

Capstone Project 1 [Part 2/3]

Question 1: Audits - 5 Marks

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

Answer:

Q1 Audit – Requirement Gathering & Planning

Stage	Status	Checklist
Requirement Gathering	Completed	BRD Template prepared
Elicitation	Completed	Stakeholder interview notes & elicitation results report
Requirement Validation	Completed	Duplicate requirements removed
Requirement Structuring	Completed	Grouping of functionalities/features – Client Signoff
Modeling	Completed	UML Diagrams created
Requirement Mapping	Completed	Business to Functional Requirements mapping
Approval	Completed	Client Signoff obtained
Documentation	Completed	RTM Document with version control

Q2 Audit – Requirement Analysis & Design

Stage	Status	Checklist
Functional Analysis	Completed	Functional Requirement Specification (FRS) created
Non-Functional Analysis	Completed	NFR Document (performance, usability, security)
Requirement Prioritization	Completed	Moscow/priority list documented
Traceability	Completed	RTM updated for design stage
Modeling	Completed	High-level design (HLD) diagrams reviewed
Validation	Completed	Stakeholder feedback collected & signoff

Q3 Audit – Development & Testing

Stage	Status	Checklist
Requirement Implementation	In Progress	Mapping requirements with development tasks
Traceability	In Progress	RTM linking requirements → test cases
Testing Coverage	In Progress	Test cases mapped to functional requirements
Defect Analysis	In Progress	Defects traced back to missing/unclear requirements
Clarification	Ongoing	BA providing requirement clarifications to Dev/Test teams

Q4 Audit – Delivery & Closure

Stage	Status	Checklist
UAT	Completed	UAT Plan & execution reports
Requirement Acceptance	Completed	Client signoff for delivered requirements
Change Requests	Completed	CR log with approvals
Documentation Closure	Completed	Updated RTM & Requirement Closure Report
Lessons Learned	Completed	Post-project analysis documented

Question 2 – BA Approach Strategy - 6 Marks

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

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.]

Answer: BA Approach Strategy

1. Understand the Project & Stakeholders

- First, I'll meet with Mr. Henry, committee members (Mr. Pandu, Mr. Dooku) and farmer reps (Peter, Kevin, Ben) to understand pain points and expectations.

- I'll also map technical stakeholders: Dev team (Juhi, Teyson, Lucie, Tucker, Bravo), Network (Mike), DB (John), Testers (Jason, Alekya).
- Stakeholder Analysis → Create RACI Matrix (Who is Responsible, Accountable, Consulted, Informed).

2. Requirement Elicitation Techniques

- Workshops & Interviews with farmers to capture user problems (fertilizer, seeds, pesticides).
- Brainstorming sessions with developers for technical feasibility.
- Questionnaires/Surveys for wider farmer community.
- Observation & Document Analysis of existing Agri-Product buying process.

3. RACI:

R: BA (organizing sessions).

A: PM (ensures process).

C: Farmers & Committee (inputs).

I: Delivery Head (Karthik).

4. Documentation to Prepare

- BRD (Business Requirement Document) – high-level needs.
- FRS/SRS (Functional Requirement Spec) – detailed features (search products, add to cart, delivery).
- Use Cases / UML Diagrams – user journeys.
- RTM (Requirement Traceability Matrix) – map each requirement to test case.

4. Approval & Sign-off Process

- After preparing BRD → Review with committee + farmers → Get Client Signoff.
- For SRS & UML → Review with Dev & Test team → Get Technical Approval.
- Maintain version control so all changes are traceable.

5. Communication Plan

- Weekly status calls with committee.
- Daily stand-ups with project team (PM, Devs, DB, Network).
- Email/Slack/Teams for formal updates.
- Monthly reports for high-level stakeholders.

6. Handling Change Requests

- Any new request from farmers or committee → log it in Change Request Register.
- Assess impact on cost, scope, and time with Project Manager (Vandanam).
- Get committee approval before implementing.

7. Progress Updates

- Use RTM + Status Reports to show which requirements are done, in progress, pending.
- Present demo sessions to stakeholders at key milestones.

8. UAT & Client Acceptance

- Prepare UAT plan with test cases mapped to requirements.
- Farmers (Peter, Kevin, Ben) + committee will execute UAT.
- Capture feedback, fix issues.
- Get final UAT signoff using Client Project Acceptance Form.

✅ Short exam-ready version (non-bookish):

“As BA, I’ll start with stakeholder analysis and RACI, then gather requirements using workshops, interviews, surveys. I’ll prepare BRD, FRS, UML, RTM and get signoff from committee. Weekly calls and daily stand-ups will keep communication clear. Any new request will go into a CR log and be approved before changes. Progress will be tracked in RTM and status reports. Finally, I’ll prepare UAT plan, farmers will test the system, and once all requirements are validated, we’ll get UAT signoff and formal closure.”

Question. 3 - 3-Tier Architecture - 5 Marks

Explain and illustrate 3-tier architecture?

Answer: 3-Tier Architecture Explanation

A 3-tier architecture is a software design pattern where the application is divided into three logical layers (tiers).

This separation improves scalability, security, and maintainability.

Tiers

1. Presentation Tier (UI Layer)

- a. This is the front-end of the application.
- b. What the user sees and interacts with → e.g., web page, mobile app interface.
- c. Technologies: HTML, CSS, JavaScript, React, Angular, Android/iOS UI.

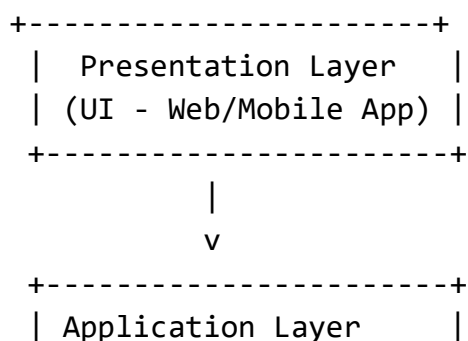
2. Application Tier (Business Logic Layer)

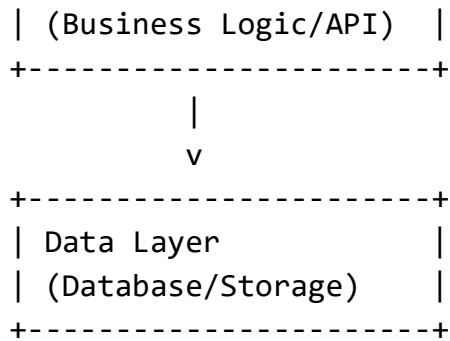
- a. The middle layer that processes data and applies business rules.
- b. Acts as a bridge between UI and database.
- c. Handles login, order processing, payment validation, etc.
- d. Technologies: Java, .NET, Python, Node.js.

3. Data Tier (Database Layer)

- a. Stores and manages application data.
- b. Responsible for queries, updates, and secure data management.
- c. Technologies: MySQL, Oracle, SQL Server, MongoDB.

Illustration (Diagram)





Example (Online Agriculture Store case)

- **Presentation Layer:** Farmers open the mobile app to browse seeds/fertilizers.
- **Application Layer:** The app's business logic checks product availability, calculates price, applies discounts.
- **Data Layer:** The database stores product details, orders, farmer profiles, and inventory.

Question: 4 BA Approach Strategy for Framing Questions – 10 Marks Business Analyst should keep What points in his/her mind before he frames a Question to ask to the Stakeholder (5W 1H – SMART – RACI – 3 Tier Architecture – Use Cases, Use case Specs, Activity Diagrams, Models, Page designs)

Answer: Perfect This is a 10-mark question, so we need a comprehensive yet structured answer.

The examiner wants you to show how a BA should frame questions smartly before asking stakeholders, using 5W1H, SMART, RACI, 3-Tier, Use Cases, etc.

Here's the answer:

BA Approach Strategy for Framing Questions to Stakeholders

As a Business Analyst, before I frame a question for stakeholders, I keep the following points in mind:

1. Apply 5W1H (Who, What, When, Where, why, How)

- **Who** is the end-user (farmer, company, admin)?
- **What** feature/problem are we discussing (buying seeds, delivery process)?
- **When** is the feature used (during order, during payment)?
- **Where** is it applied (mobile app, web, admin portal)?
- **Why** is it required (business value)?
- **How** should it function (step-by-step usage)?

Example Question: *“How do farmers currently place an order for seeds, and who verifies the delivery?”*

2. SMART Questioning

- **Specific:** Question must be clear, not vague.
- **Measurable:** Should lead to quantifiable/trackable requirements.
- **Achievable:** Should be realistic based on project budget & timeline.
- **Relevant:** Must connect with project scope (don't ask out-of-scope).
- **Time-bound:** Should consider deadlines & frequency.

Example: *“What is the maximum delivery time farmers expect (in days)?”*

3. RACI Consideration

When framing questions, I ensure I know who to ask:

- **Responsible:** Developers/Testers for technical/quality questions.
- **Accountable:** PM/Committee for approvals.
- **Consulted:** Farmers & companies for requirement inputs.
- **Informed:** Sponsor (Mr. Henry) for high-level updates.

Example: *“Who will be responsible for maintaining product inventory data in the system – farmers or manufacturing companies?”*

4. 3-Tier Architecture Awareness

Questions should align with system layers:

- **Presentation Layer (UI):** “What do farmers expect to see on the homepage?”
- **Application Layer (Business Logic):** “What rules should apply when farmers order pesticides?”
- **Data Layer (Database):** “What information do we need to store for each fertilizer product?”

5. Use Cases & Models

Before framing questions, I map **user scenarios**, so I ask relevant queries:

- **Use Cases:** “What actions should a farmer perform when buying seeds?”
- **Use Case Specs:** Capture pre-conditions, steps, post-conditions.
- **Activity Diagrams:** Visualize workflow to identify missing steps.
- **Page Designs / Wireframes:** Share mockups → ask feedback-specific questions like *“Do you prefer dropdown or search for product selection?”*

Summary (Exam-ready Conclusion)

Before asking a stakeholder any question, a BA should check:

- Apply 5W1H to cover all dimensions.
- Make questions SMART (clear, measurable, relevant).
- Identify right stakeholder using RACI.
- Align questions with 3-Tier architecture (UI, logic, data).
- Use Cases, diagrams, and page designs to ask context-driven questions.

- This ensures the stakeholder gives clear, useful, and complete answers that directly contribute to building the right solution.

Question: 5 Elicitation Techniques - 6 Marks

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

Answer: BDRFOWJIPQU

1. **Brainstorming** - A group technique used to generate ideas and gather input from stakeholders. It encourages open and creative thinking to explore potential solutions or identify requirements
2. **Document Analysis** - Reviewing existing documentation, such as business plans, process flows, and user manuals, to extract relevant information and identify gaps or areas for improvement.
3. **Requirement workshop** - Conducting facilitated sessions with stakeholders to gather requirements, clarify doubts, resolve conflicts, and ensure collaboration among participants.
4. **Focus Groups** - Gathering a selected group of stakeholders to discuss specific topics or areas of interest. The group dynamics encourage interaction and exchange of ideas, providing valuable insights.
5. **Observation** - Actively observing stakeholders' work environment, processes, and activities to gain a deeper understanding of their needs, challenges, and workflows.
6. **Workshops / JAD (Joint Application Development)** - Collaborative sessions with stakeholders to refine requirements.
7. **Job Shadowing** - Sit with end users while they perform daily work - understand actual workflow.
8. **Interviews** - One-on-one or group discussions with stakeholders to gather detailed information, understand their perspectives, and uncover specific requirements.

9. **Prototyping** - Creating a visual representation or interactive model of the proposed solution to gather feedback, validate requirements, and facilitate stakeholder understanding.
10. **Questionnaires and Surveys**- Distributing structured questionnaires or surveys to stakeholders to gather quantitative or qualitative data and opinions on specific topics or requirements.
11. **User Stories**-Capturing requirements from the user's perspective in a concise narrative format, focusing on the user's goals, actions, and expected outcomes.

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 Fertilizers

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

Answer - Elicitation Techniques Used

1. Prototyping

- a. We can create **wireframes/page designs** of the online agriculture store.
- b. Farmers and manufacturers can visualize how the app will look (search option, upload product screen).
- c. **Justification:** Helps non-technical stakeholders (farmers) give quick feedback since they may not understand technical documents.

2. Use Case Specifications

- a. Define step-by-step actions like *“Farmer searches fertilizer and adds to cart”* or *“Manufacturer uploads pesticide details.”*
- b. **Justification:** Makes it easy to validate requirements and ensures all user interactions are captured.

3. Document Analysis

- a. Review existing **agriculture supply chain documents**, farmer purchase records, and product catalogs from manufacturers.
- b. **Justification:** Saves time, ensures system requirements align with real-world data and existing practices.

4. Brainstorming (Fertilizers, Seeds, Pesticides)

- a. Conduct sessions with farmers (Peter, Kevin, Ben) and manufacturers to generate ideas about product categories, delivery, and payment features.
- b. **Justification:** Encourages open discussions and helps identify hidden requirements.

Identified Business Requirements (Including Stakeholder Needs)

- **BR001:** Farmers should be able to **search for available products** (fertilizers, seeds, pesticides).
- **BR002:** Manufacturers should be able to **upload and display their products** in the application.

✅ Short, Exam-Ready Version:

For this project, I will use **Prototyping, Use Case Specifications, Document Analysis, and Brainstorming**. Prototyping helps farmers visualize screens, use case specs capture user interactions, document analysis provides insights from existing records, and brainstorming collects ideas from farmers/manufacturers. Using these techniques, we identify requirements such as:

- **BR001:** Farmers can search products (fertilizers, seeds, pesticides).
- **BR002:** Manufacturers can upload and display their products.

Question 7 – 10 Business Requirements- 10 Marks

Make suitable Assumptions and identify at least 10 Business Requirements.

Answer - Business Requirements (BRs):

- **BR001** – Farmers should be able to **search for available products** (fertilizers, seeds, pesticides).

- **BR002** – Manufacturers should be able to **upload and display their products** in the application.
- **BR003** – Farmers should be able to **create and manage their profile** (name, location, contact).
- **BR004** – Manufacturers should be able to **create and manage company profile** (company details, license info, contact).
- **BR005** – Farmers should be able to **add products to cart and place orders**.
- **BR006** – System should provide **multiple payment options** (cash on delivery, UPI, card, net banking).
- **BR007** – Farmers should be able to **track the status of their orders** (ordered, shipped, delivered).
- **BR008** – Manufacturers should receive **notifications of new orders** placed by farmers.
- **BR009** – System should provide **basic reports** (sales reports for manufacturers, purchase history for farmers).
- **BR010** – Application should be **multi-language supported** (English + local languages) for farmers' ease of use.

Question 8 –Assumptions- 5 Marks

List your assumptions

Answer: Based on assumptions, the 10 business requirements are:

1. Farmers can search products.
2. Manufacturers can upload/display products.
3. Farmers can manage their profiles.

4. Manufacturers can manage their profiles.
5. Farmers can place orders.
6. Multiple payment options should be available.
7. Farmers can track orders.
8. Manufacturers get new order notifications.
9. Reports (sales/purchase history) should be available.
10. Multi-language support for farmers.

Question 9 – This project Requirements Priority - 8 Marks

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

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

Once the requirements are finalized, as a business analyst, one of the major roles is to act as a liaison between the client and the project team. To gather the requirements correctly from the client side and then to deliver those requirements to the project team in a way they understand. To make the project team understand the requirements, you need to convert those requirements into UML diagrams and screen mock-ups.

Answer: Requirement Prioritization & BA Role

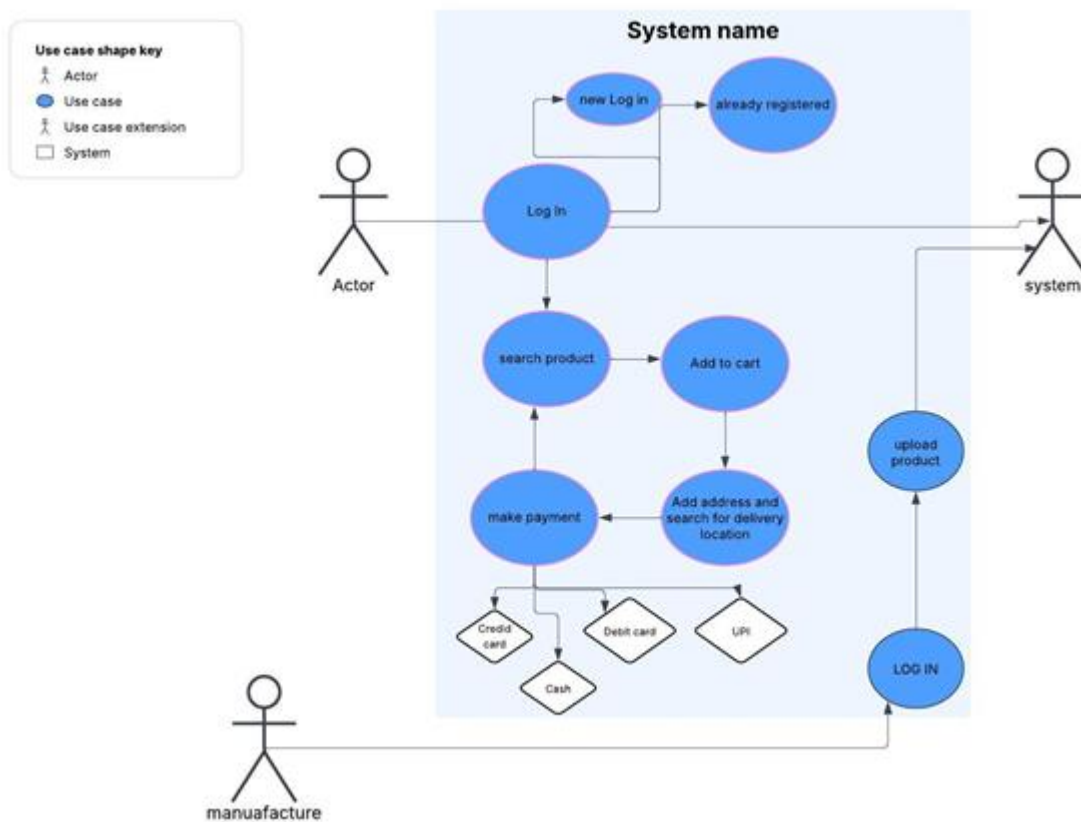
Req ID	Req Name	Req Description	Priority (1–10)
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BR001	Farmer Search for Products	Farmers should be able to search for available products in fertilizers, seeds, pesticides	8
BR002	Manufacturers Upload their Products	Manufacturers should be able to upload and display their products in the application	8
BR003	Farmer Profile Management	Farmers should be able to register and manage their profiles	7
BR004	Manufacturer Profile Management	Manufacturers should be able to register and update company details	7
BR005	Order Placement	Farmers should be able to add products to cart and place an order	9
BR006	Payment Options	Application should provide secure payment options (UPI, net banking, COD, cards)	10
BR007	Order Tracking	Farmers should be able to check status of their orders	7
BR008	Notifications	System should notify manufacturers and farmers about order status	6
BR009	Reports & Analytics	Manufacturers can view sales reports, farmers can view purchase history	5
BR010	Multi-Language Support	Application should support English and regional languages	4

Question 10 – Use Case Diagram - 10 Marks

Draw use case diagram

Answer:



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

Prepare use case specs for all use cases

Answer:

Use Case 1: User Login

- **Use Case ID:** UC-01
- **Actor(s):** Farmer, Manufacturer
- **Description:** Allows users to log into the system using valid credentials.
- **Preconditions:**
 - User must be registered in the system.
- **Postconditions:**
 - User is authenticated and redirected to their dashboard.
- **Basic Flow:**
 - User selects “Log In.”
 - System prompts for username and password.
 - User enters credentials.
 - System validates details.
 - User is granted access.
- **Alternate Flow:**
 - Invalid credentials → System displays error and prompts re-entry.

Use Case 2: Register New User

- **Use Case ID:** UC-02
- **Actor(s):** Farmer, Manufacturer
- **Description:** Allows a new user to register with the application.
- **Preconditions:**
 - User is not already registered.
- **Postconditions:**
 - User account is created successfully.
- **Basic Flow:**
 - User selects “Sign Up.”
 - User enters details (Name, Email, Phone, Role: Farmer/Manufacturer).

- System verifies uniqueness of email/phone.
- System creates account and confirms registration.
- **Alternate Flow:**
 - Duplicate email/phone → System prompts user to log in instead.

Use Case 3: Search Product

- **Use Case ID:** UC-03
- **Actor(s):** Farmer
- **Description:** Enables farmers to search fertilizers, seeds, and pesticides.
- **Preconditions:**
 - Farmer is logged in.
- **Postconditions:**
 - Matching product list is displayed.
- **Basic Flow:**
 - Farmer enters product name/category in search bar.
 - System fetches available products.
 - Farmer views product details (price, description, manufacturer).
- **Alternate Flow:**
 - No matching results → System shows “No Products Found.”

Use Case 4: Upload Product

- **Use Case ID:** UC-04
- **Actor(s):** Manufacturer
- **Description:** Allows manufacturers to upload and display products.
- **Preconditions:**
 - Manufacturer must be logged in.
- **Postconditions:**
 - Product is added to system catalog.
- **Basic Flow:**
 - Manufacturer selects “Upload Product.”
 - Manufacturer enters product details (Name, Category, Price, Description).
 - Manufacturer uploads images.

- System saves and displays product in product catalog.
- **Alternate Flow:**
 - Missing mandatory fields → System prompts to complete details.

Use Case 5: Make Payment

- **Use Case ID:** UC-05
- **Actor(s):** Farmer
- **Description:** Farmers make payment for selected products.
- **Preconditions:**
 - Farmer has added products to cart and provided delivery address.
- **Postconditions:**
 - Payment processed, order confirmation generated.
- **Basic Flow:**
 - Farmer proceeds to checkout.
 - Farmer selects payment option (Credit Card, Debit Card, UPI, COD).
 - System validates payment details.
 - Payment is processed.
 - Order confirmation displayed with order ID.
- **Alternate Flow:**
 - Payment failure → System shows error and asks for retry or alternate method

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

Activity diagrams

Answer:

