

CAPSTONE PROJECT 1.2: ONLINE AGRICULTURE PRODUCTS STORE

By Raunak Sharma

QUESTION – 01

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

ANSWER – 01

Audits are recommended for projects at any stage, but it proves most effective for ongoing projects which follows SDLC. It can be done on Quarterly, Half Yearly or Yearly basis.

Quarterly Audits in project management are structured reviews conducted every three months to assess a project's progress, compliance, and performance against established plans and standards. These audits help identify potential risks, ensure adherence to processes, and provide valuable insights for improvement.

In essence, quarterly audits act as a check-in mechanism to ensure that the project is on track and that any deviations are addressed promptly.

Audit for Business Analyst is needed because communication challenges between business teams and technologists are chronic. 60% - 80% of project failures can be attributed to poor requirements gathering analysis and management.

Area of BA Audit –

- How BA conducts requirement gathering and documented it.
- How efficiently requirement analysis is conducted by BA.
- How clearly and efficiently BA will form UML diagram.
- How clearly and efficiently BA will form use case diagram.
- How the system requirements are documented and communicated with development and technical team.

The project management audit process consists of the following steps –

- Plan the Audit
- Conduct the Audit
- Summarize the Audit
- Present the Results
- Decide an Action Plan
- Plan a Follow-up
- Repeat

QUESTION – 02

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 and 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).

ANSWER – 02

BA approaches are planned in order to come up with a suitable method to conduct business analysis activities – that is, the way in which tasks will be carried out and the deliverable that will be produced.

Factors Affecting the BA Approach –

- **Project Needs** – The business analysis approach is shaped by the problem or opportunity faced by the organization. It is necessary to consider what is known about the need at the time of planning while acknowledging that project needs evolve throughout business analysis activities.
- **Stakeholders** – Perform and document a stakeholder engagement plan to ensure planning and monitoring activities reflect stakeholder needs and account for stakeholder characteristics.

As a business analyst, following steps can be followed to complete the project. These steps are –

- **Elicitation Techniques –**

As a BA, various elicitation techniques such as interview, surveys, observations, focus groups and brainstorming can be used for requirement gathering and analysis. These techniques will help for better understanding of the project.

- **RACI matrix for Stakeholder analysis –**

We will conduct the stakeholder analysis with the help of RACI matrix to identify and categorize them on the basis of their influence and involvement in the project lifecycle.

- **Documentation –**

We will prepare various documents for business analysis such as BRD, FRD, Use Cases and User Stories. These documents will help us to collect requirements and help for the development of project.

- **Document Sign Off Process –**

The document sign-off process is a formal procedure that signifies approval or acceptance of a document, often by obtaining signatures from relevant parties. It typically involves reviewing the document, identifying signatories, obtaining their signatures (electronic or physical), and recording the event for audit purposes. This process ensures the document's accuracy, completeness, and compliance with required standards before it's considered finalized.

- **Client Approvals –**

Client approval is the process where clients review, provide feedback, and ultimately agree to project deliverables, plans, or specific tasks. It signifies the client's acceptance of the work and ensures their needs and expectations are met, serving as a quality assurance measure. This process is crucial for avoiding misunderstandings, minimizing risks, and fostering smooth collaboration.

Key aspects of client approval are stakeholder involvement, documentation, formal sign off, clear communication and meeting client needs.

- **Communication Channels –**

Communication channels are the pathways through which information flows between project stakeholders.

We will be using –

- In person meeting.
- Video conferencing
- Phone calls
- Emails
- Online messaging app.

- **Handling of Change Requests –**

Effective handling of change requests in project management involves a structured process to evaluate, approve, and implement modifications while minimizing disruption to the project.

Key steps in handling change requests:

1. Initiation and Documentation.
2. Impact Assessment.
3. Prioritization.
4. Approval/Rejection.
5. Implementation Planning.
6. Communication.
7. Monitoring and Control.

- **Update the Progress of the Project –**

Project progress updates are crucial for keeping stakeholders informed and ensuring project success. They provide a snapshot of the project's current status, highlighting achievements, roadblocks, and upcoming milestones.

These updates can be delivered through various formats which are –

- **Status Reports –**
Concise updates on the project's overall health, often including key metrics like timeline, budget, and task completion.
- **Progress Reports –**
Detailed reports outlining specific tasks, milestones, and activities completed, demonstrating the project's advancement.
- **Project Meetings –**
Regular meetings (e.g., daily, weekly) to discuss progress, identify issues, and plan next steps.

QUESTION – 03

Explain and illustrate 3-tier architecture?

ANSWER – 03

The 3 – tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers, they are as follows,

- i. The Presentation Tier – Application Layer.
- ii. The Application Tier – Business Logic Layer.
- iii. The Data Tier – Data Layer.

I. APPLICATION LAYER –

- The application layer handles the main programs of the architecture.
- It includes the code definitions and most basic functions of the developed application.
- This is the layer that programmers spend most of their time in when working on the software.
- This level consists of user interface, main function is to translate task and result into something user can understand.
- It includes screen, pages, logo, functionalities and validations.

II. BUSINESS LOGIC LAYER –

- The business logic layer contains objects that execute the business functions.
- The command pattern should be considered to implement these objects.
- With the command pattern, each use case in the requirements document is implemented as a separate command or set of commands executed in the business logic layer.
- In short, this layer processes commands makes logical decision and evaluations and performs calculations.
- It includes printers, payments gateways and RBI or IRDA rules.

III. DATA LAYER –

- This is the lowest tier of this architecture and is mainly concerned with the storage and retrieval of application data.
- The application data is typically stored in a database server, file server, or any other device or media that supports data access logic and provides the necessary steps to ensure that only the data is exposed without providing any access to the data storage and retrieval mechanisms.

- This is done by the data tier by providing an API to the application tier.
- In short, information is stored and retrieved from database in this layer.
- This information is then passed back to logic tier for processing and then eventually back to user.

Benefits of 3-Tier Architecture –

- **Modularity –**
Each tier can be developed and maintained independently, allowing for easier updates and modifications.
- **Scalability –**
Individual tiers can be scaled independently based on their specific needs, improving overall performance.
- **Flexibility –**
The separation of concerns allows for easier integration of new technologies and features.
- **Maintainability –**
Changes in one tier have less impact on other tiers, simplifying maintenance and reducing errors.
- **Security –**
The separation of tiers can enhance security by isolating sensitive data and business logic.

QUESTION – 04

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, and Page Designs)

ANSWER – 04

- **5W1H –**

The 5W1H approach is an iterative interrogative technique used to explore the cause and effect relationships underlying a particular problem and fits perfectly when we need to elaborate a project planning. This technique allows to understand a situation, to discern a problem by analyzing all aspects.

5W are What, Who, Where, When, Why and 1H is How.

Following are the 5W1H questions,

- **What** is the project? What are the objectives?
- **Who** is the client? Who are the users? Who are the members of the team?
- **Where** will the problem exist?
- **When** the project will start?
- **Why** has the project been started? Why the only selected products?
- **How** many days it will take to complete? How much is the budget?

- **SMART –**

SMART analysis is a business analysis technique which helps a business analyst to describe the user's expectations of a business solution. It is a validation technique & a process that involves analyzing, planning, documenting, elaborating, validating and managing business system requirement.

SMART stands for –

- **Specific –**
The requirement is clear and unambiguous. Explains to the project team exactly what is expected.
- **Measurable –**
The requirement can be measured that is tested to determine whether it has been met.

- **Achievable –**
The requirement is attainable, otherwise you are setting yourself up to fails.
- **Relevant –**
The requirement must be relevant to the business needs of the organization and be realistic as well.
- **Time Framed –**
The requirement has a clearly defined time frame for when it will be achieved.

- **RACI Matrix –**

RACI matrix is an acronym that stands for Responsible, Accountable, Consulted and Informed.

Each letter in RACI matrix represents a level of task responsibility on a project.

- **Responsible –**
It is the person who actually does the work to accomplish a task.
- **Accountable –**
It is the person who delegates the task, making decision, taking action and last one to review the task.
- **Consulted –**
It is the person who provides the input regarding the task or activity.
- **Informed –**
It is the person who will be kept in the loop and updated on the actions taken or decision taken.

- **3 – TIER ARCHITECTURE –**

- **Application Layer –**
This layer consist of user interface and main function of this layer is to translate task and results into something user can understand.
- **Business Logic Layer –**
This layer process commands, makes logical decision, evaluations, and performs calculations.
- **Data Layer –**
Information is stored and retrieved from data base in layer.

- **USE CASES –**

A use case is a methodology used in system analysis to identify, clarify and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal.

The method creates a document that describes all the steps taken by a user to complete an activity.

Every use case contains three essential elements which are –

- **The Actor** – It is a system user; this can be a single person or group or people.
- **The Goal** – The final successful outcome that completes the process.
- **The System** – The process and steps taken to reach the end goal.

- **USE CASES SPEC –**

A use case specification provides details for a use case in a textual format. It captures the requirements, typically of a system, in the form of a use case that contains the descriptive requirements steps in a logical sequence so that document specification can be understood by user to obtain sign – off of their requirements and for tester and developers to understand what is needed by the system to test and build the system functionality detailed in the system use case.

Use case has several types of flow which are –

- **Basic Flow (Positive Flow) –**

The flow of the events describes a single path through the system. It specifies the interactions between the actor and the system for an ideal condition; also, it contains the most common sequence of user – system interactions.

- **Alternate Flow (Operational Flow) –**

An alternate flow is a series of actions other than the basic flow that results in a user completing the goal. It is considered to be an optional flow.

- **Exceptional Flow –**

An exceptional flow is any action that will cause the actor to not to complete or achieve the desired result. Exception flow represent an undesirable path to the user.

We can use below mentioned sample outline to create use case specifications,

- **Use Case ID** – It states unique ID for each use case.
 - **Use Case Name** – It states the name of the use case, which also reflect objective and end result of that use case.
 - **Brief Description** – It states purpose of the use case.
 - **Actors** – It states a role played by user and any other system interaction.
 - **Pre-conditions** – It states the system that must be present initially.
 - **Post-conditions** – The possible state for the system after completing use case.
 - **Basic Flow** – It describes the ideal, primary behavior of the system.
 - **Alternative Flow** – It describe deviations from the basic flow.
 - **Exceptional Flow** – It explains the exceptions from the basic flow.
 - **Key Scenarios** – It enlist the most important scenarios of the use case.
 - **Special Requirements** – It states the list of the non-functional requirements.
- **ACTIVITY DIAGRAM –**

Activity diagram is basically a flowchart to represent the flow from one activity to another activity.

The activity can be described as an operation of the system. The control flow is drawn from one operation to another and it can be sequential, branch or concurrent.

Some of the most common components of the activity diagram are as follows –

- Action.
- Decision Node.
- Control Flows.
- Start Node.
- End Node.

- **MODELS –**

The model outlines the steps a business takes to complete a specific process such as ordering a product online. Process modelling is key to improving process efficiency, training, and even complying with industry regulations.

Some of the most essential models are as follows –

- Activity Diagram.
- Future Mind Maps.
- Product Road Maps.
- Organizational Charts.

- SWOT Analysis.
- User Interface Wireframe.
- Process Flow Diagram.
- PESTLE Analysis.
- Entity – Relationship Diagram.

- **PAGE DESIGNS:**

Page Designs are used to outline the content and elements on web pages. The elements are organized into low, medium and high priority.

The goal is to produce eye – catching pages that grab the attention of the customer.

Keeping all above points, I have prepared some sample questions to ask regarding the project and those are as follows –

- What do you mean by Online Agriculture Product Store?
- What is the objective of Online Agriculture Product Store?
- What kind of problem you are going solve?
- What are the products that you are going to offer?
- Who is your target customer?
- Who is the user of the Online Agriculture Product Store?
- When the project going to start?
- How much is the budget for this project?
- How much time it will take to complete this project?
- What are the all options you want on website interface?
- How the data security taken care?
- Who is responsible for entire project?
- Who is the accountable and for which stage?
- Who is the consultant for this project?
- Who is the informed in this project and at what stage?
- Who are the actors?
- What model we are going to use in this project?
- What conditions to put in activity diagram?
- What is the sequence of task?
- Whether the asked questions are SMART?

QUESTION – 05

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

ANSWER – 05

Requirement elicitation is the process of collecting the requirements of a system or requirement gathering from user, customers and stakeholders by conducting meetings, interviews, questionnaires, brainstorming sessions, prototyping etc. It serves as a foundation in documenting the requirements for application development.

As a BA I am aware of following elicitation techniques which are useful in gathering the information from client –

1. BRAINSTORMING –

- This technique is used to generate new ideas and find a solution for a specific issue.
- The members included for brainstorming can be domain experts, subject matter experts.
- This session is generally conducted around the table discussion.
- All participants should be given an equal amount of time to express their ideas.
- In short, this technique involves simply announcing a topic or posing a question and inviting participants to discuss ideas.

2. DOCUMENT ANALYSIS –

- This technique is used to gather business information by reviewing or examining the available materials that describe the business environment.
- Document analysis includes reviewing the business plans, technical documents, problem reports, existing requirements document.
- This technique is used when the plan is to update an existing system, also useful for migration project.

3. REVERSE ENGINEERING –

- This elicitation technique is generally used in migration projects.
- If an existing system has outdated documentation, it can be reverse engineered to understand what the system does.
- We can extract implemented requirement from system.

4. FOCUS GROUP –

- A focus group means elicit ideas and solution about specific product or service.
- A focus group has 6-12 participant.

- There two types of focus group
 - i. Homogeneous – Individual with similar characteristics.
 - ii. Heterogeneous – Individual with diverse background

5. OBSERVATION –

- Observing showing user or event doing part of their job.
- It can provide information of existing process, input and output.
- There are two types of observation.
 - i. Passive/Invisible: in this approach business analyst observe the subject matter working through business routine with interfering of their work, they use to notes about the process and his or her observation.
 - ii. Active/Visible: In this approach while business analyst observes the current process takes notes of the process and having conservation about the process as well.

6. WORKSHOP –

- Workshops are interactive meetings with facilitated discussions.
- A good workshop facilitator can help a group uncover core requirements and help team with brainstorming.
- It is mainly made in 5 – phases,
 - i. Planning
 - ii. Opening
 - iii. Execution
 - iv. Closing
 - v. Follow – up

7. JAD – JOINT APPLICATION DEVELOPMENT –

- JAD is a methodology that invokes the client or end user in the design and development of an application, through a succession of collaborative workshops called JAD session.
- JAD decreases time and costs associated with requirements elicitation process.

8. INTERVIEW –

- Interview technique should be used for building strong relationships between business analysts and shareholders.
- In these techniques, the interviewer directs the question to stakeholders to obtain information.
- One to one interview is the most commonly used techniques.

- If interviewer has predefined set of questions, then it's called A Structured Interview.
- If the interviewer is not having any particular format or any specific questions, then it's called an Unstructured Interview.

9. PROTOTYPING –

- Prototyping is used to identify missing or unspecified requirement.
- In this techniques, frequent demos are given to the client by clearing the prototypes so that client can get an idea of how the product will look like.
- Prototype can be used to create a mock – up of sites and describes the process using diagram.

10. QUESTIONNAIRE –

- A set of questions is given to stakeholders to quantify their thoughts.
- After collecting the responses from stakeholders, data is analyzed to identify the area of interest of stakeholders.
- Questions should be based on high priority risk and also direct and unambiguous.

11. USE CASE SPECIFICATION –

- Use case specification are an efficient and widely used techniques for elicitation software requirements.
- The use-case specification approach focuses on the goals that users have with a system, rather than emphasizing system functionality.

QUESTION – 06

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

- Prototyping, or
- Use case specs, or
- Document Analysis, or
- Brainstorming.

ANSWER – 06

Among the given elicitation techniques, I will go with Prototyping and Brainstorming for the assigned project, and the reason behind it is as follows –

1. PROTOTYPING –

- In this techniques, frequent demos are given to the client by clearing the prototypes so that client can get an idea of how the product will look like.
- Prototype can be used to create a mock – up of sites and describes the process using diagram.
- Prototyping is used to identify missing or unspecified requirement.
- It is effective in resolving uncertainties in early in the development process.
- These techniques extremely helpful in designing and developing new systems or an application.

2. BRAINSTORMING –

- Brainstorming is helps in generating new ideas, our project of online Agriculture Product Store is first of its kind project and which is developed from scratch hence idea generated from the brainstorming session are helpful for developing this kind of projects.
- It is generally used in the beginning stages of a project, where the possibilities for the project are not clearly understood or identified or defined.
- The members included for brainstorming can be domain experts, subject matter experts.
- This session is generally conducted around the table discussion.
- All participants should be given an equal amount of time to express their ideas.

Since, all of the characteristics of brainstorming and prototyping appear to be very promising in developing and designing an Online Agriculture Product Store, I have chosen these two elicitation techniques for the assigned project.

QUESTION – 07

Make suitable Assumptions and identify at least 10 Business Requirements.

ANSWER – 07

Business Requirement	Description
BR001	Farmers should be able to search for available products in fertilizers, seeds, available products in fertilizers, seeds, pesticides.
BR002	Manufacturers should be able to upload and display their products in the application.
BR003	Log – in for all the users' fertilizers, seeds, pesticides, manufacturers and farmers.
BR004	Product catalogue of fertilizers, seeds and pesticides.
BR005	A search option to search for product.
BR006	A search option to search for products, payment process, and delivery tracking.
BR007	Farmer should be able to browse through product catalogue.
BR008	Log – in through E – Mail ID and Password.
BR009	New account creation for new user using E – mail ID and Password.
BR010	Easy to use payment gate way which include Cash – on – delivery, Credit/Debit Card and UPI option.
BR011	E – Mail confirmation regarding the order status.
BR012	Delivery tracker to check delivery status.

QUESTION – 08

List your assumptions.

ANSWER – 08

The few assumptions are listed below, on the basis of which BR were written down –

- Farmers have internet connectivity.
- Farmers have Smartphones/PC/Laptop/Tablet.
- Farmers are aware of how to order product online.
- Famers have email account.
- Farmers from rural area aware of Online Agriculture Product Store.
- Farmers find exactly what they searched for.
- Farmers are aware of digital banking services such as Credit Card/Debit Card/UPI/Wallets.
- Manufacturers are ready to offer product on Online Agriculture Product Store.
- Manufacturers are will accepts all type of payments.
- Delivery is available at the rural area.
- Delivery of product is on time.

QUESTION – 09

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

ANSWER – 09

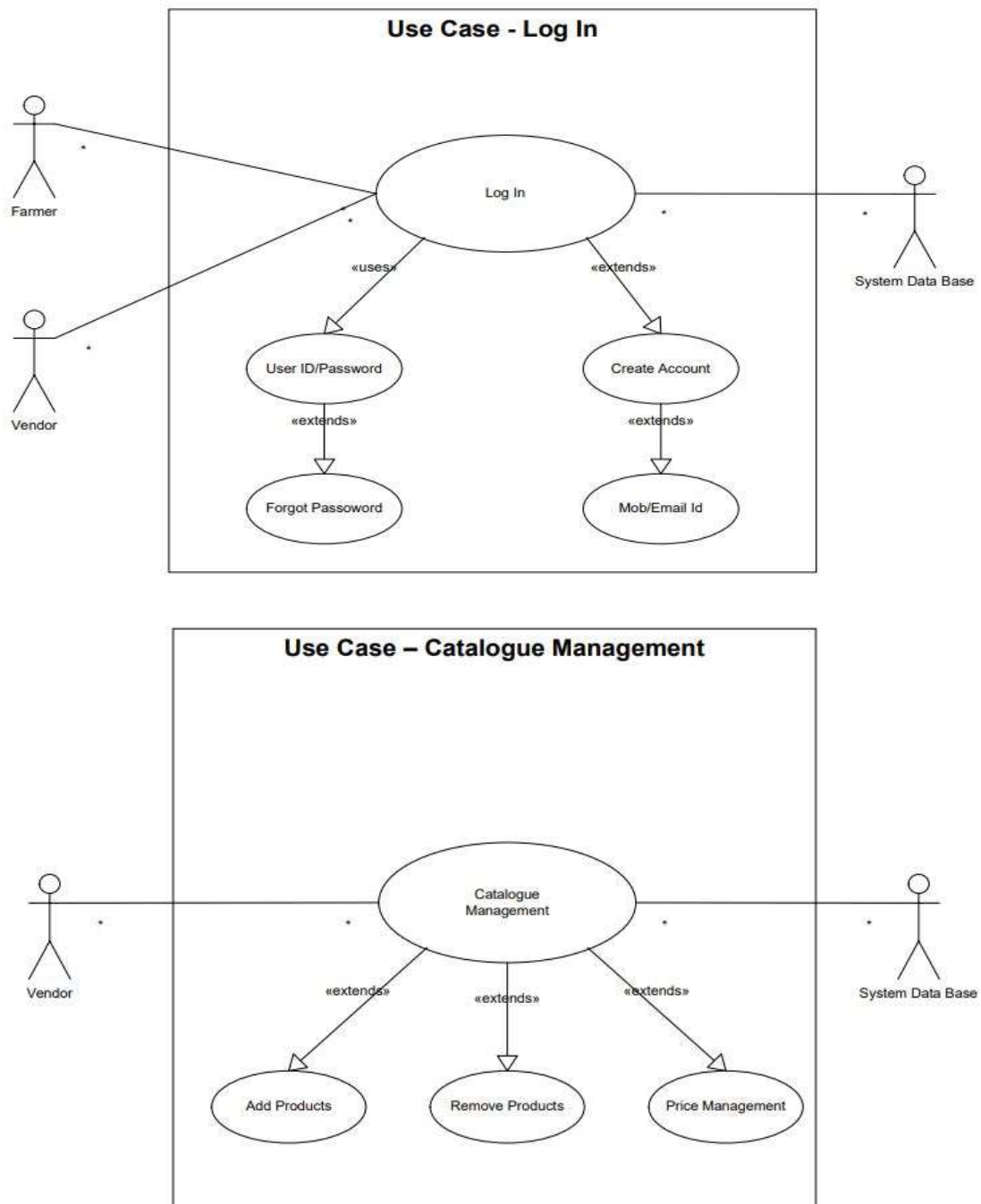
Requirement ID	Requirement Name	Description	Priority
BR001	Farmer search for product	Farmers should be able to search for available products in fertilizers, seeds, available products in fertilizers, seeds, pesticides.	8
BR002	Manufacturers upload their products	Manufacturers should be able to upload and display their products in the application.	8
BR003	Log – In	Log – in for all the users' fertilizers, seeds, pesticides, manufacturers and farmers.	10
BR004	Product catalogue	Product catalogue of fertilizers, seeds and pesticides.	9
BR005	Search Option	A search option to search for product.	8
BR006	Search Option	A search option to search for payment process, and delivery tracking.	8
BR007	Product catalogue	Farmer should be able to browse through product catalogue.	9
BR008	Log – In	Log – in through E – Mail ID and Password.	10
BR009	New Account	New account creation for new user using E – mail ID and Password.	10
BR010	Payment Gateway	Easy to use payment gate way which include Cash – on – delivery, Credit/Debit Card and UPI option.	8
BR011	E Mail Confirmation	E – Mail confirmation regarding the order status.	8
BR012	Delivery Status	Delivery tracker to check delivery status.	8

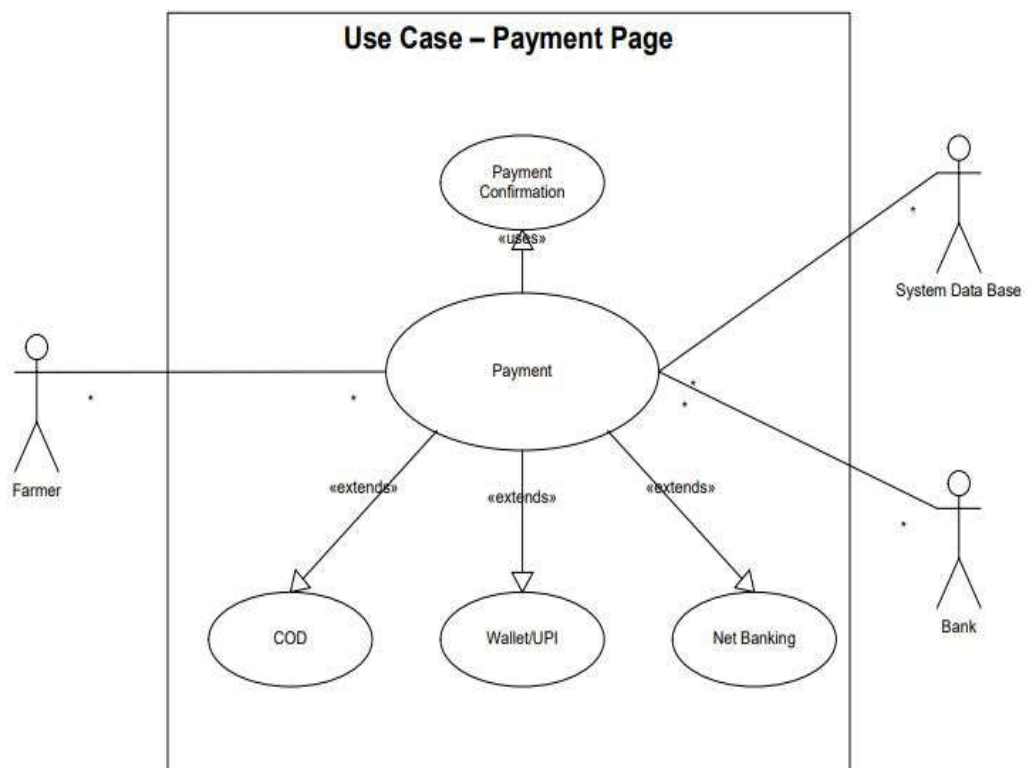
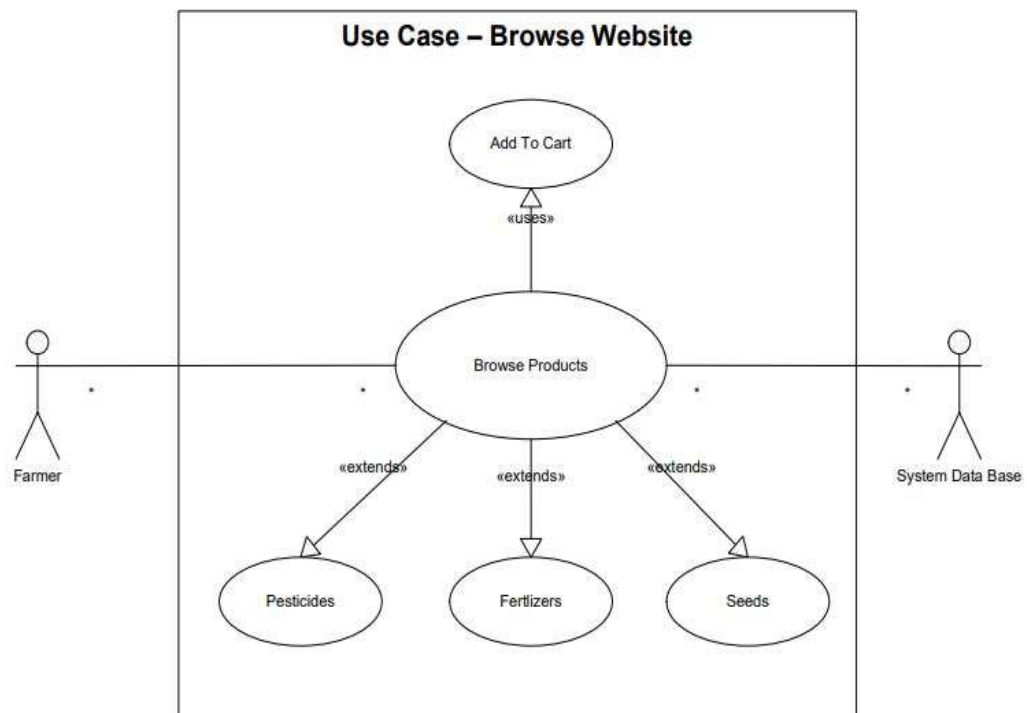
QUESTION – 10

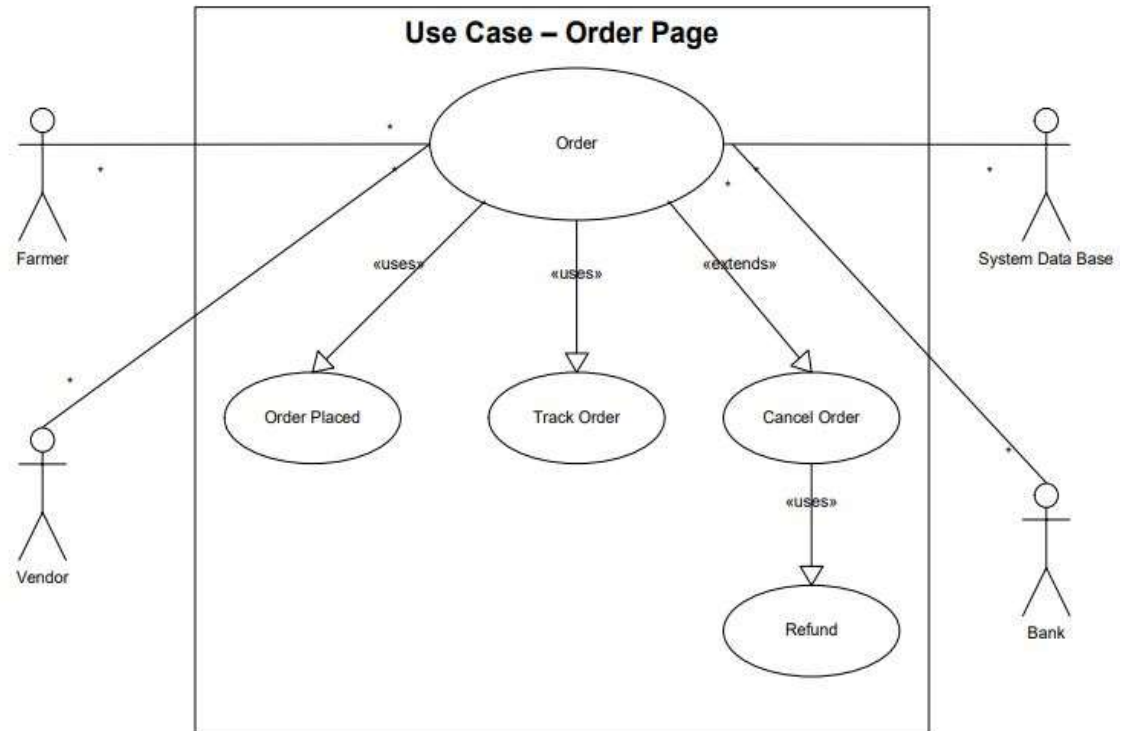
Draw use case diagram.

ANSWER – 10

Use Cases for different scenarios are as follows –







QUESTION – 11

Prepare use case specs for all use cases.

ANSWER – 11

Use Case Diagram for Online Agriculture Product Store, are as followings:

1. Use Case Specification – Log In

Use Case Id – UC 01	Use Case Specification – Log In
Actor	Farmer/ Vendor
Description	• Actors want to access website/application. • Actor can log in using log in credentials • If Don't, Actor can create account using mobile number/email id.
Pre-Conditions	Actor have log in credentials
Post-Conditions	• Actor logged in successfully • Open homepage of website/application

2. Use Case Specification – Catalogue Management

Use Case Id – UC 02	Use Case Specification – Catalogue Management
Actor	Vendor
Description	Actor want to manage catalogue of business log in page showing update items and their price.
Pre-Conditions	• Actor have logged in. • Catalogue is ready in prescribed format.
Post-Conditions	• Catalogue is uploaded and updated.

3. Use Case Specification – Browse Website

Use Case Id – UC 03	Use Case Specification – Browse Website
Actor	Farmer
Description	Actor will be browsing website and exploring the range of fertilizers, seeds and pesticides and adding them to the cart for order.
Pre-Conditions	• Actor have logged in. • Website will show products at homepage. • Browse website and explore range of products
Post-Conditions	• Search results were seen on webpage. • Products are added to the cart.

4. Use Case Specification – Payment Processed.

Use Case Id – UC 04	Use Case Specification – Payment Processed
Actor	Farmer
Description	Actor has added the products and proceeded with payment of goods.
Pre-Conditions	• Actor have logged in. • Explored products and added to cart. • Payment was successful. • Order was placed.
Post-Conditions	• Order id generated. • Confirmation and Tracking details were sent. • Refund was given in case of cancellation.

5. Use Case Specification – Order Placed

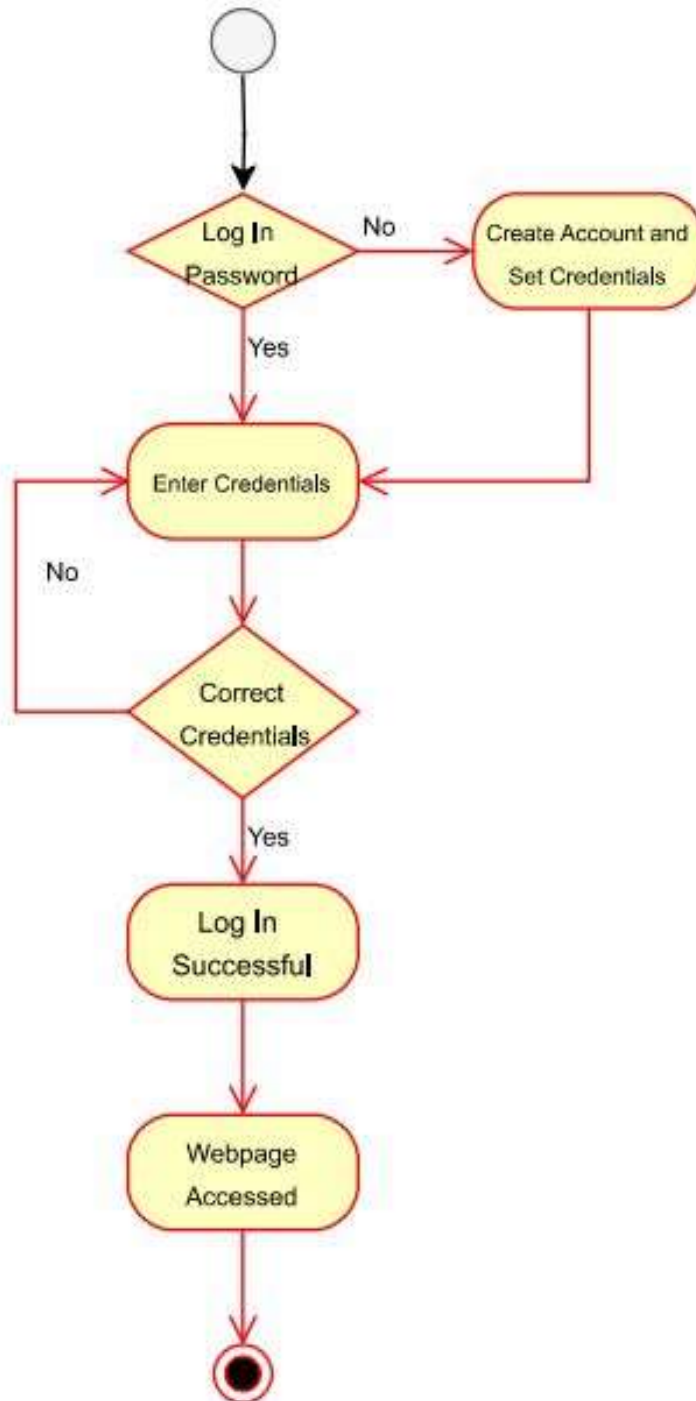
Use Case Id – UC 04	Use Case Specification – Order Placed
Actor	Farmer
Description	Actor will place the order post after them to the cart. The order confirmation, tracking details and in case of cancellation of order the refund initiation will happen.
Pre-Conditions	• Actor have logged in. • Explored products and added to cart. • Payment was successful. • Order was placed.
Post-Conditions	• Order id generated. • Confirmation and Tracking details were sent. • Refund was given in case of cancellation.

QUESTION – 12

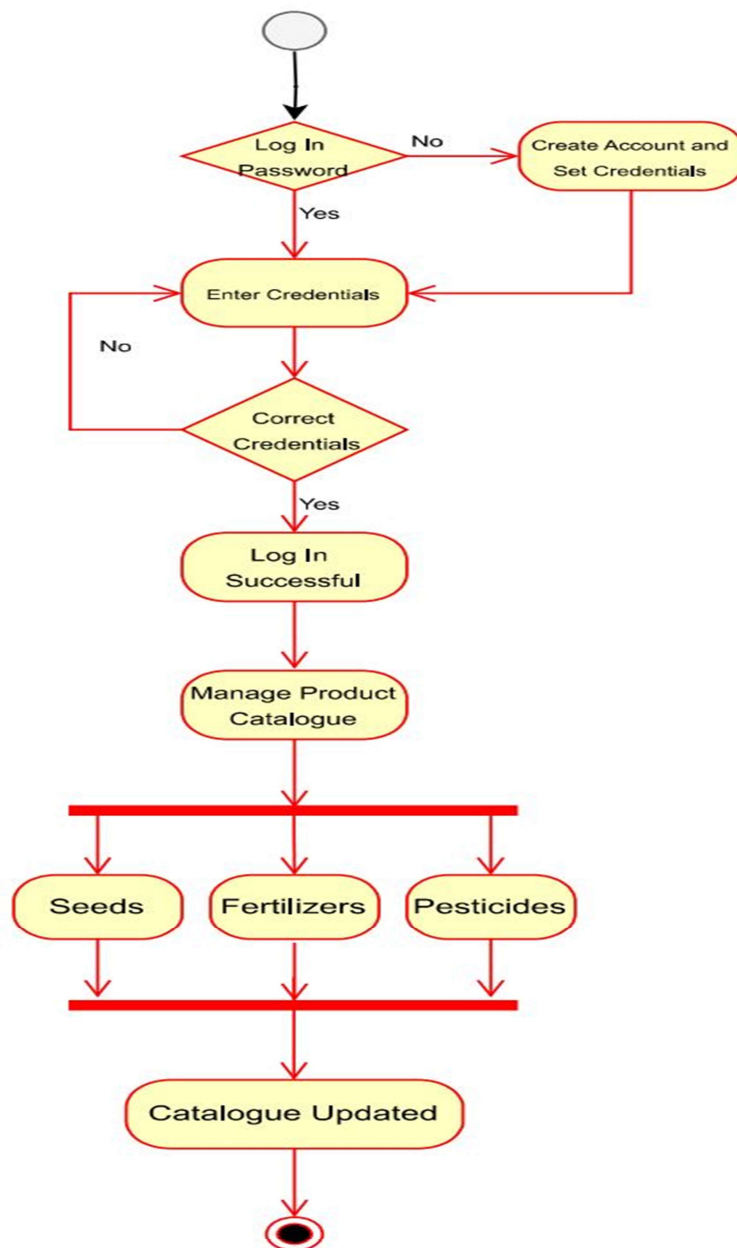
Draw Activity Diagrams.

ANSWER – 12

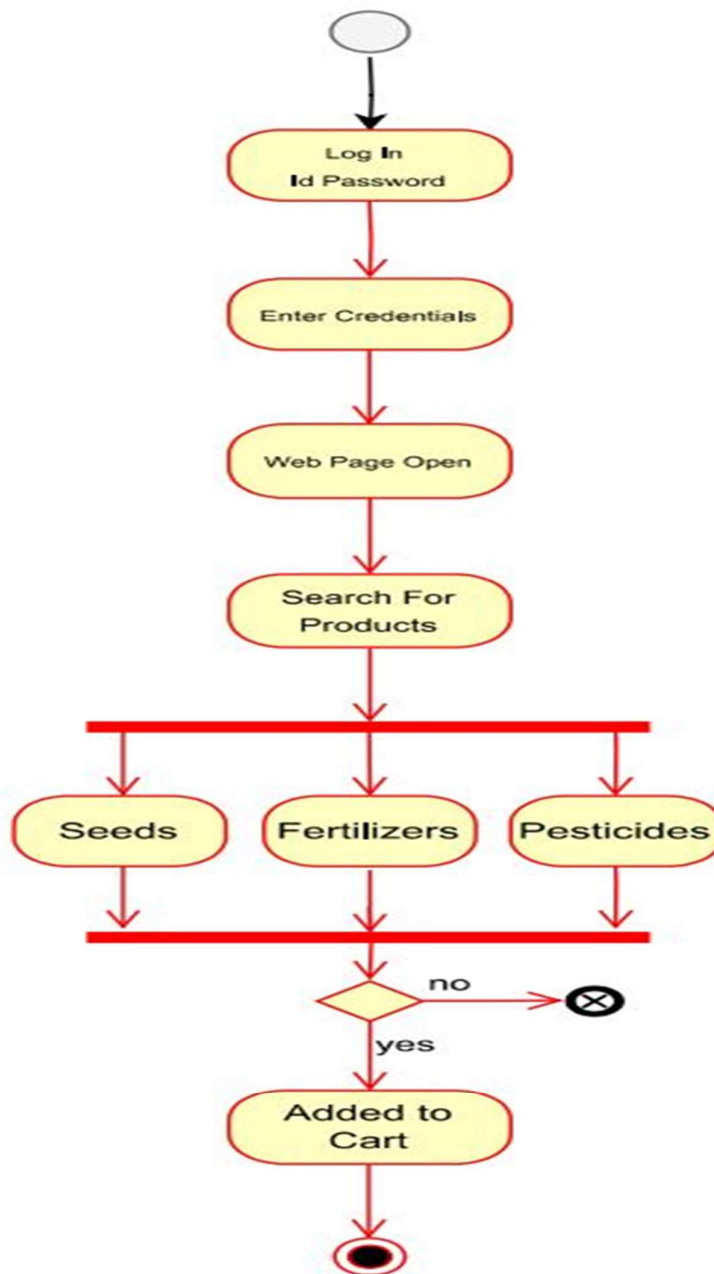
1. Activity Diagram – Log In



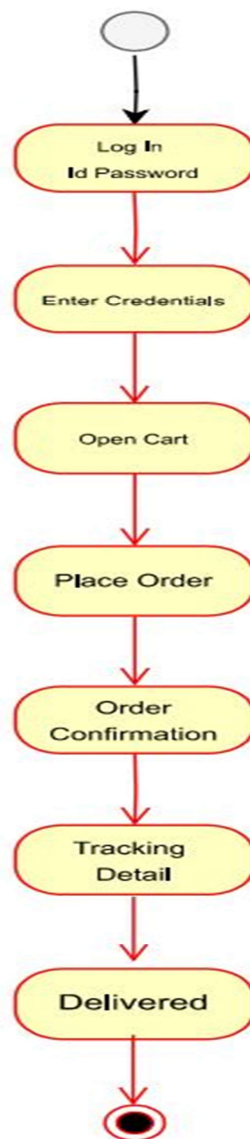
2. Activity Diagram – Catalogue Management



3. Activity Diagram – Browse Website



4. Activity Diagram – Order Placed



5. Activity Diagram – Payment Processed.

