

Capstone Project 1 Prep 1 Part 1

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Online Agriculture Products Store

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 - 5 Marks

Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

Question 2 – SWOT - 5 Marks

Mr Karthik is doing SWOT analysis before he accepts this project. What Aspects he Should consider as Strengths, as Weaknesses, as Opportunity and as Threats.

Question 3 – Feasibility study - 5 Marks

Mr Karthik is trying to do feasibility study on doing this project in Technology (Java), Please help him with points (HW SW Trained Resources Budget Time frame) to consider in feasibility Study.

Question 4 – Gap Analysis - 5 Marks

Mr Karthik must submit Gap Analysis to Mr Henry to convince to initiate this project. What points (compare AS-IS existing process with TO-BE future Process) to showcase in the GAP Analysis.

Question 5 – Risk Analysis - 10 Marks

List down different risk factors that may be involved (BA Risks And process/Project Risks)

Question 6 – Stakeholder Analysis (RACI Matrix) - 8 Marks

Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers

Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

Question 8 – Four SDLC Methodologies - 8 Marks

The Committee of Mr. Henry , Mr Pandu , and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach.

Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential Iterative Evolutionary and Agile. Please share your thoughts and clarity on Methodologies

Question 9 – Waterfall RUP Spiral and Scrum Models – 8 Marks

They discussed models in SDLC like waterfall RUP Spiral and Scrum . You put forth your understanding on these models When the APT IT SOLUTIONS company got the project to make this online agriculture product store, there is a difference of opinion between a couple of SMEs and the project team regarding which methodology would be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more onto the side of waterfall model. As a business analyst, which methodology do you think would be better for this project?

Question 10 – Waterfall Vs V-Model - 5 Marks

Write down the differences between waterfall model and V model.

Question 11 – Justify your choice - 3 Marks

As a BA, state your reason for choosing one model for this project

Question 12 – Gantt Chart - 5 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.

Question 13 – Fixed Bid Vs Billing - 5 Marks

Explain the difference between Fixed Bid and Billing projects

Question 14 – Preparer Timesheets of a BA in various stages of SDLC - 20 marks

- Design Timesheet of a BA
- Development Timesheet of a BA
- Testing Timesheet of a BA
- UAT Timesheet of a BA
- Deployment and Implementation Timesheet of a BA

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Question 1 – BPM - 5 Marks

Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

- Goals - To help farmers gain access to various agricultural products such as fertilisers, seeds and pesticides through an online web/ mobile applications and to bridge the gap between farmers and Agricultural Products Manufacturing Companies
- Inputs - Information about the various items that are to be listed on the website/app, Farmer's data info (if an account needs to be created, if they need to sign up, etc), Manufacturer's products' listings and details, Monetary investment of 2Cr, Employees on the projects - their time, Technology needs like Java, Database, any additional Network Set up
- Resources - Stakeholders that will share requirements for the Project, Mr Vandanam as project Manager, Ms. Juhi as Senior Java Developer, Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo as Java Developers. Network Admin as Mr Mike and DB Admin as John. Mr Jason and Ms Alekya as the Testers, and the BA in terms of Human Resources. Additionally, Technical Setup, Funds of 2Cr.
- Outputs - The User Friendly App and Website (Online Agri Store for Farmers), Hopefully, increase in sales, easy to use app interface, value addition for farmers.
- Activities - Creating the App, providing customer support, streamlining the shopping process and operations, gathering and analyzing requirements from stakeholders to make it better. Testing the App, providing any maintenance and support.
- Value Created to the End Customer - Farmers can purchase and use items whenever required, travel and middlemen cut, improved productivity, no need to wait any longer, trust building with time.

Question 2 – SWOT - 5 Marks

Mr Karthik is doing SWOT analysis before he accepts this project. What Aspects he Should consider as Strengths, as Weaknesses, as Opportunity and as Threats.

Strengths - Mr. Kartik got contacts that helped him get this project, talent pool available at APT IT Solutions, this project is under CSR so will also help build stronger relations with community and other stakeholders, big fund of 2Cr, stakeholders like Peter, Ben and Kevin help us with their inputs.

Weaknesses - Farmers in extremely rural areas may lack digital knowledge or network or internet access, Cost of developing app is high, deliveries of items could be difficult as there might be some uncertainty about road connectivity.

Opportunities - Can expand to more and more areas and in a country like India, it is a huge market, we're helping digitalise agro industry in a way, potential to increase features in App/ website, gathering valuable information about the Farmers habits, and commonly used items.

Threats - Since our App/ Website will be online, we may face cyber issues - bugs, hackers, servers being down etc, data and privacy of customers will need to be protected.

Question 3 – Feasibility study - 5 Marks

Mr Karthik is trying to do feasibility study on doing this project in Technology (Java), Please help him with points (HW SW Trained Resources Budget Time frame) to consider in feasibility Study.

- Technology - We do have the technical capabilities to get this done since we have Java Developers, we will also be making a database, and collab with Payment Gateways, and basically overall, for this project, APT IT Solutions will be upto the task.
- Hardware - Servers, good condition and strong computers, good connectivity with the Wifi, storage devices will be required
- Software - As mentioned in the Case study, we will be using Java Programming Language, Databases, Git, GitHub Actions, SQL, ERP systems, etc
- Trained Resources - We do have the required necessary pool available for this - Project Manager, Senior Java Developer, Java Developers, Network Admin, Testers and BA.
- Budget - The budget allotted is 2Cr, which should be sufficient for the end to end process and any other costs.
- Time Frame - We've been given 18 months, which should be sufficient for gathering the requirements, developing the App/ Website, Testing it, and Maintenance.

With the aspects discussed above, we can ascertain that this project is feasible, if executed as per plan.

Question 4 – Gap Analysis - 5 Marks

Mr Karthik must submit Gap Analysis to Mr Henry to convince to initiate this project. What points (compare AS-IS existing process with TO-BE future Process) to showcase in the GAP Analysis.

A Gap Analysis is done to show what the Current State is and what the Desired State, we aspire to be. Let us have a look at the AS-IS Existing Process and compare it with the TO-BE Future Process.

This project begun since there is an existing gap in the market, where farmers aren't able to gain access to the agricultural tools needed in their day-to-day workings.

Main gaps are accessibility, transparency, availability and more.

Parameter	Current (AS-IS) State	Desired (TO-BE) State
Accessibility	Farmers unable to access	Farmers will access through app
Items	No proper catalog	They will be able to order a wide range of items
Availability	Quite possible that when they need a particular item, it may not be available	There will be a better streamlining of stocking through the App and they can gain access to what's available and what's not and plan accordingly
Knowledge	Farmers may have limited digital knowledge	With regular use of this App, they can familiarise themselves with this process, that can be helpful elsewhere.
Trust	They may buy things locally, or from whichever vendor is available at the moment	They will be able to trust a website, become regular customers, can raise any concerns, avail COD, etc.

Question 5 – Risk Analysis - 10 Marks

List down different risk factors that may be involved (BA Risks And process/ Project Risks)

Listed below are the risks that be involved in this project.

- We may misunderstand what exactly the farmers need or what they're looking for.
- Farmers may have low digital literacy, or a fear of adopting or switching to online modes.
- Internet and delivery due to lack of connectivity could be a challenge.
- Since, we are just making the online platform and not actually supplying the agricultural items or tools, we are heavily dependent on the Manufacturers. If the manufacturers are Out of Stock on an item, or since a long time, or if the quality of the items isn't up to the mark then, it may lead to dissatisfaction.
- If the key developers leave the project or are unavailable when needed, then the time frame for the project could stretch.
- Any change in regulations from the government could be a potential risk.
- Sudden change requests from clients could cause our budget to be insufficient since then we may to rework on a lot of things.
- Since the platform will be online, it may be prone to cyber security issues, which could harm the company's reputation.

Question 6 – Stakeholder Analysis (RACI Matrix) - 8 Marks

Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers.

Parameter	Henry (sponsor)	Pandu (Finance Head)	Dooku (Project Coordinator)	Kartik (Delivery Head)	Vandanam (Project Manager)	BA	Juhi, Tyson, Lucie (Developers)	Jason (tester)	Admin (John)	Mike (Network Admin)	Farmers
Business Case approval	A	C	C	R	I	C	I	I	I	I	I
Requirements Gathering	I	I	I	I	C	R	C	I	I	I	C
Prioritisation	A	C	C	R	C	C	I	I	I	I	I
System Design	I	I	I	A	R	C	C	I	C	C	I
Development	I	I	I	I	A	I	R	I	I	I	I
Testing	I	I	I	I	A	C	C	R	I	I	I
Deployment	I	I	I	A	R	C	C	R	C	C	I
Budget Approvals	A	R	C	I	I	I	I	I	I	I	I

Based off the above, we can see that the key decision makers are - the sponsor, finance head, delivery head and the project managers. And the influencers are the coordinators, analysts, farmers and manufactures.

Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

- Project Title : Online Agricultural Items Store
- Duration of Project : 18 months
- Project Budget - 2Cr
- Funded by - Mr Henry (+ CSR Initiative)
- Executive Summary - This Project is about preparing an App/ Website that would serve as an Agriculture Product Store that would bridge the gap between Farmers and Manufacturers of fertilisers, seeds, pesticides, etc.
- Project Initiation - This project is initiated by Mr Henry and coordinated by Mr. Dooku and they will make this project into a reality with the help of Mr Kartik (The Delivery Head from APT IT Solutions)
- Problem Statement - Farmers face a lot of challenges when it comes to the procurement

of agricultural items. They're heavily dependent on intermediaries. There is a lack of transparency and not one standard digitalised platform that can be their one stop shop. All of the above listed cause higher input costs, reduced yield and lower profitability.

- Objective - Through this platform, we can enable farmers to order from verified manufacturers, in turn reducing their procurement time and cost, and will lead to transparency and trust. We can also collect and go through the demand data which will give us insights into improving our processes ahead. We will also be fostering digital literacy and inclusion amongst rural communities.
- Proposed Solution - We will develop a website and mobile based platform that will help manufacturers list the products on their catalog and will enable Farmers to order products easily. We can have COD options or also have payment gateways. We are looking to expand this nation wide.
- Technology - We have Java developers on the team and they can get this developed. For Database, we can use MySQL. For things on the Cloud, we can use AWS. And of course, we have other integrations such as Payment Gateways, Logistics, etc.
- Benefits - With just 1000 customers, for example, having an average basket of 1500 Rupees, ordering once a month, we can have 15L as a pilot value. We're also going to be reducing the farmers procurement cost and time by a huge margin, leading to improvement in their convenience and accessibility. We will also be having transparency in digital records. And additional CSR Benefits such as promoting digitalisation in Agro industries, and supporting rural economic growth are also there.
- Resources Required - We have capable Human Resources that are upto the task, a team of - Project Manager, BA, Developers, Testers, Database and Network Admins, etc. We also have a Budget of 2Cr at our disposal.
- Project Timeline - The key deliverables at our end are going to be Requirements Gathering, developing UI and system architecture, platform building, integrations, UAT, Pilot Deployment, and then Maintenance and expansion. This should be completed within a time frame of 18 months.
- Risks - Mentioned in this doc on page 6
- Stakeholders - Mentioned in this doc on page 7
- Conclusion and Final Thoughts - This is a great initiative, socially, economically

impactful, that's promoting digitalisation of agricultural practises, and empowering farmers and building sustainable value chains.

Question 8 – Four SDLC Methodologies - 8 Marks

The Committee of Mr. Henry , Mr Pandu , and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach.

Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential , Iterative, Evolutionary and Agile. Please share your thoughts and clarity on Methodologies

Model	Description	Pros	Cons	Best For	Suitability for Project
Sequential (Waterfall)	Linear, phase-by-phase approach — each stage (Requirements → Design → Development → Testing → Deployment) must finish before the next begins.	Simple to manage; clear milestones; strong documentation.	Inflexible to changes; issues found late; unsuitable for evolving needs.	Projects with well-defined, stable, and regulated requirements.	Limited suitability; core backend modules (payment, database) may follow this for predictability.
Iterative (RUP / Incremental)	Iterative top-down lifecycle: Inception, Elaboration, Construction, Transition.	Early feedback; evolving requirements accommodated; lower risk of total failure.	Scope creep possible; requires careful planning and stakeholder time.	Medium-complexity projects with evolving but somewhat known goals.	Useful for building user modules (farmer dashboards, order tracking) that can improve over time.
Evolutionary (Spiral)	Risk-driven, combining prototyping and iterative cycles with regular risk analysis and refinement.	Handles uncertainty well; early identification of high-risk issues; very flexible.	Heavy planning required; higher cost; complex to manage.	High-risk, large, or research-based projects using new tech or uncertain requirements.	Moderate Suitability — helpful for early-stage platform prototypes or pilot rollouts.
Agile (Scrum)	Incremental, sprint-based development with strong collaboration, frequent releases, and adaptability to feedback.	Fast delivery; flexible; customer-focused; continuous improvement.	Harder for fixed budgets; needs disciplined, proactive teams.	Projects needing rapid iteration, dynamic requirements, and close user involvement.	Suitable — farmers' feedback and dynamic feature changes make Agile ideal for user-facing components.

Question 9 – Waterfall RUP Spiral and Scrum Models – 8 Marks

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As seen in the above question - there are various SDLC Models, namely Sequential, Iterative, Evolutionary and Agile.

Sequential - This has a phase by phase approach to each stage and is fairly simple to manage. There are clear goals.

Iterative - This methodology has a top-down approach, suitable to minimal simpler projects.

Evolutionary - This methodology has repetitions in cycles, and has regular updates, changes and fine tuning with each stage. There's low risk of failure but since we're always fixing and making changes and improving, there are strong chances of scope creep.

Agile - There are short sprints, good team work flow, and is fast paced.

Since, there's a difference of opinion, as a Business Analyst, the advisable option would be the V- Model. There is testing at every stage, it can help us catch the issue sooner than later.

Question 10 – Waterfall Vs V-Model - 5 Marks

Write down the differences between waterfall model and V model.

Parameter	Waterfall	VModel
Approach	This is a Linear Model	The parallel development and testing phases resemble a "V" shape
Testing	Only after development finished	Testing and Development happens parallelly
Feedback	Very late	Early & Frequent
Error Detection	Errors are detected late	Errors detected early
Rate of Complexity	Simpler and easier to manage	Slightly more complex due to the parallel structure
Rate of Flexibility	Rigid; difficult to make changes	Also slightly rigid
Rate of Suitability	Good for projects with clear requirements	Good for projects with a strict testing model

Question 11 – Justify your choice - 3 Marks

As a BA, state your reason for choosing one model for this project

As a BA, I would recommend using V- Model for this project. The characteristics of the V- Model would fit well with the project since this project would benefit from regular testing, verification and validation in terms of payment securities, legal compliance , etc. This would also give the stakeholders, traceability.

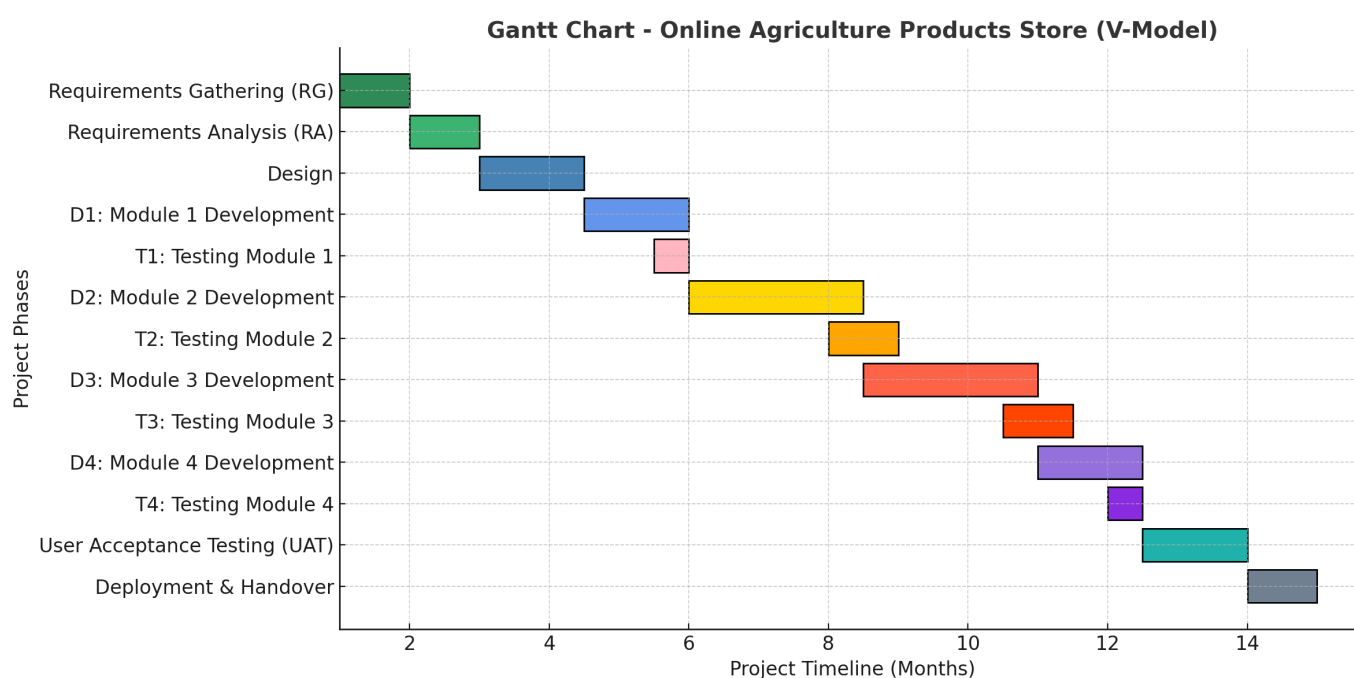
Question 12 – Gantt Chart - 5 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.

Phases in V-Model as given -

1. Requirements Gathering - Month 1 - Month 2
2. Requirement Analysis - Month 2 - Month 3
3. Design - Month 3 - Month 4.5
4. D1-T1 (Development and Testing 1) - Month 4.5 - Month 6
5. D2-T2 (Development and Testing 2) - Month 6 - Month 8.5
6. D3-T3 (Development and Testing 3) - Month 8.5 - Month 11
7. D4-T4 (Development and Testing 4) - Month 11 - Month 12.5
8. UAT (User Acceptance Testing) - Month 12.5 -Month 14
9. Closure (Deployment and Handover) - Month 14- Month 15

There is an extra buffer of 3 months in case of any unexpected delays, issues, etc.



Question 13 – Fixed Bid Vs Billing - 5 Marks

Explain the difference between Fixed Bid and Billing projects

Fixed Billing and Billing Projects are different ways of charging a client for work.

A Fixed Billing, a price is set prior before the project begins. It is decided by the client and vendor earlier. Even if a project extends and takes more time than expected, the price amount stays the same. It is slightly risky for the Vendor, but should be alright if the requirements are clear and things are as per schedule. The budget is pre-decided.

While, a Billing projects (Time and material project), the client only pays for the actuals hours of time or effort put in. The cost could go up if the project extends, but there is flexibility to make changes along the way.

For this project, it might be advisable to go with a Hybrid model. Fixed Bidding for cataloging, ordering, payments and admin work. And Billing Project for training, pilot developments and changes, etc.

Question 14 – Preparer Timesheets of a BA in various stages of SDLC - 20 marks

- > Design Timesheet of a BA
- > Development Timesheet of a BA
- > Testing Timesheet of a BA
- > UAT Timesheet of a BA
- > Deployment and Implementation Timesheet of a BA

Design Stage Timesheet of a BA

Activity	Description	Time (in Hours)
Requirements (Analysis and Documentation) & BRD	Finalising Business Requirements and reviewing them with stakeholders	80
Process Modeling	Establishing an Order Process for Farmer/Manufacturers	40
Review Meetings & Sign Off	Formal sessions to get approval on mockups	20

Development Stage Timesheet of a BA

Activity	Description	Time (in Hours)
Requirements clarifying	If there are any queries from the developers, those must be resolved	140
Scope Management	Lodging any requests, assessing the impact of the project	80
Planning	Prioritising and clearing any backlog	60
Feature Validation	Checking the features in the current stage and defining Acceptance Criteria	80

Testing Stage Timesheet of a BA

Activity	Description	Time (in Hours)
Defect checking	Analysing defects, resolving them; working with Dev Team	120
Testing	Performing business case scenario testing	60
Update RTM	Ensuring Requirements Traceability Matrix is upto date	20

UAT Stage Timesheet of a BA

Activity	Description	Time (in Hours)
Planning	Creating a UAT Plan and scheduling sessions	40
Training	Preparing any manuals	60
Feedback	Lodging the feedbacks	80
Sign Off	Formal UAT Sign Off	20

Deployment and Implementation Stage Timesheet of a BA

Activity	Description	Time (in Hours)
Live Support	Immediate support for post launch queries	40
Monitoring	Tracking KPIs and feedback	20
Completion	Providing final documentation to the support team	20

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