**CAPSTONE PROJECT 1 PART 2**

**Question 1 – BPM - 5 Marks**

1. **Quarterly Audits are planned Q1 , Q2, Q3, Q4, Q5 for this Project What is your knowledge on how these Audits will happen for a BA ?**

| **Stage** | **Quarter 1 Audit Report (Requirement Gathering Phase)** |
| --- | --- |
| **Completed** | 10 weeks (Week 1 to Week 10) |
| **Check List** | - BRD Template |
|  | - Elicitation Results Report |
|  | - Duplicate Requirements Report |
|  | - Grouping of Functionalities/Features with Client Sign-off |
|  | - Email Communication: To, CC, BCC |

| **Stage** | **Quarter 2 Audit Report (Requirement Analysis Phase)** |
| --- | --- |
| **Completed** | 7 weeks (Week 16 to Week 23) |
| **Check List** | - UML Diagrams |
|  | - Business-to-Functional Requirements Mapping |
|  | - Client Sign-off Documents |
|  | - RTM Document Version Control |
|  | - Email Communication: To, CC, BCC |

| **Stage** | **Quarter 3 Audit Report (Design Phase)** |
| --- | --- |
| **Completed** | 7 weeks (Week 30 to Week 37) |
| **Check List** | - Utilization of Tools |
|  | - Documented Evidence of Client Communication |
|  | - Stakeholder MOM |
|  | - Email Communication: To, CC, BCC |

| **Stage** | **Quarter 4 Audit Report (Development)** |
| --- | --- |
| **Completed** | 20 weeks (Week 40 to Week 60) |
| **Check List** | - JAD Session Report |
|  | - End-User Manual Preparation Document |
|  | - BA and Developer MOM |
|  | - Email Communication: To, CC, BCC |

| **Stage** | **Quarter 5 Audit Report (Testing)** |
| --- | --- |
| **Completed** | 20 weeks (Week 58 to Week 78) |
| **Check List** | - Test Case Summary |
|  | - Training Report to End Users |
|  | - Lessons Learnt Document |
|  | - Email Communication: To, CC, BCC |

 **Question 2 – BA Approach Strategy - 6 Marks**

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 )**
* **Elicitation Techniques for Gathering Requirements**

We have various elicitation techniques to gather and document requirements effectively. Below are the techniques with their definitions: **Brainstorming, Document Analysis**, **Reverse Engineering, Focus Groups, Observation, Workshops, Joint Application Development (JAD), Interview, Prototyping, Questionnaires/Surveys**

* **Brainstorming**: A collaborative session to generate ideas and solutions quickly, involving stakeholders and team members.
* **Document Analysis**: Reviewing existing documents, such as policies, user manuals, or past project reports, to gather information.
* **Reverse Engineering**: Analysing an existing system or product to derive requirements for a similar or enhanced solution.
* **Focus Groups**: Engaging a small group of stakeholders to collect diverse feedback on requirements, preferences, or pain points.
* **Observation:** Watching users perform tasks in their environment to understand workflows and challenges.
* **Workshops:** Interactive sessions involving multiple stakeholders to gather and finalize requirements.
* **Joint Application Development (JAD):** Structured workshops bringing stakeholders and technical teams together to define and refine requirements collaboratively.

* **Interview**: One-on-one or group discussions with stakeholders to gather detailed information.
* **Prototyping:** Developing a mock-up or simulation of the system to validate and refine requirements.
* **Questionnaires/Surveys**: Structured forms distributed to gather input from a large audience.
* **How to do Stakeholder Analysis RACI:**- Identify Stakeholders, Define Roles and Responsibilities, Create the RACI Matrix, Assign RACI Roles
* **What Document to write:**

Business Requirements Document (BRD), Functional Requirements Document (FRD), Use Case Documentation, Test Case Document, Requirements Traceability Matrix (RTM), Prototyping and Wireframes, Gap Analysis Document, Change Management Document, User Manual and Training Material

* **What process to follow to Sign off on the Documents:**Sign off to be taken on SRS as this is the primary and the important document. Sign off can be taken by using E-mail confirmation from the client
* **How to take Approvals from the Client**

Establish a formal meeting with the client to keep them informed and continuous feedback

* **What communication channels to establish and implement:**

Regular meeting- weekly status meeting, bi weekly sprint reviews, and monthly stakeholder updated

* **How to handle the change request**- change request form, do impact analysis, approval process , documentation
* **How to update the progress of the project to the stakeholder:** Weekly status report, Monthly Review meeting
* **How to take sign off on the UAT** – CLIENT PROJECT ACCEPTANCE FORM :

UAT Preparation, conduct UAT, Fix issues, Acceptance form, final review meeting, obtain sign off

**Question 3 – 3-Tier Architecture - 5 Mark**

1. **Explain and illustrate 3-tier architecture?**A software architectural model known as a "3-tier architecture" divides an application into three different levels, each of which is in responsibility for handling a different part of that application. Through application structuring, this divide enhances performance, scalability, and Maintainability.

This architecture's three tiers are:
**Layer of Presentation (UI):**
The goal of this layer is to communicate with the user. It handles user input, displays data, and gives the user access to system information.

EX: Web pages, desktop and mobile applications, and any other user interface are examples of components.
Technologies: **any front-end technology, including HTML, CSS, JavaScript, Angular, and React.**

**Application Layer or Business Logic Layer (BLL):**

This layer contains the core logic and processing of the application. It serves as middle layer between the data and presentation levels. In order to retrieve or save data, it interacts with the data layer, applies business rules, and processes requests from the presentation layer.

EX: Application servers, business services, or back-end APIs that carry out computations, validations, and other tasks
Technologies: **Node.js, Python, C#, Java, and so forth.**

**Database Layer, or Data Layer:**

This layer is in charge of data management and durability. It has repositories, databases, and data storage systems. Information is stored, retrieved, and updated by the data layer in response to requests from the business logic layer.

Components include file storage, databases (SQL, NoSQL), and other data repositories.

Technologies: **Oracle, SQL Server, PostgreSQL, MongoDB, MySQL, and others.**

**In our Online Agriculture Product Store:**

**Presentation Layer**: The user accesses the website or mobile app to browse products, view prices, and make purchases.

**Business Logic Layer**: The application processes user requests (like placing an order, calculating total price, etc.), validates input, and communicates with the database to check product availability.

**Data Layer**: The system retrieves product information, stores order details, and updates inventory in the database.

**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)**Approach Strategy for Framing Question

**1. 5WI1 Framework**

**Who**: Who is involved or impacted? Who will be responsible for this task or decision?

**What**: What is the problem, solution, or task? What do we need to achieve, and what resources are required?

**When**: When does this need to happen? What is the timeline for each part of the task or project?

**Where**: Where will this happen? Are there specific locations or platforms involved?

**Why**: Why is this important? Why is it necessary to address this situation or complete this task?

**How**: How will we achieve this goal? What is the method or process to get there?

By using this framework, you can ensure you cover all angles of a situation, identifying all critical elements that affect a decision or task.

**2. SMART Technique**

The SMART Technique can help you create clear, focused, and actionable questions. The SMART criteria ensure that questions are well-structured:

**S (Specific):** The question should be clear and focused. Ask for precise details to avoid ambiguity.

Example: What specific features do you want in the online store for farmers?

**M (Measurable):** The question should involve metrics or ways to measure success.

Example: How will we measure the success of the product delivery system?

**A (Achievable):** The question should focus on what is realistic and attainable within the given constraints.

Example: What resources do we need to implement the online store within the next 6 months?

**R (Relevant):** Ensure the question aligns with the goals or objectives of the project or situation.

Example: How does this feature align with our goal to improve the experience for remote farmers?

**T (Time-Bound):** The question should have a clear timeline or deadline.

Example: By when do we need to finalize the product list for the online store?

3. **RACI Matrix**

RACI chars help define and clarify roles and responsibilities within a team by outlining who is responsible, accountable, consulted, and informed for each task,

**4. UML (Unified Modelling Language)**

UML, or Unified Modelling Language, is a standardized way of diagramming and modelling software systems to aid in design, development, and communication between team members.

* **Question 5** – Elicitation Techniques - 6 Marks
As a Business Analyst, What Elicitation Techniques you are aware of? ( BDRFOWJIPQU)
**Elicitation Techniques for Gathering Requirements**

 We have various elicitation techniques to gather and document requirements effectively. Below are the techniques with their definitions: **Brainstorming, Document Analysis**, **Reverse Engineering, Focus Groups, Observation, Workshops, Joint Application Development (JAD), Interview, Prototyping, Questionnaires/Surveys**

* **Brainstorming**: A collaborative session to generate ideas and solutions quickly, involving stakeholders and team members.

Recommendation: Useful for discussing innovative features or enhancements for the platform.

* **Document Analysis**: Reviewing existing documents, such as policies, user manuals, or past project reports, to gather information.

Recommendation: Effective for understanding existing agricultural business processes.

* **Reverse Engineering**: Analysing an existing system or product to derive requirements for a similar or enhanced solution.

Recommendation: Ideal if there’s an existing agriculture product platform to study.

* **Focus Groups**: Engaging a small group of stakeholders to collect diverse feedback on requirements, preferences, or pain points.

Recommendation: Best for understanding farmers’ and suppliers’ needs.

* **Observation:** Watching users perform tasks in their environment to understand workflows and challenges.

Recommendation: Perfect for understanding farmers' product handling and sales processes.

* **Workshops:** Interactive sessions involving multiple stakeholders to gather and finalize requirements.

Recommendation: Great for consolidating requirements with multiple stakeholders at once.

* **Joint Application Development (JAD):** Structured workshops bringing stakeholders and technical teams together to define and refine requirements collaboratively.

Recommendation: Useful for aligning technical teams and SMEs for this project.

* **Interview**: One-on-one or group discussions with stakeholders to gather detailed information.

Recommendation: Suitable for understanding individual stakeholder needs.

* **Prototyping:** Developing a mock-up or simulation of the system to validate and refine requirements.

Recommendation: Excellent for visualizing the platform interface and features.|

* **Questionnaires/Surveys**: Structured forms distributed to gather input from a large audience..

**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**

**1. Prototyping**

* **Reason:** Given that the project involves a user interface for farmers and manufacturers, **prototyping** will help visualize the product catalog, search options, payment gateway, and delivery tracking. Early feedback from stakeholders can help refine features.
* **Benefit:** Allows stakeholders (like Mr. Henry, Peter, Kevin, and Ben) to interact with an early version of the product, clarifying ambiguities and aligning expectations quickly.

 **2. Use Case Specifications**

* **Reason:** This technique will help break down detailed requirements for each type of user (e.g., Farmers, Manufacturers, and Admins) and capture interactions with the system.
* **Benefit:** Clearly outlines the functional requirements like logging in, searching products, adding items to a "buy-later" list, making payments, and tracking orders.
* **Example:** Use cases could include "Farmer searches for product," "Farmer makes payment," or "Manufacturer uploads product."

 **3. Document Analysis**

**Reason:** Since manufacturers will be uploading product details (fertilizers, seeds, pesticides), **document analysis** can help gather product specifications, categories, and existing information from the manufacturers.

* **Benefit:** Helps in collecting accurate data on products and ensures consistency in product details displayed on the website.

**4. Brainstorming**
* **Reason:** During meetings with stakeholders, **brainstorming** can be an effective way to discuss potential features, ideas for product categorization, payment gateway options (COD, UPI, Credit/Debit), and delivery tracking.
* **Benefit:** Encourages creative thinking and allows the team to explore various ways to meet the business goals (e.g., improving user experience for farmers).

The **Workshop** and **Prototyping** techniques are most suitable for this project.
* **Workshop**: Helps align requirements from farmers, suppliers, and SMEs efficiently.
* **Prototyping**: Ensures the platform’s design and features meet user expectations early in the process

**Question 7** – 10 Business Requirements- 10 Marks
**Make suitable Assumptions and identify at least 10 Business Requirements.**

The system needs to be safe and safeguard payment and user data.
1**. BR001:** The app should allow users to search for products by category, product name, or additional criteria (such price or rating).
2. **BR002**: A product catalog that shows categories like pesticides, seeds, and fertilizers should be accessible to users.
3. **BR003**: In order to access the platform, users need to generate a login ID and password.
4. **BR004**: Users who are new customers are required to register using their email address and a strong password.
5. **BR00**5: Customers ought to be allowed to put items in their carts or "buy-later" lists for later purchases.
6**. BR006**: Users ought to be able to browse comprehensive product details, such as pricing, description, and product photos.
7**. BR007:** When making a transaction, customers ought to have the choice of several payment methods, including cash on delivery, credit/debit cards, and UPI.
8. **BR008**: Users should receive an email confirmation with order data and the anticipated delivery date as soon as they place a purchase.
9. **BR009**: A delivery tracking feature connected with a third-party service should allow users to follow their orders in real time.
10. **BR010**: Manufacturers need to be able to access the platform and submit their product information, such as name, price, description, and pictures, for the website to show.

 **Question 8** –Assumptions- 5 Marks
**List your assumptions**
**Assumptions**

* Manufacturers, administrators, and farmers are among the target users for the internet store.
* Product categories like insecticides, seeds, and fertilizers will be supported by the platform.
* There will be mobile and web versions of the system available for use.
* Name, description, price, availability, and image are just a few of the details that will be included in the product catalog.
* Credit/debit cards, UPI, and COD will be accepted forms of payment.
* A third-party delivery service will be connected with delivery tracking.
* Manufacturers should be able to upload product details using an admin interface on the system.
* To make purchases or save products for later, a user account will be needed.
* Order confirmations, delivery information, and progress updates will all be sent by email.

 **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 stakeholdersRequirements Once the requirements are finalized, as a business analyst, one of the major roles is to act as aliaison 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.**

| **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. | 9 |
| BR002 | Manufacturers Upload their Products | Manufacturers should be able to upload and display their products in the application. | 8 |
| BR003 | User Login and Account Creation | Users need to create login ID and password to access the platform. | 10 |
| BR004 | New User Account Creation | If the user is new, they should be able to create an account by submitting email ID and creating a secure password. | 9 |
| BR005 | Add to Buy-Later List | Users should be able to add products to a “buy-later” list or cart for future purchase. | 7 |
| BR006 | View Product Details | Users should be able to view detailed product information (name, description, price, images). | 9 |
| BR007 | Multiple Payment Options | Users should be able to select payment options such as Cash on Delivery, Credit/Debit card, UPI. | 10 |
| BR008 | Order Confirmation Email | Once an order is placed, users should receive an email confirmation with order details and expected delivery date. | 8 |
| BR009 | Delivery Tracking | Users should be able to track their orders in real-time via a delivery tracking feature. | 9 |
| BR010 | Manufacturers Product Upload | Manufacturers should be able to log in to the platform and upload their product details for display. | 8 |

***Question 10 – Use Case Diagram - 10 Marks
Draw use case diagram*s**

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

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

### **Use Case 1: Search Agricultural Products**

| **Use Case ID** | **UC001** |
| --- | --- |
| **Use Case Name** | Search for Agricultural Products |
| **Created By** | BA ,myself |
| **Last Updated By** | BA ,myself |
| **Date Created** | January 27, 2025 |
| **Last Revision Date** | January 27, 2025 |
| **Actor** | Customer |
| **Description** | This use case describes how a customer searches for fertilizers, seeds, and pesticides in the application. |
| **Pre-condition** | The customer must be registered and logged into the application. |
| **Post-condition** | The customer successfully views the desired agricultural products. |
| **Normal Flow of Events (Happy Path)** | Step 1: The customer logs in.Step 2: The system look into the product catalogStep 3: The customer enters the wanted product name or category in the search bar.Step 4: The system displays productsStep 5: The customer clicks on a product to view its details. |
| **Alternative Flow** | If no products match the query, the system displays a “No products found” message with suggestions. |
| **Exceptions** | If the system is unavailable, an error message is displayed: “Service currently unavailable.” |
| **Frequency of Use** | High |

### **Use Case 2: Add Products to Cart**

| **Use Case ID** | **UC002** |
| --- | --- |
| **Use Case Name** | Add Agricultural Products to Cart |
| **Created By** | BA ,myself |
| **Last Updated By** | BA ,myself |
| **Date Created** | January 27, 2025 |
| **Last Revision Date** | January 27, 2025 |
| **Actor** | Customer |
| **Description** | This use case describes how a customer adds products to their cart for purchase. |
| **Pre-condition** | The customer must be logged in and viewing product details. |
| **Post-condition** | Products are successfully added to the cart. |
| **Normal Flow of Events (Happy Path)** | Step 1: The customer views the product details.Step 2: The customer clicks the Add to Cart button.Step 3: The system adds the product to the cart. |
| **Alternative Flow** | If the product is out of stock, the system displays an “Out of Stock” message. |
| **Exceptions** | If the system crashes, the cart data is retained for the customer’s next login session. |
| **Frequency of Use** | High |

### **Use Case 3: Place an Order**

| **Use Case ID** | **UC003** |
| --- | --- |
| **Use Case Name** | Place an Order |
| **Created By** | BA ,myself |
| **Last Updated By** | BA ,myself |
| **Date Created** | January 27, 2025 |
| **Last Revision Date** | January 27, 2025 |
| **Actor** | Customer |
| **Description** | This use case describes how customers place orders for products in their cart. |
| **Pre-condition** | The customer must have products in their cart and must be logged in. |
| **Post-condition** | The order is successfully placed, and the customer receives a confirmation. |
| **Normal Flow of Events (Happy Path)** | Step 1: The customer navigates to their cart.Step 2: The customer reviews items and clicks Proceed to Checkout.Step 3: The system prompts the customer to confirm delivery detailsStep 4: The customer selects a payment method and confirms payment.Step 5: The system processes the payment and displays an order confirmation page. |
| **Alternative Flow** | If the payment fails, the customer is prompted to try a different payment method. |
| **Exceptions** | If the system encounters a processing error, the order remains in the cart for retry. |
| **Frequency of Use** | High |

### **Use Case 4: Update Product Inventory**

| **Use Case ID** | **UC004** |
| --- | --- |
| **Use Case Name** | Update Product Inventory |
| **Created By** | BA ,myself |
| **Last Updated By** | BA ,myself |
| **Date Created** | January 27, 2025 |
| **Last Revision Date** | January 27, 2025 |
| **Actor** | Admin |
| **Description** | This use case describes how the admin updates product inventory details. |
| **Pre-condition** | The admin must be logged into the system. |
| **Post-condition** | Inventory updates are successfully saved and reflected in the system. |
| **Normal Flow of Events (Happy Path)** | Step 1: The admin logs in.Step 2: The admin navigates to the “Inventory Management” section.Step 3: The admin updates stock levels, prices, or availability.Step 4: The admin submits the changes.Step 5: The system confirms the updates. |
| **Alternative Flow** | If mandatory fields are left empty, the system prompts the admin to complete them. |
| **Exceptions** | If the internet is down, changes are saved locally and synced when the system reconnects. |
| **Frequency of Use** | Medium |

### **Use Case 5: Track Order Delivery**

| **Use Case ID** | **UC005** |
| --- | --- |
| **Use Case Name** | Track Order Delivery |
| **Created By** | BA ,myself |
| **Last Updated By** | BA ,myself |
| **Date Created** | January 27, 2025 |
| **Last Revision Date** | January 27, 2025 |
| **Actor** | Customer, Delivery Personnel |
| **Description** | This use case describes how customers track the status of their orders. |
| **Pre-condition** | The customer must have placed an order and must be logged in. |
| **Post-condition** | The customer successfully views the current status of their order. |
| **Normal Flow of Events (Happy Path)** | Step 1: The customer logs in.Step 2: The customer navigates to the “Track Orders” section.Step 3: The system displays the list of orders with their current statusStep 4: The customer selects an order to view detailed tracking information. |
| **Alternative Flow** | If the tracking data is unavailable, the system displays an appropriate message: “Tracking details currently unavailable.” |
| **Exceptions** | If the order is delayed, the system notifies the customer with an estimated delivery date. |
| **Frequency of Use** | High |

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

**Activity diagrams**

###