Capstone Project 1

Mr. Henry, after being successful as a businessman and has become one of the wealthiest persons in the city. Now, Mr. Henry wants to help others to fulfil their dreams. One day, Mr. Henry went to meet his childhood friends Peter, Kevin and Ben. They live in a remote village and do farming. Mr. Henry asked his friends if they are facing any difficulties in their day-to-day work.

Peter told Mr. Henry that he is facing difficulties in procuring fertilizers which are very important for farm. Kevin said that he is also facing the same problem in-case of buying seeds for farming certain crops. Ben raised his concern on lack of pesticides which could help in greatly reducing pests in crops.

After listening to all his friends' problems, Mr. Henry thought that this is a crucial problem faced not only by his friends but also by so many other farmers. So, Mr. Henry decided to make an online agriculture product store to facilitate remote area farmers to buy agriculture products. Through this Online Web / mobile Application, Farmers and Companies (Fertilizers, seeds and pesticides manufacturing Companies) can communicate directly with each other.

The main purpose to build this online store is to facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity. Since new users are involved, Application should be user friendly. This new application should be able to accept the product (fertilizers, seeds, pesticides) details from the manufacturers and should be able to display them to the Farmers. Farmers will browse through these products and select the products what they need and request to buy them and deliver them to farmers location.

Mr. Henry has given this project through his Company SOONY. In SOONY Company, Mr Pandu is Financial Head and Mr Dooku is Project Coordinator. Mr. Henry, Mr Pandu , and Mr Dooku formed one Committee and gave this project to APT IT SOLUTIONS company for Budget 2 Crores INR and 18 months Duration under CSR initiative. Peter, Kevin and Ben are helping the Committee and can be considered as Stakeholders share requirements for the Project.

Mr Karthik is the Delivery Head in APT IT SOLUTIONS company and he reached out to Mr Henry through his connects and Bagged this project. APT IT SOLUTIONS company have Talent pool Available for this Project. Mr Vandanam is project Manager, Ms. Juhi is Senior Java Developer, Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo are Java Developers. Network Admin is Mr Mike and DB Admin is John. Mr Jason and Ms Alekya are the Tester.. And you joined this team as a BA.

Question 1. BPM

Ans: Goals

- 1. Provide user friendly website or mobile application for farmers and companies which manufactures products (fertilizers, pesticides and seeds) so that farmers and companies connect with each other.
- 2. Facilitate farmers to buy fertilizers, pesticides and seeds from anywhere through online.
- 3. Providing facility of doorstep delivery of agricultural products.

Inputs

- 1. Requirements and needs of farmers
- 2. Manufacturing companies
- 3. Products like fertilizers, pesticides and seeds

Resources

- 1. Agriculture products
- 2. Manufacturing companies
- 3. Delivery team
- 4. Project team working on project
- 5. Device to access system mobile, computer
- 6. Internet connectivity

Outputs

- 1. Website or application for farmers to purchase products (fertilizers, pesticides and seeds).
- 2. Platform for companies to list agricultural products to manufacture.
- 3. Shipped products to customers.
- 4. Completed orders.

Activities

- 1. Signup & Login facility (farmers and manufacturers).
- 2. Accept the product details from manufacturing companies.
- 3. Listing of products and display it to farmers
- 4. Farmer will search and select product
- 5. Farmer will buy the product using their payment method (Cards, UPI or COD)
- 6. Farmer will get message/email with order details once order is confirmed
- 7. Farmers can track the order using delivery tracker/order id.

Value Created to the end customer

- 1. User friendly & easy to use for farmers
- 2. Easy online ordering
- 3. Accessible from anywhere & anytime
- 4. Time and money saving for farmers
- 5. Increase in delivery production & farmers satisfaction
- 6. Reliable shipping and delivery services

Question 2 SWOT

Ans: SWOT (strengths, weakness, opportunities and threats)

Here strengths and weaknesses are internal to the company and opportunities and threats are external.

Strengths

- 1. Henry is already a successful business and his company is an established firm. Hence he can use his connections for marketing and outreach.
- 2. Project budget is good 2cr for 18 months duration.
- 3. The project is a CSR initiative which means company is not only targeting profit but has taken a positive social role in the world
- 4. Henry's friends Ben, peter and kevin are also key stakeholders to provide valuable inputs for the project.

Weakness:

- 1. Limited duration of the project 18 months to build both website and application.
- 2. Team is handling this type of project for the first time there is no previous expertise in this domain
- 3. The remote location of the targeted audience where products needs to be deliverable
- 4. Lack of resources to handle project at henry's company(SOONY)

Opportunities:

- 1. This project is first of its kind, it has not been developed before by any company.
- 2. By this project collaboration between manufacturing companies and suppliers can be increased.
- 3. Company is entering business into online selling of products and can expand system in future
- 4. Product provides a solution to farmers' problems and can attract a large user
- 5. base.

Threats:

- 1. Are farmers educated about the online store or are they comfortable in ordering products online?
- 2. Is there proper internet in rural areas?
- 3. Competition from other online agricultural product stores if developed by the time of release.
- 4. Quality of delivered product cannot be assured and this can affect user experience and trust.

Question 3: Feasibility study

Ans: Software: all the development softwares including licensed java kits required to develop website and application it needs to determine if any 3rd party components or API's are required to develop the website/application.

Hardware: Laptops, servers, clients, development tools, storage and required networking equipment.

App should be able to handle huge traffic and multiple users should be able to use the app at the same time. So hardware requirements need to be figured out to make the system flexible.

Resources:

- 1. Mr. karthik as delivery head
- 2. Mr. vandanam as project manager
- 3. Ms. juhi as senior java developer
- 4. Mr. teyson, Ms. lucie, Mr. tucker and Mr. bravo as java developers.
- 5. Mr. mike as network admin
- 6. Mr. john as DB admin
- 7. Mr. Jason and Ms. Alekya as testers
- 8. I (Lohith H M) as BA

Budget 2cr Timeframe 18 months. Question 4 Gap analysis

Ans:

Detailed overview of the current state of company's process, culture(AS IS):

- 1. Farmers don't have access to the variety of agricultural products as they have to rely on suppliers with limited options for which they have to pay high prices and sometimes even low quality products.
- 2. Farmers have to visit the market physically to buy products.
- 3. The lack of communication between farmers and manufacturers results in farmers not being able to procure the latest and effective products.
- 4. Farmers often face difficulty in finding the right products according to their particular crop requirements.

Target Process:

- 1. Farmers will be able to order the required products online saving their time and efforts
- 2. Farmers can directly buy the products from manufacturers at affordable price and can eliminate suppliers.
- 3. Through online store manufacturers can directly communicate with farmers & provide them with latest products and technology, which can result in high productivity and better crop yield.
- 4. The online store will have a search option to filter products based upon crop type, specific requirements and other specifications. Which will help to find the right product easily.

Other points considered are:

- 1. Should be user friendly and accessible to farmers who might not have much technical knowledge.
- 2. Secure and verified payment gateway to ensure smooth transaction.
- 3. Should have an effective supply management system to make sure the delivery of products are on time.
- 4. Should have a strong customer support system to address any issues/queries raised by farmers.

Question 5: Risk analysis

Ans:

BA Risk:

- 1. Lack of understanding about the agriculture industry and the specific need of the farmers in rurals.
- 2. Miscommunication with stakeholders resulting in unclear requirements.

- 3. Difficulty in gathering and managing stakeholder requirement due to their remote location
- 4. Insufficient resources and budget allocated for the project.
- 5. Unclear project objective and scope.

Project risk;

- 1. Limited internet connection in rural areas leading to difficulty in accessing the online store.
- 2. Delay in delivery of products due to logistical issues or due to natural disasters.
- 3. Security risks of online transactions and personal information of the users.
- 4. Technical risks of development and implementation of the online store like software bugs/system crashes.
- 5. Hesitation to evolve from farmers who are adapted to traditional method of purchasing products to online buying.

Question 6: Stakeholder Analysis (RACI Matrix)

Ans: RACI (Responsible, Accountable, consulted and informed). In this project below are the stakeholder for which RACI is prepared.

- I. Mr. Henry Project sponsor
- II. Mr. Pandu Financial head
- III. Mr. Dooku- project coordinator
- IV. Peter, kevin and ben -Key stakeholders
- V. Mr. Vandanam project manager
- VI. Mr. Karthik Delivery head
- VII. Ms. juhi Sr. Java developer
- VIII. Mr. Tyson, Ms. Lucie, Mr. tucker, Mr. bravo Java developers
- IX. Mr. john DB admin
- X. Mr. mike Network admin
- XI. Mr. Jason, Ms. alekya Testers
- XII. Lohith H M BA

RES-Responsible, ACC- Accountable, CON-Consulted and INFO-Informed

Tasks	Mr. Henry (Project Sponsor)	Peter, Kevin, Ben (Key Stakeholder)	Mr. Karthik (Delivery Head)	Mr. Vandanam (Project Manager)	Ms. Juhi (Sr. Java Developer)	Teyson, Lucie, Tucker, Bravo (Java developers)	Mr. Jason & Ms. Alekya (Testers)	Lohith H M (BA)
Requirements Gathering		CON		ACC/ INFO				RES
Requirement Analysis				INFO				RES
Development				RES/ ACC	ACC/ CON	RES		
Testing				INFO	INFO		RES	INFO
Implementation			RES	INFO				RES
UAT	INFO			RES/ ACC				INFO

Apart from the above tasks Mr. mike is responsible for setting the network infrastructure for the project and Mr. John is responsible for managing the database. Mr. Pandu, Financial head is responsible for managing the budget, Mr. Dooku provides guidance and support to the project team.

Question 7. Business Case Document

Ans: Prepared at project initiation stage and their purpose is to include all the project objectives, cost and benefits to convince stakeholders of its value.

Project Name: Online Agriculture product store Client: SOONY Ltd. Project Sponsor: Mr. Henry Project Manager: Mr. Vandanam Duration: 18 months Budget: 2 Crore INR which includes the cost of development, testing, deployment and maintenance.

Management summary: The purpose of this business case is to propose the development of an online agriculture product store to make it easier for remote area farmers to buy products. Proposed solution is a website/app which allows farmers and companies manufacturing products to communicate directly with each other. The goal is to provide a platform for farmers to purchase necessary items without facing any difficulties. It is expected to be completed in 18 months.

Problem Statement: Farmers in remote areas face difficulty in getting products which are mainly for farming. These products are not readily available in the market and they have to travel long distances to buy them. This leads to wastage of time and money. Therefore there is a need for a platform that can make it easier to purchase these products for farmers.

Solution: The proposed solution is an online agriculture products store, a web/mobile application that enables farmers and companies manufacturing fertilizers, seeds, and pesticides to communicate directly with each other. The application will have the following features:

- 1. Farmers can browse through the products and select the ones they need.
- 2. Companies can submit their product details, which will be displayed on the application.
- 3. Farmers can place an order or the products and request delivery to their location.
- 4. The application will have a user-friendly interface or easy navigation.

Benefits: The following benefits are

- 1. Farmers will be able to purchase the products without facing any difficulties in procuring them.
- 2. Companies manufacturing products will have to platform to reach out to farmers directly.
- 3. It will save the time and money for the farmers.

Key Stakeholders:

- 1. Mr. Henry who proposed the project is a key stakeholder.
- 2. Peter, Ben and Kevin who shared their requirements for the project and are key stakeholders.
- 3. Mr. pandu, Financial head and a key stakeholder
- 4. Mr. Dooku, Project coordinator and key stakeholder
- 5. Mr. Karthik, Delivery head in APT IT Solutions company and key stakeholder
- 6. Mr. Vandanam, project manager and key stakeholder
- 7. Ms. juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker and Mr. Bravo, Java developers and stakeholder
- 8. Mr. Mike, Network admin and stakeholder
- 9. Mr. John, DB admin and stakeholder
- 10. Mr. Jason and Ms. Alekya, Testers and stakeholder
- 11. The farmers and companies manufacturing products who will use the application.

Risks:

- 1. The app may face technical issues during development and deployment
- 2. There may be delays in development due to unforeseen circumstances
- 3. There may be issue will product quality and delivery, leading to dissatisfaction among farmers.
- 4. Competitors may develop similar kind of applications, leading to loss of market share.
- 5. The app may not be user friendly, leading to low adoption by farmers.

Conclusion: The online agriculture product store.

Question 8. Four SDLC Methodologies.

Ans: SDLC (software development lifecycle) is a process used by software development teams to plan, design, develop, test and deploy software. SDLC consists of several methodologies that can be used to develop software applications. These methodologies include sequential, iterative, evolutionary and agile.

Sequential: Sequential methodology also known as the waterfall model is a linear approach where each phase of the software development process must be completed before moving on to the next phase. This methodology works well for the projects where requirements are well defined and there is a clear understanding of how the end product should look like. This approach may not be suitable for the projects where changes need to be made during the development process.

Iterative:

This involves multiple cycles of the SDLC process. In this approach the development team creates a working prototype of the software project, tests it and then makes changes based on the feedback before moving on to the next cycle. This methodology is useful for projects where requirements are not well defined. Evolutionary:

It is similar to iterative methodology in that it involves multiple cycles. And in this approach the initial product is not fully functional but evolves over time through a series of iterations. This methodology is best suited for projects where the requirements are not fully defined or may change frequently.

Agile:

It is an iterative and incremental approach to software development that focuses on delivering working software in small sprints. This approach emphasizes customer collaboration, continuous feedback and flexibility in response to changing requirements. This methodology is ideal for projects where requirements may change frequently and where there is a need for rapid delivery of working software.

Each methodology has its advantages and disadvantages, and the choice of methodology will depend on the specific needs of the project. It is essential to consider factors such as project requirements, project scope, budget, team size and timeline before choosing methodologies.

Q9. Waterfall, RUP, Spiral and Scrum Models:

Ans.

- 1. Waterfall model: Waterfall model is the oldest and most structured method. In this model each phase depends on the outcome of the previous phase and all the phases run sequentially. This model provides discipline and gives a tangible output at the end of each phase. This model does not work well when flexibility is a requirement.
- 2. RUP model: Rational unified process is an iterative software development process framework. RUP is iterative, meaning repeating and agile. Iterative because all of the process's core activities repeat throughout the project, it's a process of gradual improvement and learning from previous iterations as to how to improve the next. in RUP the lifecycle of a project or the development of software is divided into 4 phases. Various activities take place during these phases i.e, modelling, analysis and design, implementation, testing. The four consecutive phases are inception, elaboration, construction and transition phase.
- 3. Spiral model: is an SDLC methodology which combines iterative development and waterfall model. It is used for risk management. This SDLC model is mostly used for large and complicated projects. The spiral model enables gradual releases and refinement of a product through each phase of the spiral as well as the ability to build prototypes at each phase. It can manage unknown risks once the project is started. The radius of the spiral model represents the cost of the project, and the angular degree represents the progress made in the current phase. Every phase can be broken into 4 quadrants i.e, identifying and understanding requirements, performing risk analysis, building prototype and

testing. This step includes architectural design, design of modules, physical product design and final design, and lastly evaluation of the software's performance.

4. Scrum model: is an agile development methodology used in development of software based on iterative and incremental processes. Scrum is executed in temporary blocks that are short and periodic, called sprints which usually range for 2-4 weeks. Each sprint is an entity in itself, i.e, it provides a complete result, a variation of the final product that must be able to be delivered to the client with the least possible effort when requested. The process has a straight point, a list of requirements that make up the project plan. It is the client of the project that prioritizes these. Objectives considering a balance of the value and the cost thereof that is how the iterations and consequent deliveries are determined.

Considering the available information and the stable nature of requirements in this project, I would recommend the waterfall model. It's important to note that the final decision should be made based on a comprehensive understanding of the project requirements, available resources and preferences and expertise of the project team and SMEs involved.

Q10. Waterfall Vs V Model:

Ans. Difference Between Waterfall and V model: Waterfall model:

- It is a continuous process
- Testing activities are carried out after the development activities are over.
- Software made in waterfall model has more defects
- It is used when requirements are fixed.
- Making changes in the software in this model is a costly affair.
- Defects cannot be determined till the software reaches the testing phase.

V-Model:

- It is a simultaneous process
- Testing activities start with the first stage itself.
- Software made in waterfall model has lesser defects
- If the requirements of the user are uncertain and keep changing, then this model is the better alternative.
- Making changes in the software in this model is comparatively cheaper.
- Defects can be determin hu ed in the initial phases due to which they can be corrected easily.

Q11. Justifying my choice:

Ans. As a BA, my recommendation would be to use the waterfall model for this project. It is a linear sequential approach where each phase of the software development process is completed before moving onto the next phase. It is suitable for projects with clear and well defined requirements which is the case for this project. It has a clear objective of developing an e-commerce platform for farmers to buy products and the requirements for the project have already been shared by stakeholders.

Q12. Gantt Chart:

Ans:

Project Tasks	Start date	End date	Duration(Days)	Duration(hrs)
Requirements Gathering	01-03-2025	9-04-2025	30	240
Requirements analysis	10-04-2025	21-05-2025	30	240
design	22-05-2025	16-07-2025	40	320
Development 1	17-7-2025	22-10-2025	75	600
Test 1	23-10-2025	24-12-2025	40	320
Development 2	25-12-2025	01-04-2026	70	560
Test 2	02-04-2026	13-05-2026	30	240
Development 3	14-05-2026	05-08-2026	60	480
Test 3	06-08-2026	16-09-2026	30	240
Development 4	17-09-2026	09-12-2026	60	480
Test 4	10-12-2026	20-01-2027	30	240
UAT	21-01-2027	10-03-2027	35	280
Total			535	4280



Q13. Fixed bid vs Billing Ans:

Fixed Bid: Fixed bid project in which the time and scope is fixed within a budget and has a deadline associated with it. In fixed bid model, the client will give all the details, specs and mock-ups and all the requirements upfront, so that vendor can provide a bid showing the project cost. In this model vendors should be good in estimating the time and budge, as they need to explain the client, as how much time it would take for them to complete the project and how much it would cost. This model has less financial risk, however it has no flexibility for adjustments, as the budget and time is fixed. This model usually works with smaller projects with limited features and clear requirements.

Billing Model: is a project where the project is billed on hourly basis. Vendor will set up a team and present the same to the client to bill them for their time spent on development. This model is flexible in nature, as changes can be added in the middle of the project. This model allows client to monitor the progress as developers present reports on work completed on timely basis.

Q14. Timesheets

	Design Timesheet of BA Resource Name - Lohith Hiremath Designation - Business Analyst Hourly Rate - 30\$/hr			
Date	Tasks	In Time	Out Time	Duration (in hrs)
19-03-2025	Communicating with client about design and solutions	10:00	7:00	9
20-03-2025	Assessing design options	10:00	6:30	8.5
21-03-2025	Assessing design options	10:00	6:30	8.5
24-03-2025	Verify and validate the requirements	10:00	6:00	8
25-03-2025	Collaborate with team to finalise system design architecture	10:00	6:00	8
	Total hours			42
	Total Payable Amount			1260\$

	Development Timesheet of BA			
	Resource Name - Lohith Hiremath Designation - Business Analyst Hourly Rate - 30\$/hr			
Date	Tasks	In Time	Out Time	Duration in hrs
26-03-2025	Coordinating with team and checking on the approvals after each development stage	10:00	5:00	7
27-03-2025	Coordinating with team and checking on the approvals after each development stage	10:00	6:30	8.5
28-03-2025	Clarifying all queries and brainstorming with development team	10:00	6:00	8
31-03-2025	Clarifying all queries and brainstorming with development team, coordinating with team and keeping track of project	10:00	7:00	9
1-04-2025	Working on change in requirements in development stage from clients	10:00	6:30	8.5
	Total hrs			41
	Total payable amount			1230\$

Testing Timesheet of BA Resource Name - Lohith Hiremath Designation - Business Analyst Hourly Rate - 30\$/hr				
Date	Tasks	In Time	Out Time	Duration in hrs
02-04-2025	Working with testing team to create system test plans	10:00	7:00	8
03-04-2025	Create and execute the system test cases	10:00	7:00	8
04-04-2025	Review system cases prepared by testing team and provide requirements clarifications when required by testing team	10:00	7:00	8

Testing Timesheet of BA Resource Name - Lohith Hiremath Designation - Business Analyst					
	Hourly Rate - 30\$/hr				
07-04-2025	Review system cases prepared by testing team and provide requirements clarifications when required by testing team	10:00	7:00	8	
08-04-2025	Working with testing team and taking signoff from the client on project acceptance form	10:00	7:00	8	
	Total hrs			40	
	Total payable amount			1200\$	

UAT Timesheet of BA Resource Name - Lohith Hiremath Designation - Business Analyst Hourly Rate - 30\$/hr					
Date	Tasks	In Time	Out Time	Duration in hrs	
9-04-2025	Develop the detailed UAt Test plan	10:00	6:00	8	
10-04-2025	Develop the test case scenario	10:00	6:00	8	
11-04-2025	Create UAT test cases	10:00	6:00	8	
14-04-2025	Test case data preparation	10:00	6:00	8	
15-04-2025	Run the test case and document the test results	10:00	6:00	8	
	Total hrs			40	
	Total payable amount			1200\$	

Development and Implementation Timesheet of BA Resource Name - BA Designation - Business Analyst Hourly Rate - 30\$/hr				
Date	Tasks	In Time	Out Time	Duration in hrs
16-04-2025	Design RTM and forward to client	10:00	6:00	8
17-04-2025	Coordinate to complete manual and functional specifications	10:00	6:00	8
18-04-2025	Training sessions for end user	10:00	6:00	8
21-04-2025	Coordinate UAt with Stakeholders	10:00	6:00	8
22-04-2025	Coordinate with IT team for system development	10:00	6:00	8
	Total hrs			40
	Total payable hours			1200\$