Capstone Project1 – Part -2/3

Question 1 – Audits - 5 Marks

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 1-

As a Business Analyst (BA), understanding the quarterly audits for a project like this is crucial to ensure that the project is on track or not. It shows that how efficiently organisation operates all its business process with rules and regulations. Conducting audit from time to time ensure the firms are strict enough in following the administrative fundamentals and sticking to maximum accuracy rate so as far as financial reporting is concerned.

Stage	**Requirement Gathering**
Status	Completed
Checklist	BRD Templates
	Elicitation result report
	Duplicates requirement report.
	Grouping of functionalities- Client sign off

Stage	**Requirement Analysis Phase**
Status	Completed
Checklist	UML Diagram
	Business to functional requirement mapping
	Client signoff
	RTM Document Control Version

Stage	**Design Phase**
Status	Completed
Checklist	Utilization of tools
	Documented evidence on client communication
	Stakeholder MOM

Stage	**Development Phase**
Status	Completed
Checklist	Creating timeline and task with list of deliverables.
	Meeting with project development team.

Stage	**Requirement Gathering**
Status	Completed
Checklist	Meeting with tester to check possible outcomes.
	Discussion with QA team

By staying proactive and organized, you can ensure that audits validate the project's success and address any issues promptly. Your role as a BA is pivotal in bridging gaps between stakeholders and the technical team, ultimately ensuring the project's success.

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.

Answer 2-

As a Business Analyst (BA), my primary role is to ensure that the project's requirements are clearly defined, documented, and delivered effectively to meet stakeholder expectations. Below is the detailed BA Approach Strategy for this project:

1. Steps to Complete the Project

a) Initiation Phase

- Understand the project objectives and scope, including the CSR focus on improving agricultural accessibility for remote farmers.
- Identify all stakeholders and their roles in the project.
- Define success criteria in collaboration with the committee and stakeholders.

b) Requirements Elicitation

- Use the following elicitation techniques:
    - Interviews: With stakeholders like Peter, Kevin, and Ben to gather detailed insights into their challenges.
    - Workshops: Conduct sessions with manufacturers and farmers to map processes.
    - Surveys/Questionnaires: To gather input from a broader group of potential users.
    - Document Analysis: Review existing agricultural procurement systems or apps for best practices.
    - Observation: Understand farmers' existing workflows for procuring seeds, fertilizers, and pesticides.

c) Stakeholder Analysis

- Prepare a Stakeholder Matrix to classify stakeholders (High Influence/Low Influence, High Interest/Low Interest).
- Use RACI Matrix to define responsibilities:
    - Responsible: The person doing the task (e.g., Developers for coding).
    - Accountable: Who ensures the task is completed (e.g., Project Manager).
    - Consulted: Experts providing input (e.g., Farmers and Manufacturers).
    - Informed: Those updated on progress (e.g., Committee Members).

2. Key Documents to Prepare

A. Business Requirements Document (BRD):
    a. Captures high-level objectives and needs.
    b. Signed off by the client (Committee).
B. Functional Requirements Document (FRD):
    a. Detailed features and functionalities of the system.
    b. Collaborate with the development team for technical feasibility.
C. Use Case Diagrams and Flowcharts:
    a. Visual representation of user interactions with the system.
D. Requirement Traceability Matrix (RTM):

    a. Tracks requirements throughout the project lifecycle.
E. Change Request Form (CRF):
    a. Formalizes any changes in scope or requirements.
F. Communication Plan:
    a. Defines how information will flow between teams and stakeholders.
G. UAT Plan and Client Project Acceptance Form:
    a. Guides the User Acceptance Testing (UAT) process.
    b. Obtains final sign-off from the client after testing.

3. Process for Document Sign-Off

A. Share drafts with stakeholders for review.
B. Conduct review meetings to address feedback.
C. Make necessary revisions and circulate the updated version.
D. Obtain formal sign-off via email or a document management system.

4. Approval Process

1. Present requirements and designs to the committee during periodic meetings.
2. Record approvals through signed documents or digital acknowledgment.
3. Track all approvals in a central repository for audit purposes.

5. Communication Channels

- Establish the following:
    - Email: Primary channel for formal communication and updates.
    - Project Management Tool (e.g., Jira, Trello): For tracking progress, tasks, and issues.
    - Weekly Standups: Regular updates with the team.
    - Monthly Review Meetings: Detailed project progress updates with stakeholders.
    - WhatsApp/Slack: For quick updates and informal communication.

6. Handling Change Requests

- Use a structured Change Control Process:
    1. Stakeholders submit a Change Request Form (CRF) detailing the change.
    2. Analyze the impact on scope, timeline, and budget.
    3. Review the change with the committee and project manager.
    4. Implement the change upon approval.
    5. Update the RTM and all impacted documents.

7. Updating Stakeholders on Project Progress

- Weekly Progress Reports:
    - Highlight completed tasks, upcoming milestones, and blockers.
- Quarterly Audits:
    - Share detailed performance metrics.
- Milestone Reviews:
    - Present progress at significant project stages.
- Dashboard Updates:
    - Use a project dashboard for real-time updates.

8. User Acceptance Testing (UAT) and Client Project Acceptance

1. Prepare a UAT Plan:
    - Define test scenarios, acceptance criteria, and test cases.
    - Conduct UAT with selected farmers and manufacturers.
2. Facilitate UAT Execution:
    - Coordinate with testers (Mr. Jason and Ms. Alekya).
    - Record feedback and resolve issues promptly.
3. Obtain Final Sign-Off:
    - Present a Client Project Acceptance Form documenting UAT results.
    - Secure sign-off from the client (committee) as confirmation of project completion.

Question 3 – 3-Tier Architecture - 5 Marks

Explain and illustrate 3-tier architecture?

Answer 3-

The 3-tier architecture is a software design pattern that separates applications into three logical and physical tiers.

1. Presentation Tier (Front-End)

- Role: Provides an interface for farmers and manufacturers to interact with the application.
- Key Functions:
  - Farmers can browse products (seeds, fertilizers, pesticides) and place orders.
  - Manufacturers can upload product details, update stock, and view orders.
  - User authentication for farmers and manufacturers.
- Technologies:
  - Web Interface: HTML, CSS, JavaScript frameworks (e.g., React, Angular).
  - Mobile Interface: Android/iOS app using Flutter or React Native.
- Actors:
  - Farmers and Manufacturers.

2. Business Logic Tier (Middle Layer)

- Role: Processes requests from the presentation layer and handles the business logic.
- Key Functions:
  - Validation of inputs (e.g., checking stock availability before allowing orders).
  - Order management (tracking orders, updating statuses).
  - Notifications (e.g., order confirmations, low stock alerts).
- Technologies:
  - Java-based backend with Spring Boot or similar frameworks.
  - RESTful APIs to communicate between the front-end and the database.
- Actors:
  - Java Developers (Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo).

3. Data Tier (Back-End)

- Role: Stores and manages data securely.
- Key Functions:
  - Store product details, user information, and order history.
  - Provide real-time updates on stock and order statuses.
- Technologies:
  - Database: MySQL or PostgreSQL.
  - Cloud-based storage solutions (if required for scalability).
- Actors:
  - DB Admin (Mr. John), Network Admin (Mr. Mike).

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 4-

When framing questions for stakeholders, a Business Analyst should ensure that the questions are clear, relevant, and designed to elicit valuable insights for project success. Below is a guide on structuring effective questions using concepts like 5W1H, SMART, RACI, 3-Tier Architecture, and key documentation methodologies:

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

Before asking a question, ensure it covers the essential aspects of the problem or requirement:

1. **Who**:
    - Who will use the system (farmers, manufacturers)?
    - Who is responsible for specific processes or approvals?
2. **What**:
    - What challenges are the users facing (e.g., in buying seeds or managing stock)?
    - What functionalities are needed to address these challenges?
3. **Where**:
    - Where will the application be accessed (remote villages, urban areas)?
    - Where should products be delivered?
4. **When**:
    - When are users most likely to access the application (seasonal cycles)?
    - When should critical milestones be achieved?
5. **Why**:
    - Why are these features essential for the users?
    - Why is scalability critical (e.g., increasing users over time)?
6. **How**:
    - How will the user interact with the system?
    - How will the system handle processes like payments and stock updates?

2. Align Questions with SMART Principles

Specific: Questions should target a precise topic (e.g., "What types of seeds do farmers commonly require?").
Measurable: Ensure the responses can translate into measurable requirements (e.g., "How many products should be displayed per page?").
Achievable: Confirm that the features requested are feasible (e.g., "How will manufacturers upload their product details?").
Relevant: Focus on questions that add value to the project (e.g., "Why is offline functionality critical for farmers?").
Time-Bound: Understand time-sensitive requirements (e.g., "When do farmers need the system ready for the planting season?").

3. Use RACI Framework for Responsibility

When framing questions, ensure that responsibilities are clear using RACI principles:

- Responsible: Who will provide input or perform the task?
  Question Example: "Who from the manufacturer's team will upload product details?"
- Accountable: Who is accountable for the final decision?
  Question Example: "Who will approve the product categorization layout?"
- Consulted: Who needs to be consulted for feedback?
  Question Example: "What feedback do farmers have on a prototype interface?"
- Informed: Who needs updates?
  Question Example: "Who in the committee needs regular status updates?"

4. Relate Questions to 3-Tier Architecture

Frame questions based on the system's three layers:

1. Presentation Tier:
   - "What design features make the app intuitive for farmers?"
   - "Should the system support multiple languages?"
2. Business Logic Tier:
   - "How should order validations and payment processing be handled?"
   - "What business rules should apply for discounts or offers?"
3. Data Tier:
   - "What specific product details should manufacturers store (e.g., type, quantity, price)?"
   - "What data security measures are critical for users' personal and payment information?"

5. Incorporate Use Cases and Diagrams

Before framing questions, understand and visualize the system using Use Cases, Activity Diagrams, and Models. This helps ensure your questions are aligned with practical workflows.

- Use Cases:
  Ask questions to confirm user actions and system responses:
  - "What should happen when a farmer places an order but stock is unavailable?"
- Use Case Specifications:
  Drill into details:
  - "What are the preconditions for a farmer to view order history?"
- Activity Diagrams:
  Confirm process flows:
  - "What are the exact steps a manufacturer follows to upload products?"

6. Consider Page Design and Usability

Frame questions around UI/UX to ensure the system is user-friendly:

- "What should the homepage display for first-time users (farmers/manufacturers)?"
- "What navigation features would make it easier for users to find products?"
- "What accessibility features should be included for farmers with limited technical knowledge?"

Question 5 – Elicitation Techniques - 6 Marks

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

Answer 5-

The acronym BDRFOWJIPQU represents a variety of elicitation techniques that a Business Analyst can use to gather requirements. Let's apply each technique to the given scenario:

a. Document Analysis- Document analysis is done through reading a document and understanding the product, process and project.
b. Reverse Engineering is also called back engineering, is the process of extracting knowledge or design information from anything man-made and reproducing anything based on the extracted information.
c. Focus group- A focus group is a mean to elicit ideas and attitudes about a specific product, service or opportunity in an interactive group environment.
d. Observations- Observing, Shadowing users or doing a part of their job, can provide information of existing processes, inputs and outputs.
e. Workshop- A requirement workshop is a structured approach to capture requirement. A workshop may be used to scope, discover, define, prioritize and reach closure on requirements for the target system.
f. JAD (Joint Application Development)- Application developed through JAD has higher customer satisfaction and less number of errors as user is directly involved in the development process.
g. Interview-An interview is a systematic approach where interviewee is going to ask relevant questions related to software and documenting the responses.
h. Prototyping- Prototyping is an attractive idea for complicated and large systems for which there is no manual process or existing system to help determining the requirements.
i. Survey/Questionnaire- Questionnaire can be useful for obtaining limited systems requirement details form the users/stakeholders, which have minor input or are geographically remote.
j. Brainstorming- Brainstorming is an effective way to generate lots of ideas on a specific issue and then determine which idea is the best solution.

Question 6 – This project Elicitation Techniques - 5 Marks

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

Answer 6-

Elicitation Techniques Used in This Project -To gather the requirements effectively for Mr. Henry's online agriculture product store project, the following elicitation techniques can be applied:

1. Interviews

Justification: Since Peter, Kevin, and Ben are key stakeholders and end users (farmers), conducting one-on-one or group interviews with them will help understand their specific challenges, expectations, and preferences. Interviews with Mr. Henry, Mr. Pandu, and Mr. Dooku (the Committee) will help clarify business objectives, budget, timelines, and expectatins.

2. Workshops

Justification: Joint workshops involving farmers, committee members, and APT IT SOLUTIONS project team (developers, testers, DB/network admin) can facilitate collaborative discussions and resolve conflicting requirements. It is useful to prioritize features (like payment options, product filtering, language support, etc.) in a structured setting.

3. Observation (Job Shadowing)

Justification: Visiting the remote village and observing how farmers like Peter, Kevin, and Ben currently purchase seeds, fertilizers, and pesticides will give real-time insights into their pain points and tech limitations.Useful in designing a user-friendly interface tailored to non-tech-savvy users.

4. Document Analysis

Justification: Analyzing existing agricultural product distribution records, procurement forms, and any available data from local government schemes can provide functional insights and help in designing backend data structures.

5. Brainstorming

Justification: Conducting brainstorming sessions with the APT IT SOLUTIONS team (developers, testers, DB admin) and committee members will help generate innovative ideas for app features, usability improvements, and technical feasibility.

Conclusion: These techniques will ensure comprehensive requirement gathering from all stakeholders (users, committee, and technical team), while aligning with business goals and the unique context of remote-area farmers.

Question 7 – 10 Business Requirements- 10 Marks

Make suitable Assumptions and identify at least 10 Business Requirements.

Answer 7-

Assumptions for the Project

1. The platform will be a web-based and mobile-friendly application.
2. Internet connectivity in rural areas may be intermittent, so the system should be optimized for low bandwidth.
3. Farmers may not be highly tech-savvy, so the interface should be simple and intuitive.
4. Manufacturers will upload product details, including images, descriptions, prices, and stock availability.
5. Payment gateways must comply with legal and banking regulations in the region.
6. Delivery services will be managed by third-party logistics partners.
7. Farmers prefer multi-language support for the application.
8. Secure user authentication will be implemented for account creation and login.
9. The application will send email notifications for order confirmations and delivery updates.
10. All transactions, orders, and product listings will be tracked and logged for reporting purposes.

Identified Business Requirements

1. **BR001**: The platform must allow farmers to browse and search for products (fertilizers, seeds, pesticides) using filters such as type, price, and availability.
2. **BR002**: Manufacturers must be able to register, login, and upload product details, including descriptions, prices, images, and stock availability.
3. **BR003**: Farmers must be able to create accounts using their email IDs and secure passwords, with an option for password recovery.
4. **BR004**: The platform must support a secure payment gateway that includes multiple payment options such as COD, credit/debit cards, and UPI.
5. **BR005**: Farmers must be able to add products to a "Buy Later" list or proceed to purchase directly from their cart.
6. **BR006**: The system must send email notifications for user registration, order confirmations, payment receipts, and delivery updates.
7. **BR007**: A delivery tracking feature must allow farmers to view the real-time status and estimated delivery time of their orders.
8. **BR008**: The platform must support multi-language options to cater to farmers from different linguistic backgrounds.
9. **BR009**: An admin panel must allow administrators to monitor transactions, manage user accounts, and generate reports on sales, product trends, and user activity.
10. **BR010**: The system must have a feedback mechanism where farmers can rate and review products to help other users make informed decisions.

Question 8 –Assumptions- 5 Marks

List your assumption

Answer 8 –

Assumptions on this project are as follows-

Target Users: Farmers in remote areas are the primary end users. Manufacturers of fertilizers, seeds, and pesticides are the product providers.

Technology: The platform will be both web-based and mobile-friendly to ensure accessibility. The application will be optimized for low-bandwidth scenarios to accommodate users in rural areas.

User Interface: The interface will be simple and intuitive, designed for non-technical users like farmers. Multi-language support will be implemented to cater to diverse linguistic needs.

Product Details: Manufacturers will upload product information, including descriptions, prices, stock availability, and images. Farmers will have access to filters for searching products by category, price range, and availability.

Payments: The platform will support secure payment methods, including cash-on-delivery (COD), credit/debit cards, and UPI. Payment processing will comply with regional financial regulations.

Logistics: Delivery services will be managed through third-party logistics providers. Farmers will have a delivery tracking system for their orders.

Notifications: The system will send automated email notifications for key activities, such as registration, order confirmations, and delivery updates.

Security: User accounts will require secure login credentials, with options for password recovery. Role-based access control will be implemented (e.g., separate roles for farmers, manufacturers, and administrators).

Stakeholder Roles: Peter, Kevin, and Ben are representative farmers and key stakeholders for requirement gathering. Mr. Henry, the project sponsor, defines the primary goals and monitors the project's progress.

Budget and Timeline: The project budget is 2 Crores INR, and the expected delivery timeline is 18 months.

Question 9 – This project Requirements Priority - 8 Marks

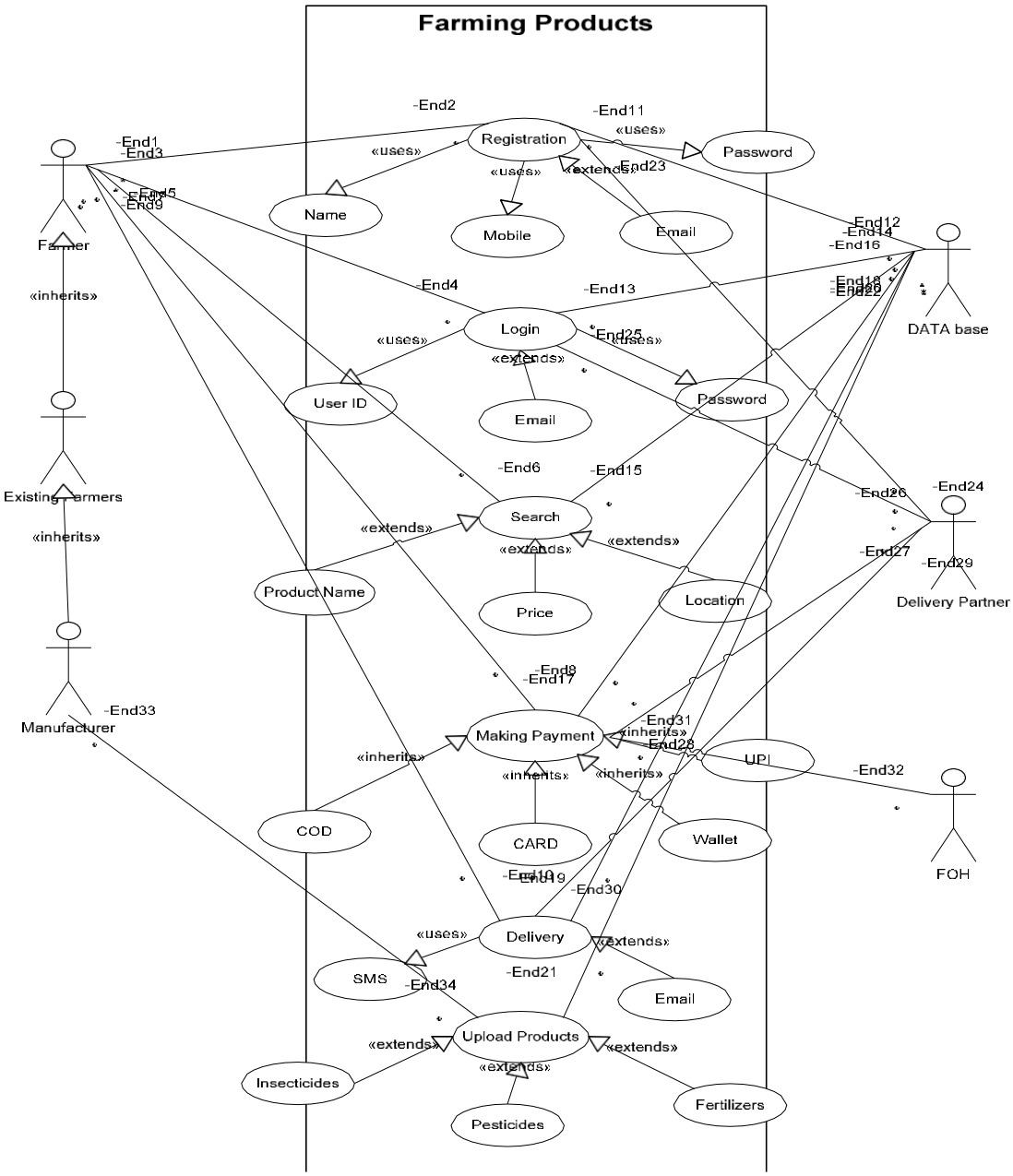
Give Priority 1 to 10 numbers (1 being low priority – 10 being high priority) to these Requirements after discussions with the stakeholder.

Answer 9-

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 search for products	Manufacturers should be able to upload and display their products in the application.	8
BR003	Secure login	Farmers and manufacturers should be able to securely log in to access and manage their accounts.	10
BR004	Payment Options	The platform should support multiple payment methods (COD, Credit/Debit Cards, UPI).	9
BR005	Delivery Tracking	Farmers should be able to track the delivery status of their orders in real-time.	7
BR006	Email Notifications	Automated email notifications for registration, order confirmations, and delivery updates.	6
BR007	Multi-Language Support	The application should support multiple languages to cater to diverse users.	5
BR008	Product Catalog	Farmers should be able to browse a categorized catalog of available fertilizers, seeds, and pesticides.	9
BR009	Feedback Mechanism	Farmers should be able to rate and review products for better user guidance.	4
BR010	Admin Reporting	Administrators should have access to reports on sales, trends, and user activities.	3

Question 10 – Use Case Diagram - 10 Marks

Draw use case diagram.



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

Prepare use case specs for all use cases

Answer 11- Use Case Specifications for Online Agriculture Product Store

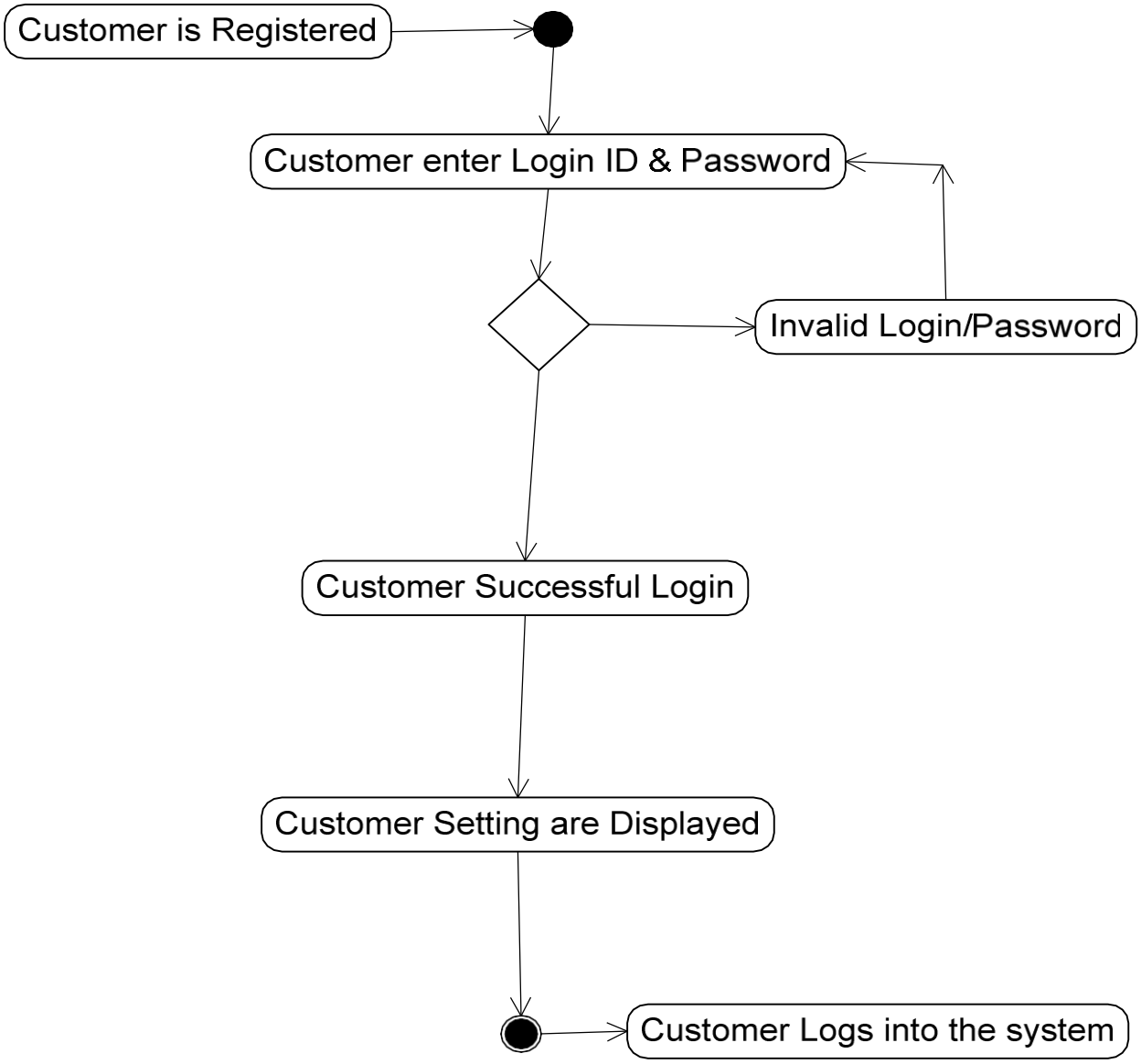
Use Case ID	Use Case Name	Actor	Description	Preconditions	Basic Flow	Alternate Flow	Postconditions
UC001	Search Products	Farmer	Allows farmers to search for specific products (fertilizers, seeds, pesticides) using keywords or filters.	- Farmer must be logged in. - Product catalog must be available in the system.	1. Farmer logs into the system. 2. Farmer enters a keyword or selects filters (e.g., type, price range). 3. The system displays a list of matching products.	If no products match the search, display a "No Results Found" message with suggestions.	The farmer views relevant product options.
UC002	Browse Product Catalog	Farmer	Farmers can browse a categorized catalog of all available products.	- Product categories must be predefined in the system.	1. Farmer selects the "Browse Catalog" option. 2. The system displays categories such as fertilizers, seeds, and pesticides. 3. Farmer views products in a category.	N/A	The farmer views products within a chosen category.
UC003	Place Order	Farmer	Farmers can add products to the cart and place an order.	- Farmer must be logged in. - Products must be available in stock.	1. Farmer adds products to the cart. 2. Farmer proceeds to checkout. 3. Farmer selects payment method and confirms order. 4. System generates confirmation.	If the payment fails, the farmer is notified and can retry or choose another payment method.	The order is successfully placed and tracked.

UC004	Track Order	Farmer	Allows farmers to track the status of their orders.	- An order must already be placed.	1. Farmer logs into the system. 2. Farmer selects "Track Order" from the dashboard. 3. System displays real-time order status and estimated delivery time.	N/A	The farmer views the updated order status.
UC005	Login	Farmer, Manufacturer, Admin	Users log into the system with secure credentials.	- The user must have an existing account.	1. User enters email and password. 2. System authenticates credentials. 3. User is redirected to their dashboard.	If credentials are invalid, an error message is displayed.	The user accesses their dashboard.
UC006	Register	Farmer, Manufacturer	New users create an account.	- The user must provide a valid email ID.	1. User selects the "Register" option. 2. User enters required details (name, email, password). 3. System verifies email and creates the account.	N/A	The user account is created successfully.
UC007	Upload Product	Manufacturer	Manufacturers upload details of new products.	- Manufacturer must be logged in.	1. Manufacturer selects "Upload Product" option. 2. Manufacturer enters product details. .	N/A	The product becomes available in the catalog

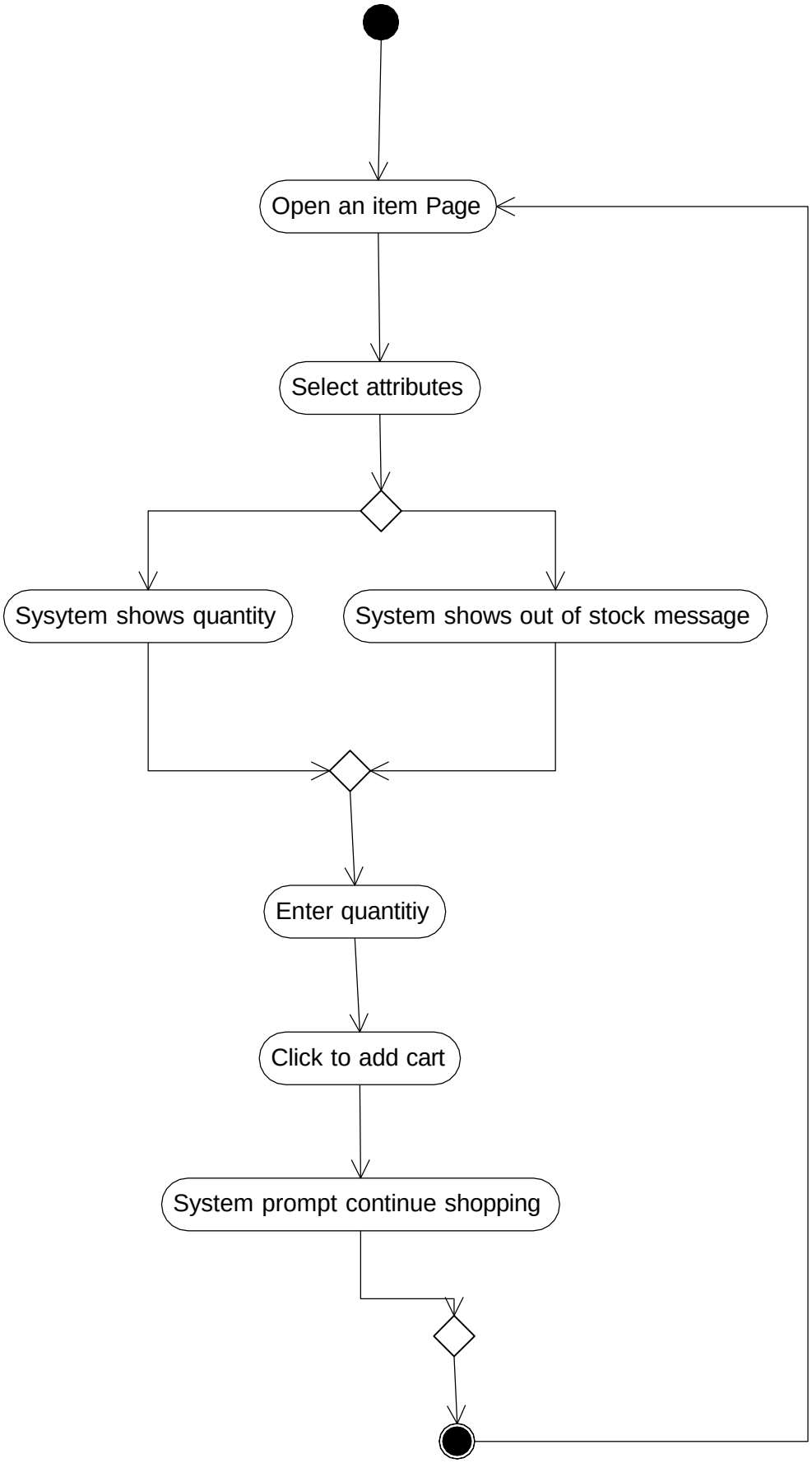
Answer 12-

Activity diagram is basically a flowchart diagram that shows the flow of activity from one activity to another activity.

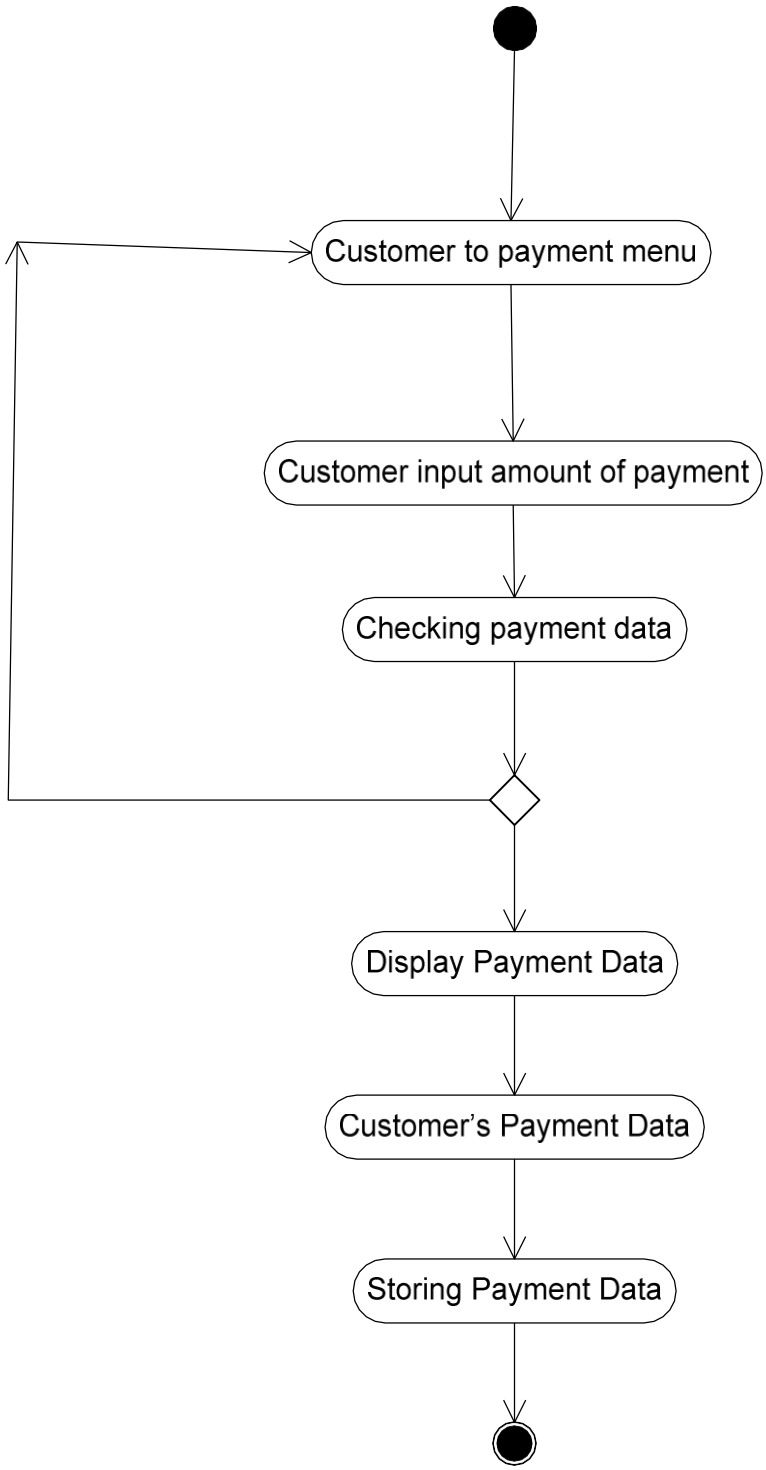
Registered Customer Login



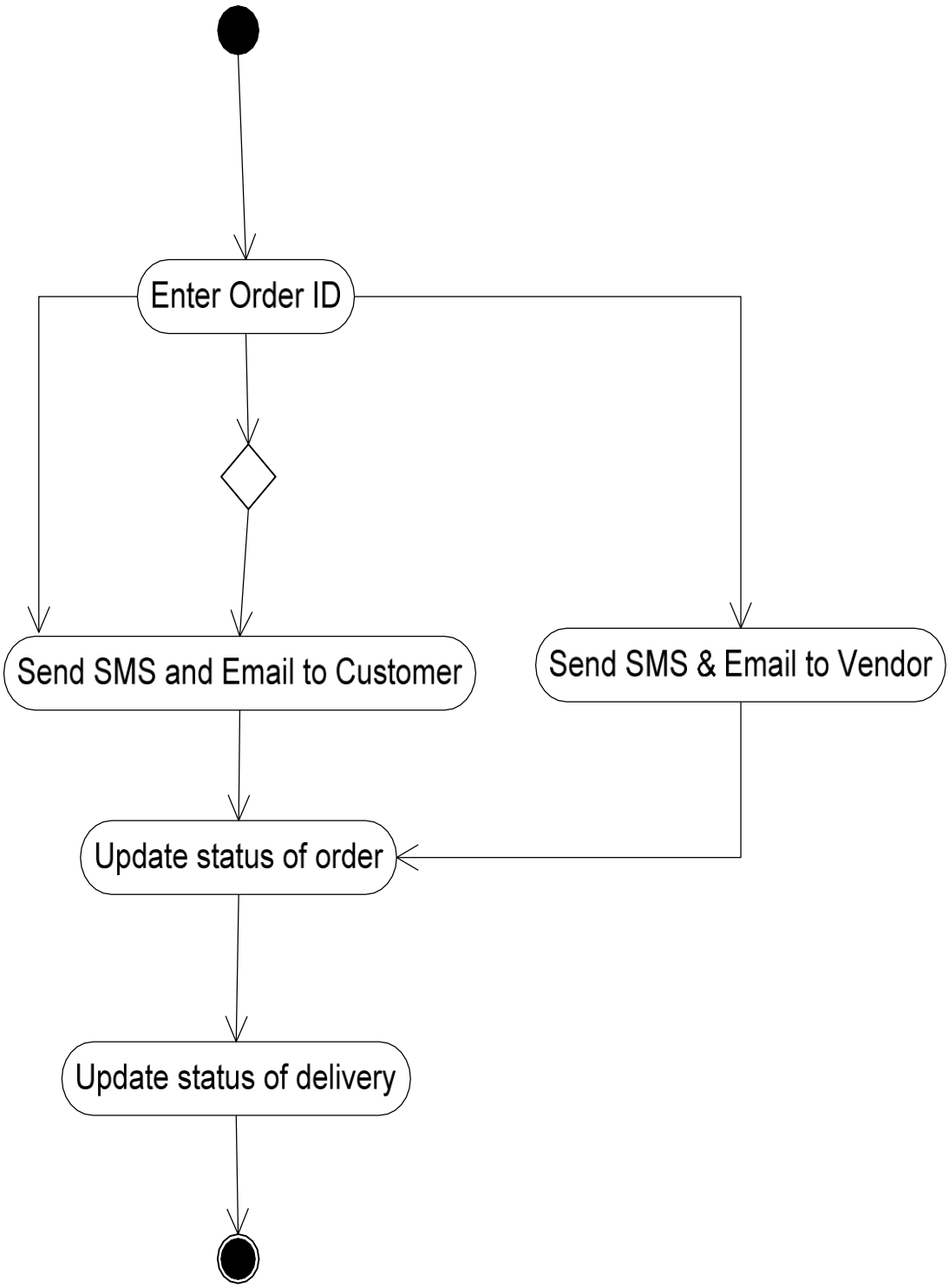
Add to Cart


Open an item Page
Select attributes
Sysytem shows quantity
System shows out of stock message
Enter quantitiy
Click to add cart
System prompt continue shopping

Making Payment



Order for delivery



Search for product