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.

1. **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?**

As a Business Analyst (BA) involved in this project, quarterly audits (Q1, Q2, Q3, Q4) are a crucial part of ensuring that the project is progressing according to plan and that all business requirements are being met. Here’s how the audits will likely unfold for you as a BA:

**1. Understanding the Purpose of Audits**

Quarterly audits are typically conducted to:

* **Monitor progress**: Check if the project is on track to meet its goals (time, budget, scope).
* **Identify issues early**: Detect potential risks, challenges, or issues that might affect the project's timeline, budget, or quality.
* **Ensure alignment**: Verify that the project’s deliverables align with the business requirements, objectives and stakeholder needs.

**2. Your Role as a BA During Quarterly Audits**

As a BA, your involvement in the audits will focus on the following aspects:

**Q1 Audit (Initial Phase):**

* **Requirement Gathering and Analysis**:
	+ You will present the requirements gathering process. This includes how you gathered requirements from the stakeholders (Peter, Kevin, Ben, etc.), identified key features for the application (user-friendly interface, product details management, purchase process, etc.) and ensured that they were documented accurately.
	+ Ensure that the **Business Requirements Document (BRD)** or **Functional Requirements Document (FRD)** is complete and has been approved by all stakeholders.
* **Verification**: Ensure that the scope of the project, including user stories and use cases, aligns with the business objectives. The team may also validate if the development and design phase is on track to meet these requirements.

**Q2 Audit (Midway Check):**

* **Progress Monitoring**:
	+ You will help track the progress of the implementation phase. Is the development team working according to the agreed-upon features? Are the product details being correctly implemented and displayed on the application as required by the stakeholders?
	+ Ensure that any **change requests** from stakeholders (such as Peter, Kevin, or Ben) are analysed and incorporated as needed.
* **User Feedback**:
	+ Collect feedback from stakeholders regarding any early prototypes or demos that may have been delivered by the developers. Ensure that this feedback is documented, analysed and presented to the team.
	+ Track any potential scope changes based on stakeholder feedback and market conditions.

**Q3 Audit (Near Completion Check):**

* **Validation of Final Deliverables**:
	+ At this stage, the application should be nearing completion. You will ensure that the business requirements are met with the current functionality. Are the farmers able to browse products, select and place orders effectively? Are the payment and delivery features working as expected?
	+ You will ensure that user acceptance testing (UAT) is planned and that any business-centric issues or concerns are identified.
* **Risk Management**:

Highlight any risks that may still be outstanding. For instance, if there were any delays or problems with integrating the products from various manufacturers or if there were any issues with logistics or delivery integration.

**Q4 Audit (Final Review and Handover):**

* **Final Testing and Sign-Off**:
	+ By this point, the application should be fully tested. As a BA, you will ensure that **User Acceptance Testing (UAT)** has been completed and all issues have been resolved. You will work with the testing team (Jason and Alekya) to make sure that everything is aligned with the business requirements.
	+ Ensure all **documentation** is finalized for the project handover, including user manuals, product documentation and operational guides.
* **Post-Deployment Review**:
	+ Help evaluate the effectiveness of the application after deployment. Are farmers able to effectively use the platform? Are the manufacturers able to list their products and communicate directly with farmers? Track any immediate post-deployment feedback.
* **Lessons Learned**:

At the end of the project, during the final audit, you will likely engage in a **lesson learned** session to identify what went well and what could be improved in future projects. This is important for continuous improvement.

**Key Activities a BA will Be Involved In During the Audits:**

* **Documentation and Reporting**: For each quarterly audit, you will need to provide clear reports or presentations that highlight the progress of the project, any issues and the status of business requirements.
* **Stakeholder Communication**: During audits, you will need to communicate with stakeholders to ensure that their needs are still being met and gather feedback.
* **Risk Analysis**: You will help identify risks and challenges that may impact the project and work with the team to mitigate them.
* **Change Management**: As changes to the scope may occur during the audits, you will assist in managing these changes and ensuring that they are properly documented and communicated to the team.

**Tools/Techniques to Be Used:**

* **Requirements Traceability Matrix (RTM)**: This document ensures that all business requirements are tracked throughout the project life cycle.
* **Stakeholder Management**: Regularly updating and communicating with stakeholders (Mr. Henry, Peter, Kevin, Ben, etc.) through meetings and reports.
* **Status Reports**: Ensuring regular project status reports that are presented during each audit meeting.

BA ensure that the project stays aligned with the business goals, user requirements and stakeholder expectations. You will focus on requirements validation, progress monitoring, risk management and ensuring effective communication between stakeholders and the development team. Regularly tracking the project’s progress against business objectives will ensure that it is delivered successfully within budget and on time.

1. **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)**

**Your Team**

**Project Manager - Mr Vandanam**

**Senior Java Developer - Ms. Juhi**

**Java Developers - Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo**

**Network Admin - Mr Mike**

**DB Admin - Mr John.**

**Testers - Mr Jason and Ms Alekya**

**BA – You.**

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

**Business Analyst (BA) Approach Strategy for the Project**

As the **Business Analyst (BA)** for this project, my primary role is to ensure the business requirements are fully understood, accurately documented, and properly communicated to both the stakeholders and the development team. Below is a detailed **BA Approach Strategy** outlining the key steps and processes that I will follow throughout the project’s lifecycle.

* 1. **Project Initiation & Planning**
* **Elicitation Techniques: Elicitation techniques** refer to the methods or approaches used by Business Analysts (BAs) to gather information, requirements, and feedback from stakeholders, users, and other sources. The goal of these techniques is to ensure that the requirements and expectations for a project or system are clearly understood and documented. Elicitation techniques help the BA collect insights into business needs, challenges, and objectives, which are essential for designing and developing solutions that meet those needs.

Common Elicitation Techniques include Interviews, **Surveys / Questionnaires, Workshops, Document Analysis, Use Case Analysis etc.**

* **Interviews**: Conduct in-depth interviews with stakeholders such as **Peter**, **Kevin**, **Ben**, and the **Committee** members to understand their pain points, requirements, and expectations.
* **Surveys/Questionnaires**: Distribute surveys to gather specific feedback on the types of products (seeds, fertilizers, pesticides) needed by farmers, their preferences, and their pain points.
* **Workshops**: Hold collaborative workshops with stakeholders and the development team to define key business processes and product features. This will help to ensure all requirements are aligned.
* **Document Analysis**: Analyse any existing documents, reports, or systems used by stakeholders (e.g., inventory management, farmer profiles, product catalogues) to understand their workflow.
* **Use Case Modelling**: Develop use cases to understand how the end users (farmers, manufacturers) will interact with the application.

**2. Stakeholder Analysis & RACI/ILS**

Effective stakeholder management is key to ensuring project success. Here’s how I will approach stakeholder analysis:

* **Stakeholder Identification**: Identify all stakeholders, including:
	+ **Primary Stakeholders**: Mr. Henry, Peter, Kevin, Ben (Farmers, and Committee)
	+ **Secondary Stakeholders**: APT IT SOLUTIONS Team (PM, Developers, Testers, Network Admin, DB Admin)
	+ **Tertiary Stakeholders**: Manufacturer representatives (Fertilizer, Seed, Pesticide Companies)
* **Stakeholder Analysis**:
	+ Categorize stakeholders based on their **interest**, **influence**, and **impact** on the project. This helps prioritize communication and ensure the right stakeholders are consulted at each stage.
* **RACI Matrix**: Define clear roles and responsibilities for stakeholders using the **RACI** model:
	+ **Responsible**: Who will do the work (e.g., Developers for product features).
	+ **Accountable**: Who will own the final decision (e.g., Project Manager Mr. Vandanam for overall project delivery).
	+ **Consulted**: Who will provide input (e.g., BA for business requirements).
	+ **Informed**: Who needs to be updated on progress (e.g., Stakeholders like Mr. Henry, Peter, Kevin).
* **ILS (Issue and Log Sheet)**: Track any issues, risks, and decisions that arise throughout the project lifecycle and ensure these are documented and addressed in a timely manner.

**3. Documentation and Requirements Management**

**A. Key Documents to be Written**

* **Business Requirements Document (BRD)**: Capture all functional and non-functional requirements, including the system's expected capabilities, user roles, and key functionalities.
* **Functional Requirements Document (FRD)**: Document specific details on how the system will work, ensuring alignment with business objectives. It includes process flows, use cases, and functional specifications.
* **User Stories/Use Cases**: Document user interactions with the system from the perspective of the farmer, manufacturer, and system administrators.
* **System Requirements Specification (SRS)**: Ensure that the technical team has a clear understanding of the requirements for designing the solution, in line with the three-tier architecture.
* **Data Flow Diagrams (DFD)**: Illustrate how data flows within the system, showing interactions between the user interface, business logic layer, and database.
* **Test Plans/Scenarios**: Ensure clear test cases and acceptance criteria are documented for validation during the UAT phase.

 **B. Process to Follow for Document Sign-Off**

* **Review and Validation**: Once the documents (BRD, FRD, etc.) are written, I will review them with the stakeholders to ensure they accurately capture the needs of the project. This will involve working closely with **Mr. Pandu (Financial Head)** and **Mr. Dooku (Project Coordinator)**.
* **Feedback Incorporation**: Collect feedback and ensure all suggestions are incorporated before finalizing the documents.
* **Formal Sign-Off**: The finalized documents will be sent to the stakeholders for formal approval. I will gather their signatures or formal approval via email or through a project management tool.
	1. **Approval Process from the Client**
* **Regular Communication**: Throughout the project, I will maintain open channels with **Mr. Henry** and other stakeholders to gather their feedback and approval.
* **Formal Approvals**: At each major milestone (requirements, design, testing, and deployment), I will seek formal sign-off from the stakeholders. These approvals will be documented and stored for reference.

**5. Communication Channels to Establish & Implement**

* **Regular Meetings**: I will organize **weekly stand-ups** and **bi-weekly stakeholder meetings** to update the stakeholders on the project’s progress, risks, and upcoming milestones.
* **Project Management Tool**: Use tools for tracking project tasks, bugs, and progress.
* **Email Updates**: For important announcements, feedback, and approvals, I will maintain regular email communication with all stakeholders.
* **Collaborative Tools**: Use **Microsoft Teams** or other tools for real-time communication among the project team and stakeholders.
* **Documentation Sharing**: Use **Google Drive**, **SharePoint**, or a similar platform for document sharing and version control.

**6. Handling Change Requests**

* **Change Request Form**: Any change request received from stakeholders will be logged using a **Change Request Form** (CRF) to capture the nature of the change, the reasons for the change, and its potential impact.
* **Impact Analysis**: I will work with the technical team (developers, testers, etc.) to assess the impact of the change request on the project timeline, budget, and scope.
* **Approval**: Once the impact analysis is complete, I will send the change request to stakeholders for approval. Only after receiving approval will the change be incorporated into the project.

**7. Progress Updates to Stakeholders**

* **Progress Reports**: I will provide **monthly progress reports** detailing completed tasks, upcoming activities, risks, and issues. These reports will be shared with **Mr. Henry** and other stakeholders.
* **KPIs and Metrics**: Monitor key performance indicators (KPIs), such as **development progress**, **budget adherence** and **timeline compliance**, and communicate them during the quarterly audits.

**8. UAT and Client Project Acceptance Form**

* **User Acceptance Testing (UAT)**:
	+ Once development is complete, I will assist in organizing and facilitating the UAT. This will involve coordinating with the **Testers** (Jason and Alekya) to ensure the application meets the agreed-upon business requirements.
	+ I will also help stakeholders, like **Peter**, **Kevin**, and **Ben**, to test the system and provide feedback.
* **Client Project Acceptance Form**:
	+ After UAT, I will ensure that the **Client Project Acceptance Form** is filled out and signed by the relevant stakeholders to confirm that the application is ready for deployment.
	+ The **Client Project Acceptance Form** will include details such as:
		- Confirmation that the business requirements have been met.
		- A final review of the system’s performance.
		- Sign-off from **Mr. Henry** or any designated stakeholder confirming project acceptance.

**Conclusion:**

The above strategy outlines the necessary steps for ensuring a successful project outcome. By applying appropriate elicitation techniques, conducting thorough stakeholder analysis, maintaining clear communication, and following a structured approach to document management and approvals, I will ensure that the project is delivered on time, within budget, and meets all stakeholder expectations.

1. **Explain and illustrate 3-tier architecture?**

In the context of the online agricultural product store that Mr. Henry is planning to build, the **3-tier architecture** provides a structured way to design and organize the system into three separate layers, each with distinct responsibilities. This makes the system more scalable, maintainable, and efficient.

* 1. **Application Layer (Presentation Layer)**:
* **Purpose**: The Application Layer, also known as the **Presentation Layer**, is the topmost layer responsible for interacting with the user. This is where farmers, suppliers, and other users will interact with the system through a user interface (UI).
* **Role**: It displays the application’s data to the user and handles user input (e.g., browsing products, adding items to the cart, and placing orders). This layer ensures that the user interface is intuitive and user-friendly, as the target audience (farmers in remote areas) may not be very tech-savvy.
* **Components**:
	+ **Web Interface**: A responsive web interface that allows farmers to browse the available fertilizers, seeds, and pesticides.
	+ **Mobile Application**: A mobile app version of the platform, providing easy access for users with mobile phones.
	+ **Frontend Technologies**: HTML, CSS, JavaScript, React (for web), and mobile app frameworks like React Native or Flutter.
* **Example in the Context of the Project**: When a farmer logs into the system, the **Application Layer** displays a list of products (fertilizers, seeds, pesticides). The farmer can filter the products based on type, price, and availability, and add them to their shopping cart. Once the order is placed, the information is sent to the **Business Logic Layer**.
	1. **Business Logic Layer (Application Logic Layer)**:
* **Purpose**: The Business Logic Layer processes the data between the Application Layer (UI) and the Database Layer. It contains the core functionality and rules that dictate how the system operates.
* **Role**: This layer handles the logic for managing product details, calculating prices, validating user inputs, managing orders, and handling communication between farmers and manufacturers. It ensures that the user’s actions are valid and that business rules (such as order quantity limits, product availability, etc.) are followed.
* **Components:**
* **Programming Languages: Java, Python, JavaScript, C#, Ruby, etc. Application Programming Interface (API)s that handle requests from the Application Layer and communicate with the Database Layer.**
* **Business Rules: The logic to calculate pricing, discounts, and shipping costs. It also validates user data like order quantities, delivery locations, and payment methods.**
* **Backend Technologies: Java (as mentioned, with Java developers like Ms. Juhi), Spring Boot for backend development etc**
* **Example in the Context of the Project**: When a farmer places an order for fertilizers, the **Business Logic Layer** checks if the product is available in the warehouse, calculates the total price, applies any discounts, and processes the payment before sending the order to the **Database Layer** for storage.
	1. **Database Layer (Data Layer)**:
* **Purpose**: The **Database Layer** is where all the application data is stored, managed, and retrieved. This layer interacts directly with the data storage system (such as a relational or non-relational database) and ensures that data is persisted for later use.
* **Role**: This layer handles the creation, reading, updating, and deletion (CRUD operations) of data. It is responsible for storing all the necessary information, including user profiles, product details, orders, and transactions. The **Database Layer** ensures that the data is structured, secured, and easily accessible when needed by the Business Logic Layer.
* **Components**:
	+ **Relational Databases**: MySQL, PostgreSQL, or Oracle databases could be used to store structured data such as product information, user profiles, and order history.
	+ **NoSQL Databases**: MongoDB or other NoSQL databases might be used to store unstructured or semi-structured data, such as product reviews, inventory data, and logs.
	+ **Data Access Layer**: A layer responsible for interacting with the database to fetch, update, or delete data.
* **Example in the Context of the Project**: When a farmer places an order, the **Business Logic Layer** sends a request to the **Database Layer** to save the order details (products, quantity, farmer’s address, payment details). If the farmer is a new user, their profile is created in the database. If the user is returning, their previous orders and details are fetched.

**Flow of Data in 3-Tier Architecture**:

1. **User Interaction**:
	* The farmer uses the **Application Layer** (web or mobile app) to browse products, view details, and place an order.
	* Example: The farmer selects a fertilizer, views the price, and adds it to the cart.
2. **Business Logic Processing**:
	* The data from the farmer’s interaction is sent to the **Business Logic Layer** where it is validated (checking product availability, calculating prices, etc.).
	* Example: The Business Logic Layer checks the stock, calculates the total price, and processes the order details.
3. **Data Persistence**:
	* Once the order is confirmed, the **Business Logic Layer** sends the data to the **Database Layer** where the order details are saved in the database.
	* Example: The farmer’s order, along with shipping details, is stored in the database for future reference.
4. **Display and Confirmation**:
	* The **Business Logic Layer** sends the result (order confirmation, failure message, etc.) back to the **Application Layer**, which displays it to the farmer.
	* Example: The farmer sees a confirmation message that their order has been placed successfully.

 **Advantages of 3-Tier Architecture for the Project**:

* **Scalability**: As the number of farmers or manufacturers grows, each layer can be scaled independently. For instance, more servers can be added to the **Application Layer** to handle higher traffic, or the **Database Layer** can be scaled to accommodate more product data.
* **Maintainability**: Changes in the database structure or business logic do not affect the user interface directly. This separation allows the team to make updates or changes without disrupting the overall user experience.
* **Security**: The database layer is isolated from direct user interaction, which helps in securing sensitive data (e.g., payment details, product inventory).
* **Flexibility**: The system is modular, meaning you can replace or upgrade each layer independently. For instance, you can change the database system without affecting the business logic or presentation layer.

In this project, the **3-Tier Architecture** will ensure that Mr. Henry’s online agricultural product store is efficient, scalable, and easy to maintain as it helps remote farmers access essential agricultural products like seeds, pesticides, and fertilizers.

1. **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).**

As a Business Analyst (BA) in this project, you need to approach the stakeholders carefully and comprehensively to gather the required information for building the online agricultural product store. Before framing any questions, it's crucial to consider several key aspects to ensure that the requirements are clear and detailed, aligning with the stakeholders' needs and expectations. Here's a breakdown of what to keep in mind:

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

The 5W 1H method ensures you gather detailed and broad information to understand the problem and the needs of stakeholders.

* **Who:**
	+ Who are the primary users of the application (farmers, manufacturers, delivery agents)?
	+ Who will manage the system (admin, support team)?
	+ Who is responsible for each feature (e.g., product details, delivery)?
	+ Who will maintain and update the application (internal or external teams)?
* **What:**
	+ What are the core functionalities (product browsing, ordering, payment)?
	+ What types of products (seeds, fertilizers, pesticides) will be listed?
	+ What features do stakeholders consider as essential (e.g., search filters, product recommendations)?
	+ What are the technical requirements (e.g., mobile app, responsive design, payment gateway)?
* **Where:**
	+ Where will the system be used (farmers’ locations, manufacturers’ locations)?
	+ Where will the data be stored (cloud, on-premise servers)?
* **When:**
	+ When will the system need to be launched (specific milestones, deadlines)?
	+ When will users need access to the application (real-time availability or business hours)?
* **Why:**
	+ Why is this project important for farmers and manufacturers?
	+ Why will this online platform make a difference for remote area farmers?
* **How:**
	+ How will the communication happen between farmers and manufacturers (chat, forms, call centre)?
	+ How will the product delivery process work (tracking, delivery dates)?
1. **SMART (Specific, Measurable, Achievable, Relevant, Time-bound):**

Ensure that the questions you ask will help clarify specific and measurable goals for the project.

* **Specific:**
	+ What specific products need to be listed on the platform?
	+ How will the farmers select the products (search filters, categories)?
* **Measurable:**
	+ What metrics or KPIs (Key Performance Indicators) will determine success (e.g., number of users, product sales)?
	+ How will user satisfaction be measured?
* **Achievable:**
	+ Are there technical limitations (e.g., internet connectivity issues in remote areas)?
	+ Can the system handle the expected number of users and transactions?
* **Relevant:**
	+ How will the platform help farmers in remote areas (better access to products, better prices)?
	+ Is there a focus on creating a sustainable and scalable solution?
* **Time-bound:**
	+ What is the timeline for launching the platform and subsequent updates?
	+ Are there any specific deadlines for product delivery, onboarding, or marketing?
1. **RACI (Responsible, Accountable, Consulted, Informed):**

This framework will help clarify the roles and responsibilities of everyone involved, ensuring clear accountability.

* **Responsible:**
	+ Who is responsible for developing the product features (developers, project manager)?
	+ Who is responsible for gathering requirements and documentation (you as BA)?
* **Accountable:**
	+ Who is accountable for the overall success of the project (Mr. Henry, Mr. Pandu)?
* **Consulted:**
	+ Who should you consult when gathering requirements (Peter, Kevin, Ben, other farmers)?
* **Informed:**
	+ Who should be kept informed on progress and updates (Mr. Vandanam, Mr. Karthik, Mr. Pandu)?
1. **3-Tier Architecture:**

The system’s architecture will have three main layers: presentation (application), logic (business logic) and database layers.

* **Presentation/Application Layer (UI/UX):**
	+ How should the user interface look (simple, intuitive, mobile-friendly)?
	+ What features are important for user interaction (easy search, product descriptions, checkout process)?
* **Logic Layer (Business Logic):**
	+ How should the logic for order processing work (inventory checks, payment gateway)?
	+ What business rules must be followed (product availability, delivery conditions)?
* **Data Layer (Database):**
	+ What data needs to be stored (user profiles, product inventory, order history)?
	+ How will the data be accessed and managed (database security, query optimization)?
1. **Use Cases & Use Case Specifications:**

A **use case** is a description of how a system or application will be used to accomplish a specific goal from the perspective of an end user. It outlines the interactions between the user (referred to as an "actor") and the system to achieve a particular task or objective.

* **Use Case Examples:**
* A farmer browses products and adds items to their cart.
* A manufacturer submits new product details to the platform.
* An admin monitors and approves product listings.
* **Use Case Specifications:**
	+ Define the flow of each use case (normal and alternative flows).
	+ What are the preconditions (e.g., user must log in to place an order)?
	+ What are the postconditions (e.g., order is placed, and farmer gets a confirmation)?
1. **Activity Diagrams:**

Activity Diagrams are a type of Unified Modelling Language (UML) diagram that visually represents the flow of control or activities in a system. They show the sequence of steps in a process or workflow and how they are connected, helping to model the dynamic aspects of a system. Activity diagrams are commonly used in the analysis and design phases to understand how processes work, identify potential bottlenecks, and ensure all workflows are accounted for. They are especially useful for representing business processes, use case flows or system interactions in a simplified, visual way. They also help to model the flow of actions, such as the order process, product submission and product delivery.

**For example:**

* **Farmer Ordering Flow:**
	+ Browse products → Add to cart → Checkout → Payment → Delivery.
* **Manufacturer Product Submission:**
	+ Log in → Add product details → Submit for review → Product approval
1. **Models:**
* Create **Entity-Relationship Models (ERMs)** to visualize how data entities interact.
* Create **Class Models** to map out the structure of the application and its components.
* **State Diagrams** could be useful for visualizing the various states of an order (pending, shipped, delivered).
1. **Page Designs:**
* Develop wireframes and mock-ups for the user interface (UI), focusing on the ease of use for farmers.
* Define which pages are essential (product pages, order summary, account management, etc.) and how they will flow.
* Ensure that the design is mobile-friendly, as many farmers in remote areas might use mobile phones for access.

**Conclusion:**

As a Business Analyst, before framing any questions, ensure you have a clear understanding of these areas and adapt your questions accordingly to gather comprehensive requirements. Always consider the 5W 1H framework for clarity, SMART for goal setting, RACI for roles and responsibilities, and the 3-tier architecture for the system design. Additionally, create use cases, activity diagrams, models, and page designs to ensure that the system will be both functional and user-friendly.

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

An **Elicitation Technique** is a method or approach used by a Business Analyst (BA) to gather information and requirements from stakeholders in order to understand their needs, expectations, and preferences. The goal of these techniques is to collect comprehensive and accurate data that will guide the development of a solution, such as a product, system or process.

Elicitation is a critical part of the requirements gathering process, as it ensures that all relevant stakeholder needs are captured and understood. The techniques can vary in terms of formality, interaction and depth of information they provide. Some common elicitation techniques include interviews, workshops, brainstorming sessions, surveys, document analysis, observations and prototypes, among others.

In essence, these techniques help a Business Analyst engage with stakeholders, facilitate communication and ensure that the project meets the expectations of everyone involved.

As a Business Analyst, I am aware of several elicitation techniques that can help gather requirements and understand stakeholders' needs effectively. The acronym **BDRFOWJIPQU** stands for various methods used in the requirements gathering process. Below are the elicitation techniques that correspond to this acronym:

1. **B** - **Brainstorming**: This technique involves bringing stakeholders together to generate ideas and solutions to a problem. It's typically done in a collaborative and open manner where ideas are freely discussed without judgment.
2. **D** - **Document Analysis**: This involves reviewing existing documentation to understand current processes, systems or business requirements. This helps the business analyst gather information from already available sources, such as reports, user manuals or previous project documents.
3. **R** - **Requirements Workshops**: A structured group session where stakeholders are invited to discuss and define their needs and expectations for a project. Workshops encourage active participation and collaboration, which can help refine and finalize requirements.
4. **F** - **Focus Groups**: This technique involves selecting a group of people who represent the target audience and gathering feedback from them. Focus groups are typically used to understand users' opinions, behaviours and perceptions.
5. **O** - **Observation**: Also known as "Job Shadowing," this technique involves observing how users interact with current systems or processes. This helps identify inefficiencies or opportunities for improvement.
6. **W** - **Workshops**: Similar to requirements workshops but can be more interactive, involving hands-on activities to design or build aspects of the solution, like user interfaces or workflows.
7. **J** - **Joint Application Development (JAD)**: A highly structured and collaborative meeting technique used to gather requirements, design systems or improve processes. It involves stakeholders, business users and IT team members working together intensively for a short period.
8. **I** - **Interviews**: Conducting one-on-one or group interviews with stakeholders to gather detailed information. This is one of the most common techniques for eliciting requirements and understanding the needs of various stakeholders.
9. **P** - **Prototyping**: Creating a mock-up or prototype of the system or product for stakeholders to interact with. This can help clarify requirements by giving stakeholders something tangible to review and provide feedback on.
10. **Q** - **Questionnaires/Surveys**: These tools help gather information from a large number of stakeholders in a standardized format. This technique is particularly useful when working with dispersed or large groups of users.
11. **U** - **Use Cases/Scenarios**: This technique involves defining how users will interact with the system or product by describing specific scenarios and workflows. It helps clarify the functional requirements of the system from the user's perspective.

By using these elicitation techniques, a Business Analyst can gather accurate and comprehensive requirements that align with the needs and expectations of all stakeholders involved in the project.

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

**Prototyping**

**Use case Specs**

**Document Analysis**

**Brainstorming**

For the **online agriculture product store** project, several elicitation techniques can be used to gather requirements from stakeholders, including **Prototyping**, **Use Case Specs**, **Document Analysis**, and **Brainstorming**. Below is a justification for selecting each of these techniques:

* + **Prototyping**
* **Justification**:
	+ Prototyping is highly beneficial for a project like this, where there are different types of users, including farmers and manufacturers, who will interact with the application in various ways.
	+ By developing a working prototype of the application, stakeholders (such as Peter, Kevin, Ben and other farmers) can provide feedback on the interface, user experience and functionality.
	+ It helps stakeholders visualize the system early in the development process, ensuring that the solution aligns with their needs and expectations.
	+ The iterative nature of prototyping allows for continuous improvements based on user feedback, which is crucial for refining the application's features and usability.
	+ **Use Case Specs**
* **Justification**:
	+ **Use Case Specifications** are essential for defining the interaction between users (farmers, manufacturers) and the system. This technique will provide clear and detailed descriptions of the different ways users will interact with the online store.
	+ Use cases will capture the business processes, such as how a farmer selects a product (fertilizer, seeds, pesticides), how they browse through products and how they make a purchase request.
	+ This approach ensures that all functional requirements are clearly understood and documented, minimizing the risk of misunderstandings and helping developers create a system that meets business needs.
	+ Use cases also help identify possible user roles and permissions, such as the farmer’s ability to view products and request orders and the manufacturer’s ability to update product listings.
	+ **Document Analysis**
* **Justification**:
	+ Document analysis is an effective technique for understanding existing processes or requirements. Since there may be some existing records related to the current methods farmers use to procure agricultural products (e.g., order forms, contracts with suppliers or previous business processes), analysing these documents will provide valuable insights.
	+ This technique can help identify gaps in the current system, the problems faced by stakeholders (e.g., Peter, Kevin, and Ben), and areas where digital solutions can be introduced. For instance, analysing existing contracts between farmers and manufacturers can reveal terms that need to be addressed in the new online store.
	+ Document analysis also helps gather business rules, regulations and other important information that may be important for ensuring the application complies with relevant laws and standards.
		- **Brainstorming**
* **Justification**:
	+ **Brainstorming** sessions can be highly productive for gathering initial ideas and exploring potential solutions with stakeholders. In a project like this, where the goal is to create a user-friendly online store for farmers in remote areas, brainstorming can help identify unique requirements and creative solutions.
	+ Stakeholders (such as Peter, Kevin, Ben and others) can discuss challenges, share their pain points (e.g., difficulty accessing fertilizers or seeds) and propose features they would like to see in the application.
	+ Brainstorming also fosters collaboration among diverse groups, such as the farming community, manufacturers and the development team. It allows for a wide range of perspectives to be considered, ensuring that the application meets the varied needs of all users.
	+ Furthermore, brainstorming can be useful in addressing concerns about the user interface, mobile accessibility, and the ways in which the application can make purchasing agricultural products easier.

**Conclusion:**

* **Prototyping** will provide stakeholders with a tangible version of the application to test, validate and give feedback on.
* **Use Case Specs** will clearly define how different users (farmers, manufacturers and admins) will interact with the system, ensuring that functional requirements are well-documented.
* **Document Analysis** will help understand the existing processes and any related documentation that can inform the design and features of the online store.
* **Brainstorming** will be essential for gathering ideas and fostering collaboration, helping the team address the specific needs and problems of farmers and manufacturers.

By using these elicitation techniques, the project team can gather comprehensive, accurate and actionable requirements to build an effective online agriculture product store.

**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 catalogue 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 catalogue 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**

Based on the information gathered during the meetings with Mr. Henry, Peter, Kevin, and Ben, here are the **Business Requirements (BR)** that address both the functional needs of the system and the expectations of the stakeholders:

* **Business Requirements (BR)**
* **BR001 – Product Search and Browse**

**Description**: Farmers should be able to search for available products (fertilizers, seeds, pesticides) within the application and they should also be able to browse through the entire product catalogue.

**Stakeholder Requirement**: Kevin emphasized that farmers need the ability to search for products. This aligns with the user experience of making it easy for farmers to find specific products quickly.

* **BR002 – Manufacturer Product Upload and Display**

**Description**: Manufacturers should be able to upload their product details, including descriptions, images, prices and availability and the system should display these products to farmers.

**Stakeholder Requirement**: This was directly mentioned by Mr. Henry, who stated the need for manufacturers to upload product information so that it can be displayed to the farmers. This helps ensure that farmers have access to the latest products available in the market.

* **BR003 – User Login and Registration**

**Description**: Farmers must log in to their accounts to add products to their cart or buy-later list. If the farmer is a new user, they must be able to create an account using their email address and a secure password.

**Stakeholder Requirement**: Peter emphasized the necessity for farmers to log in before making any purchase or adding products to their list. This helps in managing orders and providing a personalized experience.

* **BR004 – Easy Payment Gateway**

**Description**: The application should offer a simple, secure and user-friendly payment gateway, allowing farmers to choose from various payment methods like cash-on-delivery (COD), credit/debit cards and UPI for transactions.

**Stakeholder Requirement**: Ben expressed the need for an easy-to-use payment system to enhance the user experience, ensuring farmers can choose the payment method most convenient for them.

* **BR005 – Order Confirmation and Email Notification**

**Description**: Once a farmer places an order, they should receive an email confirmation about the order status, including the items ordered and the expected delivery date.

**Stakeholder Requirement**: Kevin mentioned that farmers should receive email confirmations to ensure they are aware of their order's status and can track it effectively.

* **BR006 – Delivery Tracking**

**Description**: The system should include a delivery tracker, allowing farmers to track the whereabouts of their orders in real-time.

**Stakeholder Requirement**: Kevin highlighted the importance of having a delivery tracking system so that farmers can know the status of their orders at any time.

* **Summary of Stakeholder Requirements**
* **Kevin**:

Farmers should be able to search for and browse products in the catalogue.

Farmers should receive email confirmation regarding their order status.

Farmers should be able to track their orders with a delivery tracker.

* **Peter**:

Farmers should be required to log in before adding products to their cart or buy-later list.

Farmers should have the option to create an account if they are new users.

* **Ben**:

The payment gateway should include COD, credit/debit card, and UPI payment options.

These **Business Requirements** and **Stakeholder Requirements** clearly outline the essential features and functionalities for the online agriculture product store that will serve both farmers and manufacturers. These requirements ensure that the application will meet user needs, support business operations, and enhance user experience.

1. **Make suitable Assumptions and identify at least 10 Business Requirements.**

Here are 10 potential business requirements for the online agriculture product store that Mr. Henry wants to build, along with a few assumptions:

**Assumptions:**

* The application will be accessible on both web and mobile platforms.
* The application will have an easy-to-use interface, as users may not be very familiar with technology.
* The platform will support multiple languages to cater to a wider audience, especially in remote areas.
* Payments can be done via multiple methods, including online and offline (COD).
* Delivery services will be included for product shipping and it will support tracking of orders.
* The manufacturers (companies) will be verified before they can list their products.
* The platform will also include a support/help feature for users who face technical issues.
* Inventory management will be in place to track product availability.
* The system will have security features for protecting sensitive data (user details, financial transactions etc.).

**Business Requirements:**

1. **User Registration and Authentication:**
	* The system must allow farmers and manufacturers to register and log in securely using email, mobile number or social media accounts.
	* The system should support role-based authentication (farmer, manufacturer, admin).
2. **Product Listing by Manufacturers:**
	* Manufacturers must be able to list their products (seeds, fertilizers, pesticides) on the platform by providing essential details such as product name, description, pricing, quantity and delivery details.
	* The system must allow manufacturers to upload product images to enhance visibility.
3. **Product Search and Browsing for Farmers:**
	* Farmers must be able to search for products based on categories (seeds, fertilizers, pesticides), price range and type of crop.
	* Filters should be available to narrow down product selection by manufacturer, product features, price range or ratings.
4. **Product Details and Comparison:**
	* Farmers must be able to view detailed information about the products, including description, usage instructions, ingredients and reviews from other farmers.
	* Farmers should be able to compare similar products in terms of features and pricing.
5. **Shopping Cart and Order Placement:**
	* Farmers should be able to add products to the shopping cart and proceed to checkout.
	* The application should allow farmers to review the products in their cart, adjust quantities and apply any discount coupons before finalizing the order.
6. **Order Management and Delivery:**
	* Farmers must receive an order confirmation notification, including an estimated delivery date.
	* The system must allow for tracking of order status (e.g., processing, shipped, out for delivery) and provide updates to farmers.
	* Delivery charges should be calculated and displayed at the time of checkout.
7. **Payment Integration:**
	* The system should integrate with various payment gateways to allow farmers to make payments through credit/debit cards, UPI and cash on delivery (COD).
	* The system must support secure payment processing to protect user data.
8. **Feedback and Rating System:**
	* Farmers should be able to rate and review products based on their experience.
	* The system should display average ratings for each product, allowing new customers to make informed decisions.
9. **Manufacturer and Product Verification:**
	* The platform must verify the authenticity of manufacturers before they can list their products. This could involve checking licenses, certifications and other legal documents.
	* Manufacturers should be able to update product information, but changes should be reviewed and approved by an admin before being displayed.
10. **Customer Support and Help Desk:**
	* The application must provide a customer support feature for farmers to report issues or get assistance with order tracking, product queries or payments.
	* The system should allow for both live chat and email support, ensuring that users can contact the support team easily.

These requirements will provide the foundation for developing a user-friendly and efficient online agriculture product store.

1. **List your assumptions.**

Here are the assumptions for the project based on the context provided:

* **Multi-Platform Access:**
	+ The application will be available on both web and mobile platforms to cater to a larger audience, especially in remote areas where mobile phones are more likely used since farmers may not have access to desktop computers or laptops.
* **User-Friendly Interface:**
	+ The application will be designed to be simple and intuitive, as many farmers might not be tech-savvy and would require a straightforward user experience.
* **Multi-Language Support:**
	+ The application will offer support for multiple languages to ensure accessibility for farmers from different regions of the country.
* **Payment Methods:**
	+ The application will support both online and offline payment methods, including credit/debit cards, UPI and cash on delivery (COD), to accommodate farmers with varying access to digital payment systems.
* **Product Delivery:**
	+ The platform will include delivery services to send the purchased products directly to the farmer's location, with order tracking available for farmers.
* **Manufacturer Verification:**
	+ Manufacturers (fertilizer, seed and pesticide companies) must go through a verification process before they are allowed to list their products on the platform to ensure legitimacy and quality of products.
* **Inventory Management:**
	+ The platform will include an inventory management system that will track the availability of products in real-time, ensuring that farmers can only order products that are in stock.
* **Customer Support:**
	+ A helpdesk feature will be available to assist farmers with any technical issues or inquiries they may have regarding the application or their orders.
* **Security Features:**
	+ The application will have reliable security measures in place to protect sensitive information, such as personal details, payment information and order history.
* **Order Tracking:**
	+ Farmers will be able to track the status of their orders from placement to delivery, ensuring they are informed at each stage of the process.
* **Discounts and Offers:**
	+ The platform may offer discounts, promotions or loyalty programs to attract more farmers and encourage repeated purchases.
* **Mobile-Friendly:**
	+ The mobile version of the application will be optimized for low-end smartphones, considering that farmers in remote areas may not always have access to high-end devices.
* **Internet Connectivity:**
	+ The platform will assume that users have access to the internet, though it will be optimized for lower bandwidth areas where internet speeds may be slower.
* **Product Catalogue Management:**
	+ Manufacturers will be responsible for updating product details, but changes will be subject to approval by administrators to ensure product accuracy and consistency.
* **Legal Compliance:**
	+ The platform will comply with local agricultural regulations, including certifications and licenses required for selling agricultural products.
* **Product Quality and Certifications:**
* **Product Quality** ensures the product performs well and is safe for use, while **Certifications** provide legal assurance that the product meets recognized standards like Key Certifications Relevant to Agricultural Products such ISO, Organic Certifications, Pest Control Certifications, Global Good Agricultural Practice Certifications (Global GAP), FSSAI, Seed Certifications from Indian Council of Agricultural Research (ICAR) etc.

These assumptions help define the scope and limitations of the project, ensuring that the final product meets the needs of the farmers and manufacturers while adhering to practical considerations.

Top of Form

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1. **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 Searchfor Products | Farmers should be able to search for available products in fertilizers, seeds, pesticides | 8 |
| BR002 | Manufacturersupload their Products | Manufacturers should be able to upload and display their products in the application | 8 |
| BR003 | User Login and Registration | Farmers must log in to their accounts to add products to their cart or buy-later list. If the farmer is a new user, they must be able to create an account using their email address and a secure password. | 10 |
| BR004 | Easy Payment Gateway | The application should offer a simple, secure and user-friendly payment gateway, allowing farmers to choose from various payment methods like cash-on-delivery (COD), credit/debit cards and UPI for transactions. | 10 |
| BR005 | Order Confirmation and Email Notification | Once a farmer places an order, they should receive an email confirmation about the order status, including the items ordered and the expected delivery date. | 9 |
| BR006 | Delivery Tracking | The system should include a delivery tracker, allowing farmers to track the whereabouts of their orders in real-time. | 9 |

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

As the Business Analyst (BA) for this project, your role will be pivotal in ensuring that the requirements of the clients (Mr. Henry, Peter, Kevin and Ben) are accurately understood and communicated to the project team at APT IT SOLUTIONS. Here are some of the steps and deliverables you will need to focus on as a part of the project:

**1. Requirements Gathering**

You need to conduct multiple sessions with the stakeholders (Mr. Henry, Peter, Kevin and Ben) to gather detailed information about their needs and expectations for the online agricultural product store.

**Key Requirements to Gather:**

* **Farmers' Requirements:**
	+ Browsing products (fertilizers, seeds, pesticides) by category.
	+ Requesting and buying products (with a user-friendly interface).
	+ Ordering products and receiving deliveries at their location.
	+ Ability to view product details (name, price, quantity, supplier, description).
* **Manufacturers' Requirements:**
	+ Product listing (fertilizers, seeds, pesticides) with details such as description, quantity, price and delivery information.
	+ Management of inventory.
	+ The ability to update products, prices and availability.
* **Admin and Management Requirements:**
	+ A dashboard to manage the products, orders and users.
	+ Sales reports and analytics.
	+ User management (Farmers, Manufacturers, Admins).

**2. Creating Use Cases and Use Case Diagrams**

Use case diagrams help identify the interactions between the users and the system. You will create use cases that describe how users (Farmers, Manufacturers, Admins) will interact with the system.

**Examples of Use Cases:**

* **Farmer Use Cases:**
	+ Browse products.
	+ Search for products by name, category or supplier.
	+ Place an order.
	+ Track order delivery.
	+ Review purchased products.
* **Manufacturer Use Cases:**
	+ List new products.
	+ Update product details.
	+ Manage inventory.
	+ View orders.
* **Admin Use Cases:**
	+ Manage users (Farmers, Manufacturers).
	+ View product sales and inventory reports.
	+ Approve or reject product listings.

**Use Case Diagram**: This will be used to represent how users interact with the system. Example actors: **Farmer**, **Manufacturer**, **Admin**.

**3. System Requirements Specification (SRS) Document**

You will create a detailed **SRS Document**, which includes:

* **Functional Requirements:** Detailed description of what the system should do (e.g., product search, order tracking, inventory management).
* **Non-Functional Requirements:** Performance, security, scalability and usability aspects of the system.
* **System Architecture:** How different components (frontend, backend, database) will interact.

**4. UML Diagrams**

You will create UML (Unified Modelling Language) diagrams to visually represent the system structure and flow. Here are the key diagrams:

* **Use Case Diagram:** To represent the actors and their interactions with the system.
* **Class Diagram:** To show the system's classes, attributes, methods and relationships between them. This is essential for the developers to understand the structure of the system.
* **Sequence Diagram:** To represent the flow of messages between objects, such as the process of a farmer browsing products, adding them to the cart and placing an order.
* **Activity Diagram:** To show the workflow of activities in a particular process, such as the farmer placing an order and receiving delivery updates.
* **State Diagram:** To show the various states of an object, like a product (Available, Out of Stock etc.).

**5. Wireframes / Screen Mock-ups**

You will need to create **screen mock-ups** or wireframes of the application to provide a visual idea of the user interface (UI). These mock-ups help the team visualize the layout and functionality of each page in the application.

**Some Key Screens to Mock-up:**

* **Home Screen:** Categories of products (fertilizers, seeds, pesticides), search bar.
* **Product Details Page:** Detailed information about the product.
* **Cart Page:** Where farmers review their selected products before purchase.
* **Order Confirmation Page:** Summary of the order and delivery details.
* **Admin Dashboard:** To manage users, orders and products.

**Tools to Use for Mock-ups:**

* **Wireframe Tools:** Figma, Balsamiq or Sketch for creating these mock-ups.
* **UML Tools:** Lucidchart, Visual Paradigm, MS Visio or draw.io for creating UML diagrams.

**6. Communication Between Stakeholders and Project Team**

As the BA, you need to ensure clear communication between all parties involved:

* **For the Client (Mr. Henry, Peter, Kevin and Ben):** Regular updates and clarification sessions about the progress of the project and feedback on the mock-ups and diagrams.
* **For the Development Team (APT IT SOLUTIONS):** Ensuring that all functional requirements are clear and any ambiguities are addressed immediately. You will be the key person translating technical jargon into understandable terms for the client and vice versa.

**7. Test Cases**

Working with **Testers** like Mr. Jason and Ms. Alekya, you'll also help define high-level test cases to ensure the system works as intended. These might include:

* Test cases for user registration and login.
* Test cases for adding products to the cart and placing an order.
* Test cases for verifying the correct delivery information.

**Conclusion:**

Your role as a Business Analyst is crucial in ensuring that all stakeholders are aligned and the project team has a clear understanding of the client’s requirements. By using UML diagrams, wireframes and clear documentation, you will bridge the gap between technical and non-technical teams, ensuring that the online agricultural product store meets the needs of the farmers and manufacturers while delivering value to Mr. Henry’s vision of helping others.

1. **Draw use case diagram.**

To create a use case diagram for the online agricultural product store based on the scenario provided, we can break down the system into several key actors and use cases. Here's a summary of the actors and use cases:

**Actors:**

1. **Farmer**: End users who will purchase fertilizers, seeds and pesticides.
2. **Manufacturer**: Fertilizer, seed and pesticide companies who will list their products for sale.
3. **Administrator**: The person who manages the application, ensuring smooth functioning and managing the system.
4. **Delivery Person**: A person responsible for delivering the products to the farmer's location.
5. **System**: The online application itself which facilitates all the transactions.

**Use Cases:**

1. **Farmer**:
	* Register/Log in to the application.
	* Browse available products (fertilizers, seeds, pesticides).
	* Search for specific products.
	* View detailed product information (product description, price etc.).
	* Select products and add them to the cart.
	* Place order for products.
	* Request delivery to their location.
	* View order history.
	* Track the order status.
2. **Manufacturer**:
	* Register/Log in to the application.
	* Add new products (fertilizers, seeds, pesticides).
	* Edit product details.
	* Remove products.
	* View sales and customer information.
3. **Administrator**:
	* Log in to the admin panel.
	* Approve or reject manufacturer/farmer registration.
	* Manage user accounts (both farmers and manufacturers).
	* Monitor the performance of the system.
	* Generate reports.
4. **Delivery Person**:
	* Log in to the delivery system.
	* Accept delivery requests.
	* Update the delivery status.

**System Use Cases:**

* **System**:
	+ Authenticate users (farmers, manufacturers, administrators).
	+ Process orders and transactions.
	+ Send notifications to users regarding order status.
	+ Manage user data securely.





**Here, we mainly concentrate on the Use Case diagrams of the interactions between Primary Actors (Farmer, Manufacturer) and System Admin.**

* **Farmers** can register, browse and select products, view order history, and request delivery.
* **Manufacturers** can add, edit, or remove their products, and view sales data.
* **Administrators** manage the system, user accounts, and ensure smooth operations.
* **Delivery People** are responsible for accepting orders and updating the delivery status.
* The **System** manages all backend processes, such as user authentication, order processing, and sending notifications.

This use case diagram gives a high-level view of the application and its main interactions.

1. **Prepare use case specs for all use cases.**

**Use Case Specifications for the Online Agricultural Product Store**

* 1. **Use Case: Register Manufacturer**

**Use Case ID**: UC-01
**Actor(s)**: Manufacturer (Fertilizer, Seed, Pesticide Companies)
**Description**: A manufacturer registers their company on the platform to upload and sell products to farmers.

**Preconditions**:

* The manufacturer has access to the internet and the application.
* The manufacturer is a valid business entity with the relevant products to sell.

**Flow of Events**:

1. The manufacturer navigates to the registration page.
2. The manufacturer enters their company details (name, address, contact information, etc.).
3. The system verifies the provided information.
4. The manufacturer provides product details (type of product, quantity, price, etc.).
5. The manufacturer submits the registration form.
6. The system sends a confirmation email to the manufacturer.
7. The manufacturer receives confirmation and can now upload products.

**Postconditions**:

* The manufacturer is successfully registered on the platform.
* The manufacturer can now upload and manage product listings.

**Exceptions**:

* If the manufacturer provides invalid or incomplete information, the system prompts for corrections.
* If the manufacturer’s email is already registered, the system displays an error.
	1. **Use Case: Upload Product**

**Use Case ID**: UC-02
**Actor(s)**: Manufacturer
**Description**: The manufacturer uploads details of their products to sell on the platform.

**Preconditions**:

* The manufacturer is successfully registered on the platform.

**Flow of Events**:

1. The manufacturer logs into their account.
2. The manufacturer clicks on “Upload Product” in the dashboard.
3. The manufacturer fills in the product details (type of product, description, quantity, price, etc.).
4. The manufacturer uploads images and additional documentation if necessary.
5. The manufacturer submits the product for approval.
6. The system validates the data and checks for any errors or missing information.
7. The product is successfully listed on the platform or rejected for revision.

**Postconditions**:

* The product is listed in the online store or marked for revision.

**Exceptions**:

* If product details are missing, the system prompts the user to fill in required fields.
* If images or documents are not uploaded correctly, the system requests re-upload.
	1. **Use Case: Browse Products**

**Use Case ID**: UC-03
**Actor(s)**: Farmer
**Description**: The farmer browses through the products (fertilizers, seeds, pesticides) offered by manufacturers.

**Preconditions**:

* The farmer is logged into the system.

**Flow of Events**:

1. The farmer logs into the platform.
2. The farmer navigates to the "Browse Products" section.
3. The farmer filters products by type (fertilizers, seeds, pesticides) and location.
4. The farmer views a list of available products.
5. The farmer clicks on a product to see more detailed information.
6. The farmer adds products to the shopping cart.

**Postconditions**:

* The farmer can view products and details, and can add items to the cart for purchase.

**Exceptions**:

* If no products match the search criteria, the system displays a message indicating no results found.
* If there are no products available, the system informs the farmer.
	1. **Use Case: Request Product Purchase**

**Use Case ID**: UC-04
**Actor(s)**: Farmer
**Description**: A farmer selects products from the catalogue and requests a purchase.

**Preconditions**:

* The farmer has browsed and added products to their shopping cart.

**Flow of Events**:

1. The farmer clicks on “Checkout” after reviewing the products in their cart.
2. The farmer enters shipping details (address, contact number etc.).
3. The farmer selects the payment method (cash on delivery, online payment, card etc).
4. The farmer confirms the purchase order.
5. The system generates an order confirmation and notifies the manufacturer.

**Postconditions**:

* The farmer’s order is recorded in the system and is sent to the respective manufacturer for fulfilment.

**Exceptions**:

* If the payment fails, the system prompts the farmer to select a different payment method.
* If shipping details are incomplete, the system prompts the farmer to provide missing information.
	1. **Use Case: Manage Orders (Manufacturer)**

**Use Case ID**: UC-05
**Actor(s)**: Manufacturer
**Description**: The manufacturer views, processes and manages orders made by farmers.

**Preconditions**:

* The manufacturer is registered and logged in to the platform.

**Flow of Events**:

1. The manufacturer logs into their account.
2. The manufacturer navigates to the “Orders” section.
3. The manufacturer views new, pending and completed orders.
4. The manufacturer selects an order to process.
5. The manufacturer confirms availability and prepares the product for delivery.
6. The manufacturer updates the order status (shipped, in progress, delivered).

**Postconditions**:

* The manufacturer updates the order status and notifies the farmer about the shipping progress.

**Exceptions**:

* If the product is out of stock, the manufacturer must notify the farmer and possibly suggest an alternative.
* If there is an issue with the delivery, the manufacturer can initiate a resolution.
	1. **Use Case: Track Order Status**

**Use Case ID**: UC-06
**Actor(s)**: Farmer
**Description**: The farmer tracks the status of their order after making a purchase.

**Preconditions**:

* The farmer has placed an order and the order is being processed by the manufacturer.

**Flow of Events**:

1. The farmer logs into their account.
2. The farmer navigates to the “My Orders” section.
3. The farmer views the order list with statuses (pending, shipped, delivered).
4. The farmer selects an order to view detailed tracking information (if available).
5. The farmer receives updates (e.g., shipping notifications, delivery date).

**Postconditions**:

* The farmer stays updated on their order status and delivery timeline.

**Exceptions**:

* If the order status is not updated, the system displays a message stating that tracking information is unavailable.
	1. **Use Case: Customer Support (Farmer/Manufacturer)**

**Use Case ID**: UC-07
**Actor(s)**: Farmer, Manufacturer
**Description**: The farmer or manufacturer contacts customer support to resolve issues related to products, orders or payment.

**Preconditions**:

* The user (farmer or manufacturer) has an account on the platform.

**Flow of Events**:

1. The user logs into their account.
2. The user navigates to the “Help” or “Customer Support” section.
3. The user submits a query or issue (e.g., product defect, payment problem).
4. The system confirms the query submission and provides a reference number.
5. The customer support team responds via email or phone to resolve the issue.
6. The issue is marked as resolved and the user receives a notification.

**Postconditions**:

* The issue is resolved or escalated as necessary and the user is notified of the resolution.

**Exceptions**:

* If the issue cannot be resolved immediately, the system notifies the user of the delay and the expected resolution time.
1. **Activity diagrams.**











