> <p>User enters their registered email ID.</p> <p>System sends a password reset link to the user's email.</p> <p>User clicks on the password reset link and resets the password.</p> <p>User logs in with the new password.</p>	
Exceptions	Invalid email or password: System shows an error message	
Frequency of Use	High	
Assumptions	Users have registered accounts.	

Use Case ID	UC002	
Use Case Name	Browse Products	
Created by	Sangeeta	Last Updated By:15th Feb,2024
Date Created	4th Feb,2024	Last Revision Date:10th Feb,2024
Actor	Farmers	
Description	Allows farmers to browse the product catalogue.	
Pre-condition	User must have access to the internet.	
Post Condition	User has browsed the available products.	
Normal Flow of events/Basic flow/Happy Flow	User navigates to the product catalogue page. User views available products. User can filter products by category.	
Alternative Flow	User applies a filter that returns no results. System notifies the user and suggests adjusting the filters or searching with different criteria.	
Exceptions	If the system is down, the user is notified that the catalogue is currently unavailable.	
Frequency of Use	High	
Assumptions	Users are familiar with using web interfaces. Product information is up to date.	

Use Case ID	UC003	
Use Case Name	Add to Cart	
Created by	Sangeeta	Last Updated By:10th March,2025
Date Created	3rd March,2025	Last Revision Date:8th March,2025
Actor	Farmers	
Description	Allows farmers to add products to their shopping cart.	
Pre-condition	User is logged in.	

Post Condition	Product is added to the cart.	
Normal Flow of events/Basic flow/Happy Flow	User selects a product. User clicks the "Add to Cart" button. System adds the product to the cart. System updates the cart display.	
Alternative Flow	User selects a product. User is not logged in and tries to add the product to the cart. System prompts the user to log in. User logs in. System adds the product to the cart. System updates the cart display.	
Exceptions	User not logged in: System prompts the user to log in.	
Frequency of Use	High	
Assumptions	Users are logged in.	

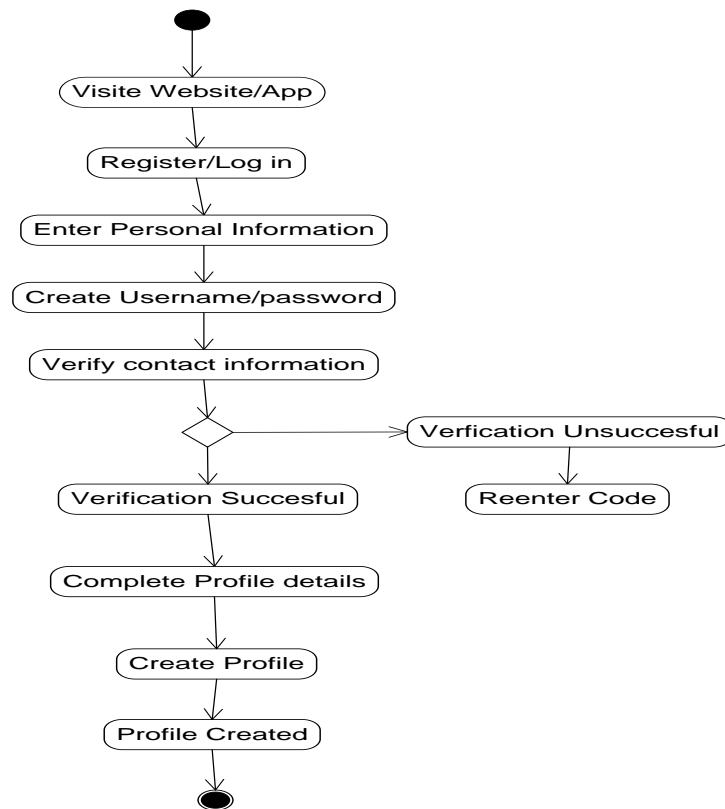
Use Case ID	UC004	
Use Case Name	Upload Products	
Created by	Sangeeta	Last Updated By:2nd April,2025
Date Created	22nd March,2025	Last Revision Date:30th March,2025
Actor	Manufacturer	
Description	Allows manufacturers to upload and display their products.	
Pre-condition	User is logged in.	
Post Condition	Product is uploaded and displayed.	
Normal Flow of events/Basic flow/Happy Flow	Manufacturer navigates to the upload page. Manufacturer enters product details and uploads images. System validates input. System saves the product and updates the catalogue.	
Alternative Flow	Manufacturer navigates to the upload page. Manufacturer enters incomplete product details or uploads incorrect image format. System prompts the manufacturer to correct the input. Manufacturer corrects the input. System validates input.	

	System saves the product and updates the catalogue	
Exceptions	Invalid input: System shows an error message.	
Frequency of Use	High	
Assumptions	Manufacturers are logged in.	

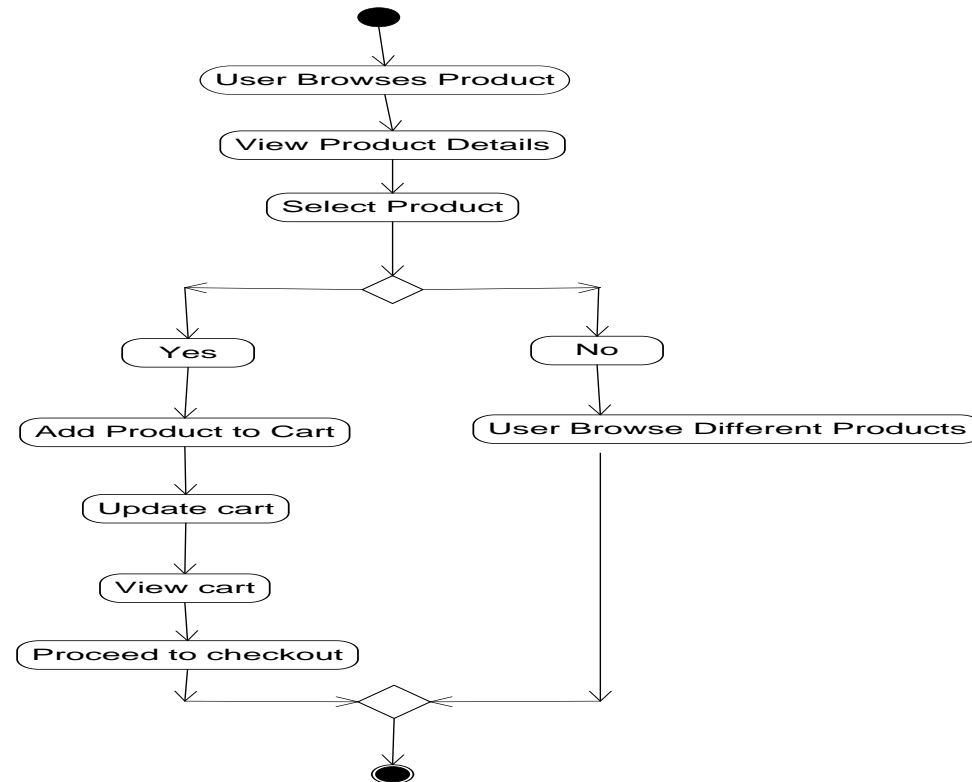
Use Case ID	UC005	
Use Case Name	Purchase Products	
Created by	Sangeeta	Last Updated By:8th April,2024
Date Created	3rd April,2025	Last Revision Date:6th April,2025
Actor	Farmer	
Description	Allows farmers to purchase products using various payment options.	
Pre-condition	User is logged in and has products in the cart.	
Post Condition	Purchase is completed and confirmed.	
Normal Flow of events/Basic flow/Happy Flow	User navigates to the cart. User reviews the cart and clicks "Checkout". User selects a payment method (COD, Credit/Debit Card, UPI). System processes the payment. System confirms the purchase.	
Alternative Flow	User navigates to the cart. User reviews the cart and clicks "Checkout". User selects a payment method (COD, Credit/Debit Card, UPI). User's selected payment method is unavailable. System notifies the user and prompts to choose a different payment method. User selects an alternative payment method. System processes the payment. System confirms the purchase.	
Exceptions	Payment failure: System shows an error message.	
Frequency of Use	High	
Assumptions	Payment methods will be reliable and secure.	

Answer 12: Activity Diagrams –

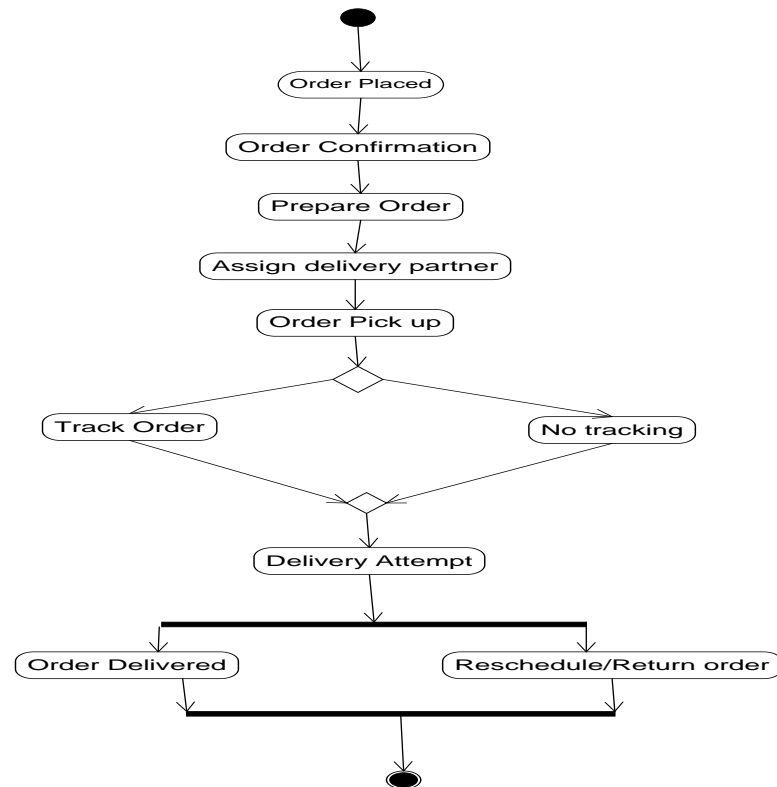
Customer Profile Activity Diagram:



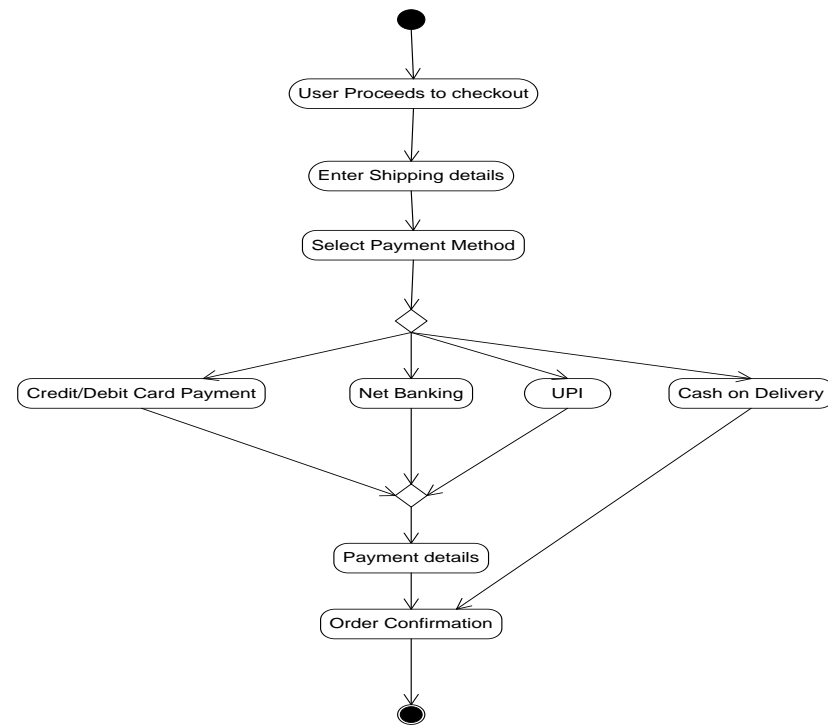
Add to Cart Activity Diagram:



Delivery Diagram:



Payment Diagram:



Cancellation Diagram:

