

Online Agriculture Products Store

Mr. Henry, after being successful as a businessman and has become one of the wealthiest persons in the city. Now, Mr. Henry wants to help others to fulfil their dreams. One day, Mr. Henry went to meet his childhood friends Peter, Kevin and Ben. They live in a remote village and do farming. Mr. Henry asked his friends if they are facing any difficulties in their day-to-day work.

Peter told Mr. Henry that he is facing difficulties in procuring fertilizers which are very important for farm. Kevin said that he is also facing the same problem in-case of buying seeds for farming certain crops. Ben raised his concern on lack of pesticides which could help in greatly reducing pests in crops.

After listening to all his friends' problems, Mr. Henry thought that this is a crucial problem faced not only by his friends but also by so many other farmers. So, Mr. Henry decided to make an online agriculture product store to facilitate remote area farmers to buy agriculture products. Through this Online Web / mobile Application, Farmers and Companies (Fertilizers, seeds and pesticides manufacturing Companies) can communicate directly with each other.

The main purpose to build this online store is to facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity. Since new users are involved, Application should be user friendly. This new application should be able to accept the product (fertilizers, seeds, pesticides) details from the manufacturers and should be able to display them to the Farmers. Farmers will browse through these products and select the products what they need and request to buy them and deliver them to farmers location.

Mr. Henry has given this project through his Company SOONY. In SOONY Company, Mr Pandu is Financial Head and Mr Dooku is Project Coordinator. Mr. Henry, Mr Pandu, and Mr Dooku formed one Committee and gave this project to APT IT SOLUTIONS company for Budget 2 Crores INR and

18 months Duration under CSR initiative. Peter, Kevin and Ben are helping the Committee and can be considered as Stakeholders share requirements for the Project.

Mr Karthik is the Delivery Head in APT IT SOLUTIONS company and he reached out to Mr Henry through his connects and Bagged this project. APT IT SOLUTIONS company have Talent pool Available for this Project. Mr Vandanam is project Manager, Ms. Juhi is Senior Java Developer, Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo are Java Developers. Network Admin is Mr Mike and DB Admin is John. Mr Jason and Ms Alekya are the Tester. And you joined this team as a BA.

Question 1 – Audits - 5 Marks
4 Quarterly Audits are planned Q1 , Q2, Q3, Q4 for this Project.
What is your knowledge on how these Audits will happen for a BA?

Ans:

Quarterly audits for a BA in this project would involve:

- 1. Review of Deliverables: Ensuring BRD, FRD, use cases, and other documentation align with stakeholder requirements.
- 2. Process Compliance: Verifying adherence to SDLC methodologies
- 3. Stakeholder Feedback: Gathering input from Mr. Henry, Peter, Kevin, and Ben on requirement clarity and alignment.
- 4. Risk Mitigation Check: Validating that BA risks (e.g., incomplete requirements) are addressed.
- 5. Progress Tracking: Comparing actual progress against the Gantt chart milestones (RG, RA, Design, etc.).

Quarter	Focus Areas for BA	Key Artifacts Reviewed	Expected Deliverables
Q1	Project initiation, requirement gathering, stakeholder identification	Business Requirement Document (BRD), Stakeholder Register	Initial requirement sign-off
Q2	Mid-project review, change management	Change Requests, updated BRD	Gap analysis and updated roadmap
Q3	UAT preparation, validation readiness	UAT test cases, traceability matrix	UAT planning and feedback loop
Q4	Project closure, lessons learned	Final reports, feedback forms	Post-mortem analysis, transition document

Question 2 – BA Approach Strategy - 6 Marks

Before the Project is going to Kick Start, The Committee asked Mr Karthik to submit BA Approach Strategy

Write BA Approach strategy (As a business analyst, what are the steps that you would need to follow to complete a project – What Elicitation Techniques to apply, how to do Stakeholder Analysis RACI/ILS, What Documents to Write, What process to follow to Sign off on the Documents, How to take Approvals from the Client, What Communication Channels to establish n implement, How to Handle Change Requests, How to update the progress of the project to the Stakeholders, How to take signoff on the UAT- Client Project Acceptance Form).

Ans:

1. **BA process Steps includes:**

Phase	Key Activities	BA Deliverables
Requirements Gathering (RG)	Conduct workshops, interviews with stakeholders (Peter, Kevin, Ben), and document analysis.	BRD, Stakeholder Requirements List, Use Case Diagrams.
Requirements Analysis (RA)	Prioritize requirements (e.g., BR001-BR012), validate with stakeholders, and map to technical feasibility.	FRD, Gap Analysis, Prioritization Matrix.

Design	Collaborate with developers on 3-tier architecture, UI mock-ups, and database schema.	Functional Specifications, Activity Diagrams, Wireframes.
Development	Clarify requirements, review code alignment, and manage change requests.	Updated BRD/FRD, Traceability Matrix.
Testing	Validate test cases, coordinate UAT, and document defects.	Test Plans, UAT Scenarios, Defect Logs.
Deployment	Finalize user training, deployment checklists, and postimplementation reviews.	

2. Elicitation technique:

Prototyping: Considering farmers are not tech-savvy, prototyping and workshops might be suitable for the project.

3. Stakeholder Analysis with RACI:

Role	Responsible	Accountable	Consulted	Informed
Mr. Henry	A	A	C	I
Peter, Kevin, Ben	R		A	I
Mr. Dooku		A	C	I
Mr. Karthik	R		A	I
Project Team	R			I

4. Documentation to be Prepared:

Document	Purpose
BRD	Define business goals, scope, and high-level requirements.
FRD	Detail functional specs (e.g., search filters, payment gateways).
Use Case Specs	Describe interactions (e.g., "Farmer places order").
Risk Register	Log risks (e.g., budget overrun, low farmer adoption).
Traceability Matrix	Link requirements to test cases and deliverables.

4. Process to Sign Off Documents

- **Step 1:** Draft BRD/FRD and circulate to stakeholders via email.
- **Step 2:** Conduct review workshops with Mr. Henry, Peter, Kevin, Ben.
- **Step 3:** Incorporate feedback and finalize versions.
- **Step 4:** Use **Formal Approval Forms** signed by Mr. Henry (Accountable) and Mr. Pandu (Financial Head).

5. Client Approval Process

- **Approval Gates:**
 1. **BRD Approval** after Requirements Gathering.
 2. **FRD Approval** post-Design phase.
 3. **UAT Sign-off** before deployment.
- **Methods:**

- **Formal Meetings:** Present deliverables to the Committee (Mr. Henry, Pandu, Dooku).
- **Email Confirmation:** Document approvals for audit trails.

6. Communication Channels & Change Requests.

CHANNEL	PURPOSE	FREQUENCY
Weekly Status Meetings	Progress updates, risks, and milestones.	Weekly (PM, BA, Developers).
Collaboration Tools	Jira/Confluence for requirement tracking.	Real-time.
Stakeholder Emails	Formal decisions and approvals.	As needed.

Change Request Handling:

1. Log requests in **Change Control Register**.
2. Assess impact on budget/timeline (e.g., 2 Cr INR limit).
3. Obtain approval from Mr. Henry and Committee before implementation.

7. Progress Updates to Stakeholders

- **Monthly Dashboards:** Highlight milestones (e.g., RA completion, UAT readiness).
- **Gantt Chart Alignment:** Track against V-Model phases (RG, RA, Design, D1-T1, etc.).
- **Risk Reports:** Highlight threats (e.g., farmer reluctance) and mitigation plans.

8. UAT Sign-off Process

- a) **UAT Execution:** Farmers test the platform (search, payment, delivery tracking).
- b) **Defect Resolution:** Log issues in Jira and prioritize fixes.
- c) **Sign-off Form:** Use **Client Project Acceptance Form** signed by:
 - **Accountable:** Mr. Henry.
 - **Consulted:** Peter, Kevin, Ben.
 - **Informed:** Manufacturers.

By focusing on stakeholder collaboration, rigorous documentation, the project will address farmers' needs while adhering to budget and timeline constraints.

Question 3 – 3-Tier Architecture - 5 Marks

Technical Team have assembled to discuss on the Project approach and have finalized to follow 3-tier architecture for this project.

Explain and illustrate 3-tier architecture?

Answer:

A **3-tier architecture** is a well-established software design pattern that organizes the application into three distinct layers:

- 1. **Presentation Layer (Client Tier)**
- 2. **Business Logic Layer (Application Tier)**
- 3. **Data Layer (Database Tier)**

This structure promotes separation of concerns, scalability, maintainability, and performance.

Tier	Components in the Project	Responsibilities
Presentation Tier	Web Browser, Mobile App UI (Farmer & Manufacturer Interface)	1. Displays UI to farmers and manufacturers- Handles input forms (login, registration, product search) 2. Responsive screens (add to cart, order summary, etc.)
Business Logic Tier	Java (Spring Boot), REST APIs, Middleware	1. Manages all application logic 2.Validates input, processes order, handles payment workflows 3. Manages communication between UI and database.
Data Tier	Relational Database (e.g., MySQL, PostgreSQL), Product Catalog Tables, Order History	1. Stores persistent data like user accounts, product details, transactions, and delivery logs- Supports search queries and order retrieval

Question 4 – BA Approach Strategy for Framing Questions – 10 Marks

Business Analyst should keep What points in his/her mind before he frames a Question to ask to the Stakeholder

(5W 1H – SMART – RACI – 3 Tier Architecture – Use Cases, Use case Specs, Activity Diagrams, Models, Page designs)

Answer:

A Business Analyst must frame questions that are:

- Clear, unambiguous
- Role-appropriate
- Context-driven
- Technically sound yet understandable
- Geared towards achieving SMART requirements

5W1H FRAMEWORK		
Element	What It Represents	Application in Framing Questions
Who	Identifies roles or users	“Who will use this feature? Who manages the inventory?”

What	Defines the functionality	“What actions should a farmer be able to perform?”
When	Timing or sequence of events	“When should the confirmation email be sent?”
Where	Location or platform	“Where will users access the app—web or mobile?”
Why	Business need or problem	“Why do we need multi-language support?”
How	The process or method	“How should the delivery tracking feature be implemented?”
SMART Criteria		
Element	Definition	Application in Questions
Specific	Well-defined and focused	“What payment modes should be supported—COD, UPI, or both?”
Measurable	Quantifiable or criteria-based	“How many product categories should be available?”
Achievable	Realistic within constraints	“Can we integrate order tracking with third-party logistics?”
Relevant	Aligns with business goals	“Is this feature needed by the majority of users (farmers)?”
Time-bound	Has deadlines or timeframes	“By which phase should product catalog be complete?”
RACI Matrix		
Role	Description	Impact on Question Framing
Responsible	Does the work	Ask task-specific questions: “What do developers need to build X?”
Accountable	Approves the work	Ask approval/decision questions: “Who signs off on this feature?”
Consulted	Provides expertise	Ask expert-based questions: “What language support is needed?”
Informed	Needs updates but not involved in decision	Ask for communication preferences: “How should updates be shared?”
3-Tier Architecture Awareness		
Tier	Function	Question Framing Implication
Presentation Layer	User Interface (UI)	“How should the farmer’s dashboard look on mobile vs desktop?”
Business Logic Layer	Processes and rules	“What happens when a user clicks ‘Add to Cart’?”
Data Layer	Database interaction	“What product details must be stored in the backend database?”
Use Cases		
Element	Explanation	Sample Question
Actor	Person/system interacting with system	“What actions can a manufacturer perform on the platform?”
System	The platform being built	“How should the system respond when an invalid payment is made?”
Precondition	Condition before the use case	“Does the user need to be logged in before accessing the catalog?”
Main Flow	Normal process steps	“What is the step-by-step process of placing an order?”
Alternate Flow	Error or exception handling	“What happens if payment fails?”

Use Case Specification (UCS)		
Component	Definition	Implication for BA Questions
Use Case ID	Unique identifier	“Which module does this use case belong to?”
Description	Brief overview of the use case	“What should this functionality achieve?”
Trigger	Event that initiates the use case	“What action starts the order process?”
Preconditions	What must be true before execution	“Does the user need to be authenticated?”
Postconditions	Outcome of the use case	“What should be displayed after a successful transaction?”
Activity Diagrams		
Component	Functionality	BA Consideration While Questioning
Start Node	Entry point	“What initiates this process?”
Activity	Action performed	“What are the steps to add a product to the cart?”
Decision Node	Yes/No or multi-option decisions	“What happens if the entered email is invalid?”
End Node	Process conclusion	“What is the final output after order placement?”
Page Designs (UI/UX)		
Page Element	Focus	Impact on Question Framing
Fields	Input from user	“What mandatory fields are needed during registration?”
Buttons & CTAs	Trigger actions	“What action should the ‘Place Order’ button initiate?”
Layout	Arrangement of elements	“Should the product categories appear as tabs or drop-downs?”
Accessibility Features	Color, font, language	“Should local language be the default for rural farmers?”

Question 5 – Elicitation Techniques - 6 Marks

As a Business Analyst, What Elicitation Techniques you are aware of? (BDRFOWJIPQU)

Answer:

Acronym	Technique	Distinct Feature	When to Use	Best For
B	Brainstorming	Rapid idea generation in group settings	Early discovery phase	Identifying potential features, process improvements
D	Document Analysis	Studying existing documentation (SOPs, BRDs, Policies)	Initial requirement understanding	Legacy systems, compliance projects
R	Requirements Workshops	Collaborative sessions with multiple stakeholders	Mid to late elicitation phase	Finalizing requirements, conflict resolution
F	Focus Groups	Targeted sessions with similar role participants (e.g., farmers)	Post-prototyping for feedback	Customer validation, new product planning
O	Observation	Watching users perform tasks in real-world setting	Early or ongoing	Understanding user behaviour, usability pain points
W	Workshops	Interactive sessions with defined goals and facilitators	Requirement refinement	Use case modelling, group validation
J	Job Shadowing	Immersive on-the-job observation over time	Before defining user stories	Role understanding, documenting processes
I	Interface Analysis	Studying how systems interact with users/other systems	During system analysis	Integration needs, UX improvement
P	Prototyping	Visual mock-ups or wireframes shared for feedback	Iterative requirements development	UI-heavy projects, feedback from nontechnical users
Q	Questionnaires/Surveys	Written questions sent to a wide audience	When stakeholder access is limited	Market research, internal feedback loops

U	User Stories	Descriptive requirements from user perspective using “As a user, I want...”	Agile or iterative projects	Functional requirement definition
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Question 6 – This project Elicitation Techniques - 5 Marks

Which Elicitation Techniques can be used in this Project and Justify your selection of Elicitation Techniques?

Prototyping
Use case Specs
Document Analysis
Brainstorming

Answer :

Feature	Why Prototyping Helps
Farmers' Tech Familiarity	Reduces confusion by replacing text with visuals.
Stakeholder Feedback	Promotes iterative discussion and refinement of UI/UX.
Interface Expectations	Ensures screens are simple and intuitive (e.g., large buttons, native language).
Budget and Time Constraints	Helps avoid miscommunication, reducing rework and saving costs.
Testing Readiness	Can be reused as basis for test case development.

Question 7 – 10 Business Requirements- 10 Marks

Fertilizers, seeds, pesticides details from the manufacturers and should be able to display them to the Farmers.

To gather the business requirements from the client, you went to SOONY and met Mr. Henry. When Mr. Henry was asked about the project and what are they expecting from the project, Mr. Henry stated that he is expecting to have a login for all its users (fertilizers, seeds, pesticides manufacturers and Farmers), a product catalog of fertilizers, seeds, pesticides, a search option to search for products, payment process, and delivery tracking.

After doing the stakeholder analysis, you have found out that Peter, Kevin, Ben are the key stakeholders and you have scheduled an appointment to meet them. After meeting with them and trying to gather the stakeholder requirements, Kevin said that, a Farmer should be able to browse through the products catalog once they visit the website and need to have a search option so that they can search for any product they need. Peter said that, if a farmer wants to buy any product or add them to buy-later list, they need to login first using their email id and password. If it is a new user, then they can create a new account by submitting their email ID and creating a secure password. Ben added saying that, Farmers needs to have an easy-to-use payment gateway which should include cash-on-delivery (COD), Credit/Debit card and UPI options so that the user’s experience should be better. Kevin mentioned that, a user gets an email confirmation regarding their order status. A delivery tracker to track the whereabouts of their order.

Identify Business Requirements (which includes Stakeholder Requirements)

BR001 – Farmers should be able to search for available products in fertilizers, seeds, pesticides

BR002 – Manufacturers should be able to upload and display their products in the application Make

suitable Assumptions and identify at least 10 Business Requirements

Req ID	Requirement Name	Requirement Description (Elaborated)
BR001	Farmer Search for Products	Farmers should be able to search the database of available fertilizers, seeds, and pesticides using keyword, category filters (crop type, usage), and price filters. This enhances usability and ensures ease of product discovery.
BR002	Manufacturer Product Upload	Manufacturers should be able to register and upload product details including name, quantity, pricing, usage instructions, and certifications. This helps in maintaining an up-to-date and verified catalogue.
BR003	Role-Based Login System	A secure authentication system is required for farmers and manufacturers to log in. Each role (Farmer or Manufacturer) should see a customized dashboard with relevant actions.
BR004	Categorized Product Catalog	The platform must categorize products into distinct groups (e.g., Seeds, Fertilizers, Pesticides) and support browsing by crop-specific requirements. This improves navigation.
BR005	Secure User Registration	New users (especially farmers) should be able to easily register with basic details, mobile/email verification, and secure password creation. The system should handle authentication tokens.
BR006	Wishlist/Buy-Later Feature	Farmers should have an option to save items in a wish-list or “Buy Later” list. This supports better purchase planning and user retention.
BR007	Payment Gateway Integration	The application must support multi-mode payments (COD, Credit/Debit, UPI) and ensure PCI-DSS compliance. It should allow retry options in case of failures.
BR008	Order Confirmation Notifications	The system should auto-generate order summaries and send email/SMS confirmations to farmers including invoice, payment mode, and estimated delivery.
BR009	Order Delivery Tracking	Farmers should be able to track the status of their order from dispatch to delivery. Integration with logistics providers for real-time status updates is required.
BR010	Multi-language Support	The UI should support local Indian languages (e.g., Telugu, Hindi) to cater to non-English-speaking farmers. Language selection should be at the time of login.

Question 8 –Assumptions- 5 Marks

List your assumptions

Answer:

Key assumptions for this project include:

- **Internet Access:** Farmers and manufacturers have reliable internet access (or a plan will support offline caching) for web/app usage in rural areas.
- **Smart Device Availability:** Farmers have access to a smartphone or computer to use the online store (possibly assisted at coop shops).
- **Data Privacy:** User data (profiles, orders) will be protected per legal standards (GDPR, local laws).
- **Logistics Partnership:** A logistics provider exists to handle deliveries once orders are placed (managed by the project).
- **Manufacturers' Participation:** Suppliers will keep their product catalogues up to date (inventory counts, pricing).
- **Payment Infrastructure:** Payment gateways (UPI, card networks) are available and secure in the target regions.
- **Language Support:** The application will support at least the primary local languages of the farmers.

These assumptions fill gaps not explicitly covered in stakeholder interviews but necessary for planning.

Question 9 –This project Requirements Priority - 8 Marks

Give Priority 1 to 10 numbers (1 being low priority – 10 being high priority) to these Requirements after discussions with the stakeholders

Req ID	Req Name	Req Description	Priority
BR001	Farmer Search for Products	Farmers should be able to search for available products in fertilizers, seeds, pesticides	8
BR002	Manufacturers upload their Products	Manufacturers should be able to upload and display their products in the application	8

Once the requirements are finalized, as a business analyst, one of the major roles is to act as a liaison between the client and the project team. To gather the requirements correctly from the client side and then to deliver those requirements to the project team in a way they understand.

Answer:

Question 9 – This project Requirements Priority - 8 Marks

Answer:

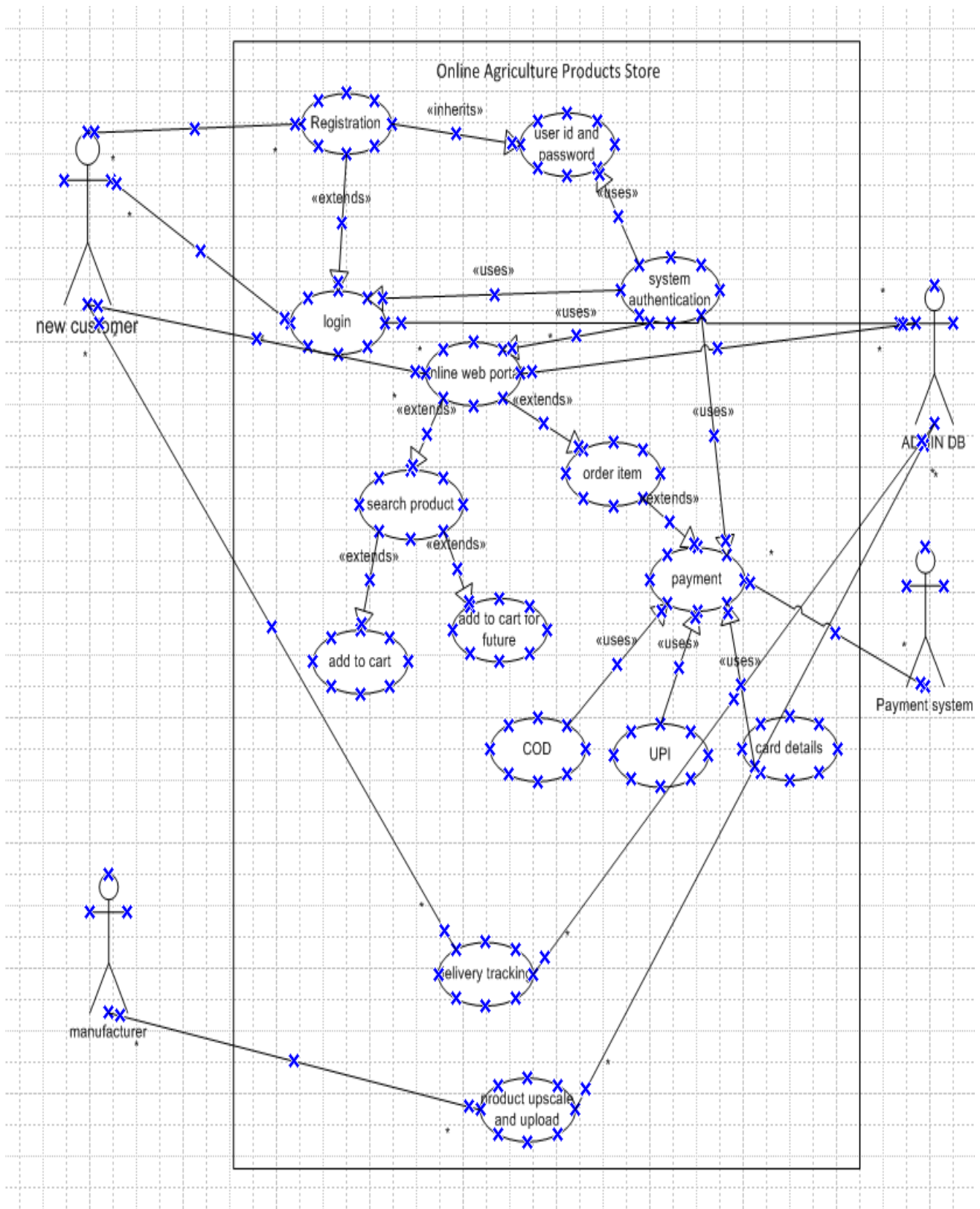
Req ID	Requirement Name	Requirement Description (Elaborated)	Priority (1-10)
BR001	Farmer Search for Products	Farmers should be able to search the database of available fertilizers, seeds, and pesticides using keyword, category filters (crop type, usage), and price filters. This enhances usability and ensures ease of product discovery.	10
BR002	Manufacturer Product Upload	Manufacturers should be able to register and upload product details including name, quantity, pricing, usage instructions, and certifications. This helps in maintaining an up-to-date and verified catalogue.	9

BR003	Role-Based Login System	A secure authentication system is required for farmers and manufacturers to log in. Each role (Farmer or Manufacturer) should see a customized dashboard with relevant actions.	9
BR004	Categorized Product Catalog	The platform must categorize products into distinct groups (e.g., Seeds, Fertilizers, Pesticides) and support browsing by crop-specific requirements. This improves navigation.	8
BR005	Secure User Registration	New users (especially farmers) should be able to easily register with basic details, mobile/email verification, and secure password creation. The system should handle authentication tokens.	8
BR006	Wishlist/Buy-Later Feature	Farmers should have an option to save items in a wish-list or “Buy Later” list. This supports better purchase planning and user retention.	6
BR007	Payment Gateway Integration	The application must support multi-mode payments (COD, Credit/Debit, UPI) and ensure PCI-DSS compliance. It should allow retry options in case of failures.	10
BR008	Order Confirmation Notifications	The system should auto-generate order summaries and send email/SMS confirmations to farmers including invoice, payment mode, and estimated delivery.	7
BR009	Order Delivery Tracking	Farmers should be able to track the status of their order from dispatch to delivery. Integration with logistics providers for real-time status updates is required.	9
BR010	Multi-language Support	The UI should support local Indian languages (e.g., Telugu, Hindi) to cater to nonEnglish-speaking farmers. Language selection should be at the time of login.	6

To make the project team understand the requirements, you need to convert those requirements into UML diagrams and screen mock-ups.

Question 10 – Use Case Diagram - 10 Marks

Draw use case diagram.



Question 11 – (minimum 5) Use Case Specs - 15 Marks

Prepare use case specs for all use cases?

Answer:

Use Case ID	Use Case Name	Actors	Description	Preconditions	Main Flow (Steps)	Postconditions
UC001	User Registration/Login	Farmer, Manufacturer	Users register or log in to access system features	User is not logged in	1. Click Register/Login 2. Enter credentials 3. Submit 4. Authentication	User is logged into system
UC002	Browse Product Catalog	Farmer	Farmers browse available products	User is logged in	1. Go to catalogue 2. Apply filters/search 3. View products	Products displayed to user
UC003	Search Product	Farmer	Farmers search for specific seeds/fertilizers/pesticides	Product catalogue available	1. Enter keyword 2. System fetches relevant items	Matching products are listed
UC004	Add to Cart / Buy Later	Farmer	Add product to cart or wish-list	Product selected	1. Click on product 2. Choose add to cart or wish-list	Product added to appropriate list
UC005	Make Payment	Farmer	Payment through UPI, COD, or Cards	Product in cart	1. Choose payment method 2. Enter details 3. Confirm payment	Order placed
UC006	Upload Product	Manufacturer	Manufacturers upload product info	Manufacturer logged in	1. Access upload section 2. Fill product form 3. Submit for review	Product stored as "Pending Approval"
UC007	Approve Product Listing	Admin	Admin approves or rejects new product uploads	Product submitted	1. Admin reviews submission 2. Click Approve/Reject	Product becomes visible/hidden
UC008	Receive Order Notification	Farmer	Email confirmation sent after order	Order placed	1. System sends order email with summary	Email received
UC009	Track Order	Farmer	Track delivery status after order	Order dispatched	1. Click 'Track Order' 2. System shows real-time delivery status	Status updates shown
UC010	Provide Feedback/Rating	Farmer	Submit feedback or rating for a product	Order completed	1. Visit order history 2. Click 'Review' 3. Submit star rating and comment	Feedback saved and visible

Question 12 – (minimum 5) Activity Diagrams - 15 Marks

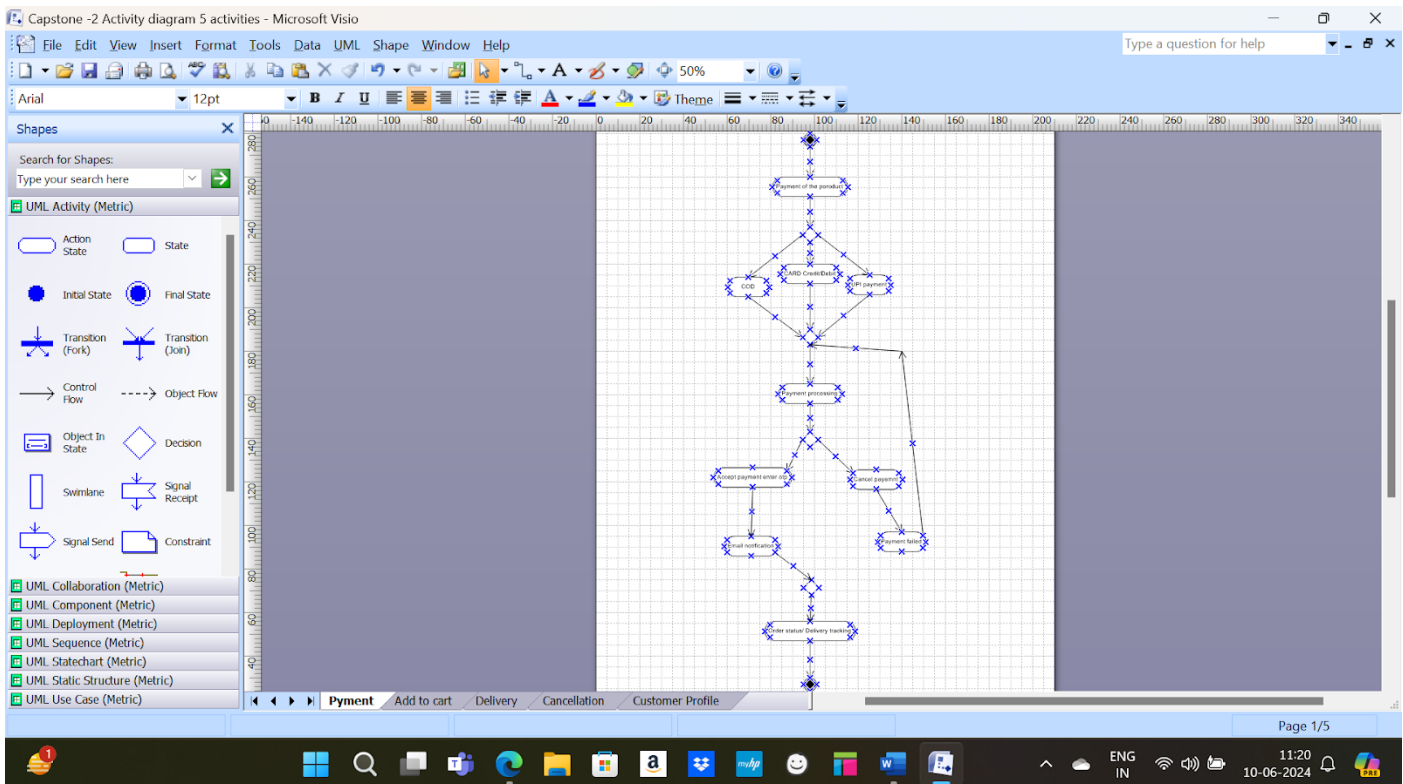
Activity diagrams

Here 5 activities in the above case study are segregated as: -

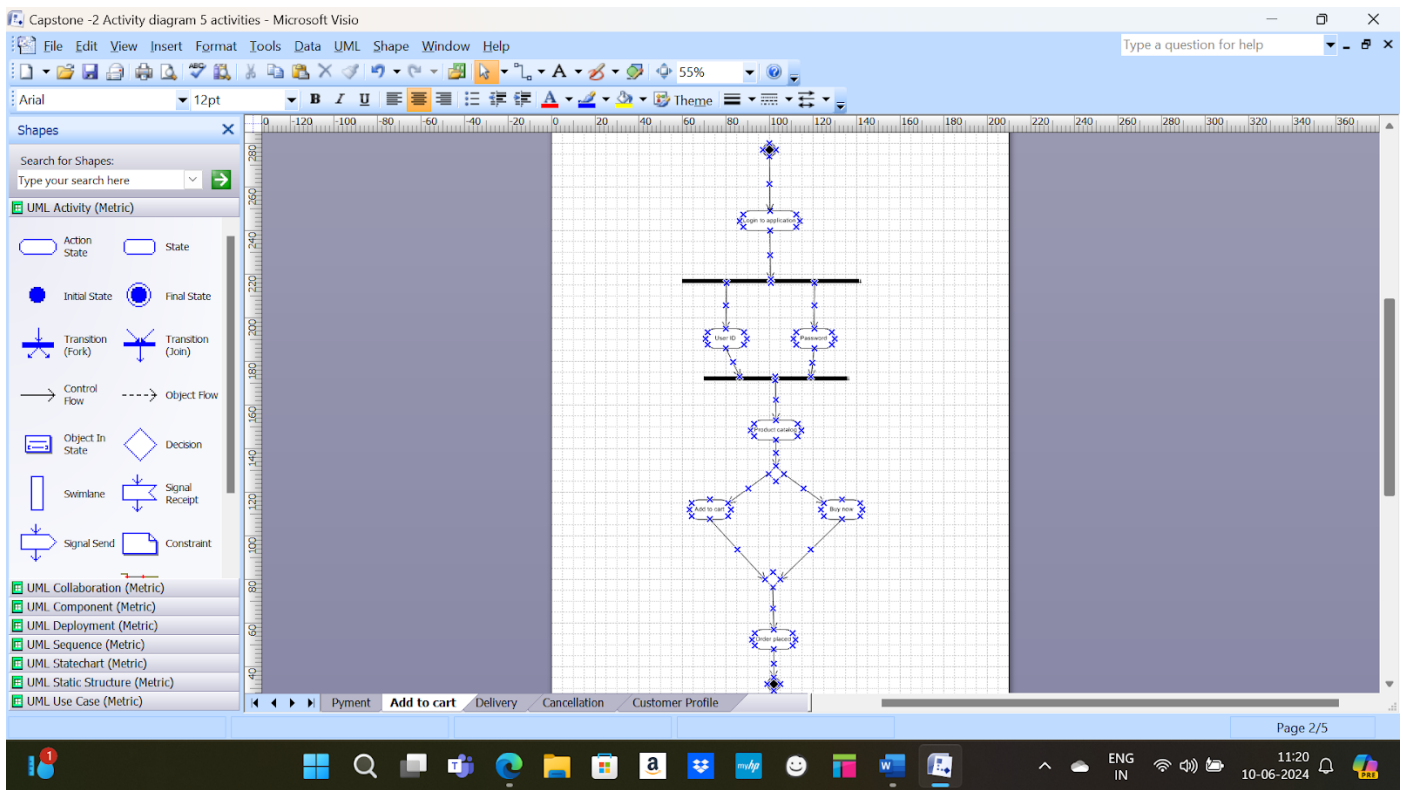
1. Adding to cart
2. Payment
3. Delivery
4. Cancellation
5. Customer Profile

Activity diagram is UML behavior diagram which shows flow of control or object flow with emphasis on the sequence and conditions of the flow. The actions coordinated by activity models can be initiated because other actions finish executing, because objects and data become available, or because some events external to the flow occur

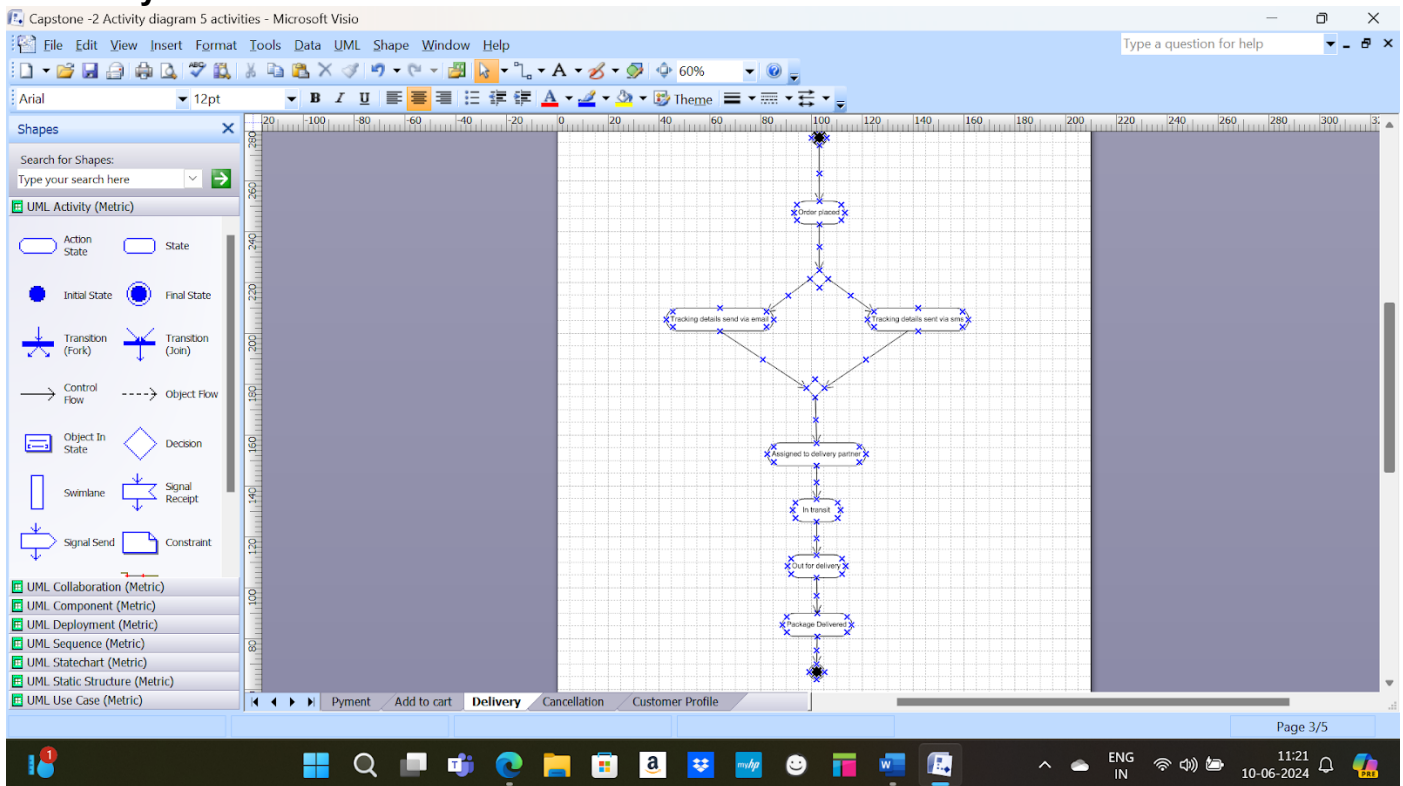
1. Payment



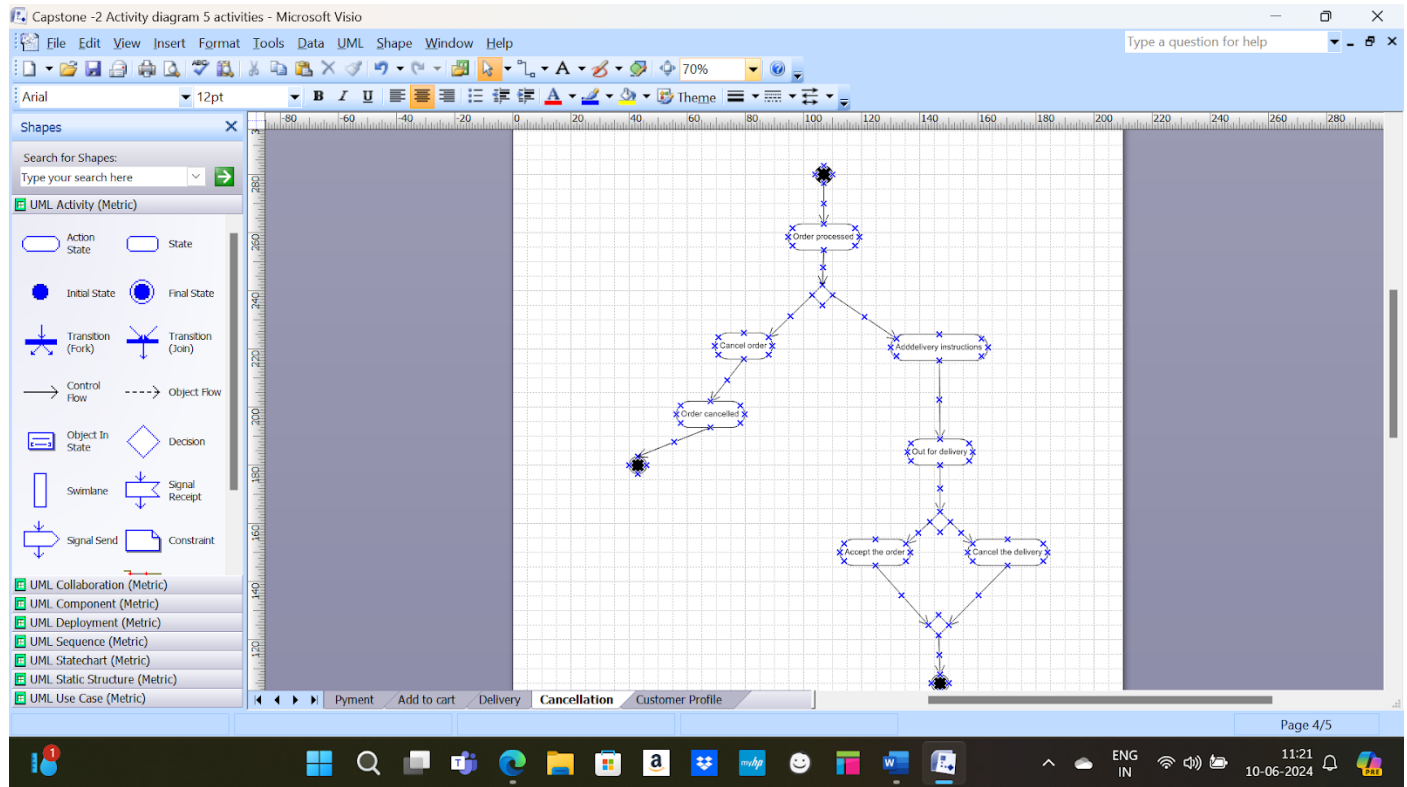
2. Add to cart:-



3. Delivery



4.Cancellation:



5. Customer Profile: -

