**CAPSTONE PROJECT1 PART1**

**ONLINE AGRICULTURE STORE**

**Question 1:** Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

**Business Process Model for Online Agriculture Store**

* **Goal**: To design an Online Web/Mobile Application to remote area farmers that connects directly with Agriculture Companies which produce fertilizers, seeds and pesticides. This application helps the farmers to easily access the products and their prices and the timely delivery of the products.
* **Inputs**: Farmer requirements from Peter, Kevin and Ben. Agricultural product information from Agriculture Companies, inventory data, web/mobile application technology and financial Support (**CSR Funding)** from Mr. Henry
* **Resources**: Mr. Henry (Sponsor), Peter, Kevin, Ben (Stakeholders, Domain Experts), Mr. Karthik (Delivery Head), Mr. Vandanam (Project Manager), Development Team (Juhi, Teyson, Lucie, Tucker, Bravo), QA/Testers (Jason, Alekya), Network Admin (Mike), DB Admin (John), Business Analyst (Myself), Sales team and logistics partners.
* **Outputs**: Online agriculture store, successful product purchases, Secure Payment and Invoicing System, customer feedback, supplier connections.
* **Activities**: Requirements Gathering & Analysis, Platform Design and Development, Testing, Deployment, Customer Onboarding, Order fulfilment, Monitoring, Feedback, and Enhancements
* **Value Created to the End Customer**: Access to a wide range of agricultural products, connects even the remotest villages, convenience, avoids traveling to distant markets , real-time ordering, Product availability, pricing, and delivery tracking and cost-effective solutions for farmers.

**Question 2:** 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.

 **SWOT Analysis by Mr. Karthik Before Accepting the Project**

* **Strengths**:
	+ Strong brand recognition of Mr. Henry and APT IT SOLUTIONS.
	+ Availability of skilled developers and resources.
	+ Direct access to a market with a large number of farmers in need of agricultural products.
* **Weaknesses**:
	+ Limited initial user base and potential technical infrastructure challenges.
	+ Dependence on third-party suppliers for product availability.
* **Opportunities**:
	+ Expansion into remote rural areas.
	+ Potential partnerships with agricultural product manufacturers.
	+ CSR initiative alignment with social causes.
* **Threats**:
	+ Competition from existing e-commerce platforms.
	+ Logistics and supply chain disruptions.
	+ Middlemen may feel threatened and try to disrupt adoption in villages.

**Question 3:** 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.

**Feasibility Study for Technology (Java)**

* **Hardware/Software**:
	+ **Java**, HTML, Java Script, Web/Mobile platforms, Database management systems (MySQL), cloud infrastructure (AWS, Azure), Testing Tool (Selenium) and Project Management Tools (JIRA and Confluence).
* **Trained Resources**:
	+ Java developers, QA testers, DB administrators, Network administrators, Project Manager, Business Analyst.
* **Budget**:
	+ Estimation based on resource availability, licenses, hardware costs, and cloud service charges.
* **Time Frame**:
	+ Estimated 18 months (including design, development, testing, deployment, and training).

**Question 4:** 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

**Gap Analysis for Mr. Henry (AS-IS vs. TO-BE Process)**

* **AS-IS Process**:
	+ Farmers struggle to purchase agricultural products locally or through unreliable supply chains.
	+ Lack of a digital platform to meet the demand for agricultural supplies in remote areas.
* **TO-BE Process**:
	+ An online store that connects farmers directly with suppliers, offering a streamlined, reliable purchasing process.
	+ An automated system for tracking orders, inventory, and customer support.
* **Gap Analysis Focus**:
	+ This GAP Analysis clearly highlights the inefficiencies and limitations of the current process and how the Online Agriculture Product Store will fill those gaps, helping farmers, to improve access, and have transparency. The gap in distribution and accessibility of agricultural products is bridged through digital transformation.

**Question 5:** List down different risk factors that may be involved (BA Risks And process/Project Risks

**BA Risks:**

* Misunderstanding user requirements from farmers due to low technical literacy.
* Incomplete requirement documentation.
* Change in requirements during development due to evolving business needs**.**
* Mainly involve understanding users, gathering correct requirements, and managing expectations.

**Project/Process Risks:**

* Scope creep due to lack of clarity.
* Communication gaps between rural stakeholders and technical teams.
* Technical failures during deployment in remote areas.
* Delays in integration with logistics and supplier systems.
* Project Risks include adoption, tech failures, legal issues, and budget/time management.

**Question 6:** Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers

**RACI Matrix Key**

* **R** = Responsible: Person who is responsible to do the work
* **A** = Accountable: Person who make final decisions
* **C** = Consulted : Person consulted for input
* **I** = Informed : Person kept up to date about the progress of the work

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| **Activity / Role** | **Mr. Henry** | **Mr. Karthik** | PM (Vandanam) | **BA** | **Developers** | **Testers** | **Farmers (End users)** |
| **Requirements Gathering** | **A** | **C** | **R** | **R** | **I** | **I** | **C** |
| **Approval of Requirements** | **A** | **C** | **R** | **R** | **I** | **I** | **C** |
| **Design** | **C** | **C** | **A** | **R** | **R** | **I** | **I** |
| **Development** | **I** | **I** | **R** | **C** | **A** | **I** | **I** |
| **Testing** | **I** | **I** | **R** | **C** | **R** | **A** | **I** |
| **UAT** | **C** | **I** | **R** | **C** | **I** | **R** | **A** |
| **Final Approval** | **A** | **C** | **R** | **C** | **I** | **I** | **C** |

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**Key Stakeholder Roles**

| **Stakeholder** | **Role/Influence** |
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| **Mr. Henry** | **Key Decision Maker (Accountable)** – Project Sponsor under CSR |
| **Peter, Kevin, Ben** | **Influencers** – End-user representatives, source of requirements |
| **Mr. Karthik** | **Initiator & Facilitator** – Delivery Head, ensures project approval and alignment |
| **Mr. Vandanam** | **Accountable for Execution** – Manages timelines, deliverables, teams |
| **Ms. Juhi & Dev Team** | **Responsible** – Solution development and implementation |
| **Myself(BA)** | **Bridge & Driver of Requirements** – Gather, validate, communicate requirements |
| **QA Team** | **Responsible for Testing** – Ensures product quality and stability |
| **Infra Admins** | **Responsible for Setup** – Database and network management |

**Question 7:** Help Mr Karthik to prepare a business case document

**Title: Online Agriculture Product Store**

* **Background:** Farmers in remote villages face challenges in accessing agricultural products like fertilizers, seeds, and pesticides.
* **Problem:** Lack of centralized access, timely delivery, and direct communication with suppliers.
* **Proposed Solution:** A web/mobile platform enabling farmers to directly buy from manufacturers.
* **Benefits:** Convenience, timely availability, reduced dependency on middlemen, and scalable model.
* **Costs:** Development, testing, hosting, logistics integration, and training.
* **ROI:** Long-term impact through increased farmer productivity and digital inclusivity**.**
* **Timeline:** 18 months (CSR Initiative).
* **Recommendation:** Proceed with project using the V-Model for structured and quality-driven development.

**Question 8:** 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.

 The **SDLC** is a systematic process used by software teams to **plan, develop, test, deploy,**

 **and maintain** software applications.

 **Phases include:**

1. Requirement Gathering & Analysis
2. System Design
3. Development
4. Testing
5. Deployment
6. Maintenance

 Depending on how we organize and move through these phases, we can choose different

 **development methodologies.**

* **Sequential:** Step-by-step, suited for stable, clearly defined requirements.
* **Iterative:** Allows improvements with each iteration, ideal for evolving requirements.
* **Evolutionary:** Focus on product evolution over time, user-driven.
* **Agile:** Best for flexibility and changing needs, with sprints and continuous feedback.

For this project, Sequential or V-Model is preferred due to clearly defined goals, structured roles, and emphasis on quality and validation**.**

 **Question 9:** 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?

As per my understanding

* **Waterfall**: A sequential approach where each phase is completed before moving to the next. Best for projects with clear and fixed requirements but lacks flexibility for changes.
* **RUP (Rational Unified Process)**: A more iterative approach that includes a series of phases (inception, elaboration, construction, and transition) to ensure flexibility and iterative development.
* **Spiral**: A risk-driven model, focusing on risk analysis and mitigation in each iteration, with continuous refinement based on feedback and evolving requirements.
* **Scrum**: A form of Agile where work is broken into time-boxed sprints, each delivering a functional product increment. Scrum focuses on flexibility, continuous improvement, and team collaboration.

As a **Business Analyst I** think that **V-Model** would be more appropriate for this project because:

* The **requirements** for this project are **clear** and can be defined upfront, which makes it suitable for a **V-Model** approach.
* The focus on validation at each step (Requirements, Design, and Testing phases) will help ensure that the platform functions as intended before it goes live.
* Since agricultural products and logistics need accuracy, the **V-Model’s emphasis on thorough testing** makes it ideal for meeting the project's reliability goals.

Conclusion: While Waterfall is simple and linear, the **V-Model gives us a much-needed advantage** in testing quality, validation traceability, and early detection of issues. It’s also **structured enough to keep the team aligned**, yet quality-focused to match SME expectations. This benefit makes V-Model a better fit for our Online Agriculture Store project.

**Question 10:** Write down the differences between waterfall model and V model.

**Difference Between Waterfall Model and V-Model**

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| **Aspect** | **Waterfall Model** | **V-Model (Validation & Verification Model** |
| **Basic Concept** | Linear and sequential development process | Extension of Waterfall where each dev phase has a testing phase |
| **Process Flow** | One-way (Top to bottom) | V-shaped (development on left side, testing on right side) |
| **Testing Start Point** | After the development phase is complete | Starts **in parallel** with development |
| **Focus Area** | Development-centric | Quality-centric (equal focus on development and testing) |
| **Flexibility** | Very rigid – difficult to go back once a phase is complete | Also rigid, but with **early testing strategy** |
| **Risk Detection** | Errors found late during testing | Errors can be caught early during test planning |
| **Documentation** | Medium level of documentation | High emphasis on documentation and test traceability |
| **Cost of Fixing Defects** | High (defects found later in the cycle) | Lower (early defect detection through validation) |
| **Customer Involvement** | Low – mainly during requirement phase | Medium – consulted during validation and UAT |
| **Best For** | Projects with clear, fixed requirements | Projects requiring high quality and **early test planning** |
| **Examples of Usage** | Internal tools, small web apps, short-term projects | Healthcare, banking, defence systems, CSR apps with stakeholders |

* Both are **structured and linear models**, but the **V-Model emphasizes quality more strongly** by planning and executing validation activities early.
* The **V-Model is often considered a better choice** for projects where **accuracy, traceability, and quality assurance** are crucial — like the **Online Agriculture Products Store**, where early user testing and stakeholder feedback are important.

**Question 11:** As a BA, state your reason for choosing one model for this project

As a **Business Analyst** I choose **V-Model** would be more appropriate for this project because:

* The **requirements** for this project are **clear** and can be defined upfront, which makes it suitable for a **V-Model** approach.
* The focus on validation at each step (Requirements, Design, and Testing phases) will help ensure that the platform functions as intended before it goes live.
* Since agricultural products and logistics need accuracy, the **V-Model’s emphasis on thorough testing** makes it ideal for meeting the project's reliability goals.

For this Project **Online Agriculture Products Store**, **the V-Model is a more suitable choice** because it focuses on early testing and validation, ensures high quality, provides better documentation and traceability, and reduces risks related to evolving user requirements. These factors are critical for a project involving multiple stakeholders, with a strong emphasis on user satisfaction and quality of service for farmers.

**Question 12:** 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 and Milestones:**

* RG: Requirements Gathering
* RA: Requirements Analysis
* Design: Architecture and UI/UX
* D1 to D4: Development Modules
* T1 to T4: Corresponding Testing Phases
* UAT: User Acceptance Testing

**Resources:**

* PM: Oversees delivery
* BA: Gathers requirements, supports testing and UAT
* Developers: Java (UI + backend)
* Testers: QA, integration, UAT
* DB Admin & Network Admin: Infra setup and data management

Gantt Chart with duration

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**Question 13:** Explain the difference between Fixed Bid and Billing projects

**Fixed Bid vs. Billing Projects**

* **Fixed Bid**: A pre-agreed cost for the entire project, suitable when the scope and requirements are clear and fixed.
* **Billing**: The client is billed based on actual time and resources used, more suitable when requirements are likely to evolve over time.

As a Business Analyst, the decision between Fixed Bid and Billing Projects should depend on the project’s clarity of scope and the client's preference for risk and flexibility. For a project like the Online Agriculture Products Store, if the requirements are clear from the start, a Fixed Bid model may be more suitable. However, if the project involves evolving requirements or uncertainties about the full scope, a Billing approach offers more flexibility for the client and the development team.

**Question 14**: Preparer Timesheets of a BA in various stages of SDLC

* Design Timesheet of a BA
* Development Timesheet of a BA
* Testing Timesheet of a BA
* UAT Timesheet of a BA
* Deployment n Implementation Timesheet of a BA

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|  |  | Design Timesheet of a BA |  |  |  |
| S.No. | Tasks | Actionable Items | Start time | End time | Duration |
| 1 | Collaborating with stakeholders to clarify design requirements. | Initial discussions with PM & Devs | 10:00AM | 12:00PM | 2 hours |
| 2 | Reviewing requirements and translating them into user stories. | Ensured clear understanding of design | 12:00PM | 01:30PM | 1.5 hours |
| 3 | Working with design team on wireframes and UI layout. | Provided inputs on user interactions | 02:30PM | 04:00PM | 1.5hours |
| 4 | Finalizing use case documentation for design validation. | Validating use cases with the team | 04:00PM | 05:00PM | 1 hours |
| 5 | Meeting with developers to discuss design feasibility. | Clarifying design issues with Dev team | 05:00PM | 07:00PM | 2 hours |
|  |  |  |  |  | 8 hours |
|  |  | Development Timesheet of a BA |  |  |  |
| S.No. | Tasks | Actionable Items | Start time | End time | Duration |
| 1 | Reviewing and clarifying requirements with developers. | Discussing technical feasibility | 10:00AM | 12:00PM | 2 hours |
| 2 | Assisting with the prioritization of features and tracking scope changes. | Reviewing feature priority with PM | 12:00PM | 01:30PM | 1.5 hours |
| 3 | Documenting and refining user stories for upcoming sprints. | Sprint backlog preparations | 02:30PM | 04:00PM | 1.5hours |
| 4 | Conducting workshops for requirements clarification with the team. | Ensuring understanding of features | 04:00PM | 05:00PM | 1 hours |
| 5 | Answering developer queries regarding functional specifications. | Handling technical questions | 05:00PM | 07:00PM | 2 hours |
|  |  |  |  |  | 8 hours |

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|  |  | Testing Timesheet of a BA |  |  |  |
| S.No. | Tasks | Actionable Items | Start time | End time | Duration |
| 1 | Reviewing test cases to ensure full coverage of requirements. | Aligning with test cases and user stories | 10:00AM | 12:00PM | 2 hours |
| 2 | Working with testers to validate functional scenarios. | Ensuring test cases match business needs | 12:00PM | 01:30PM | 1.5 hours |
| 3 | Participating in defect triage meetings. | Prioritizing critical defects | 02:30PM | 04:00PM | 1.5hours |
| 4 | Verifying and tracking defects reported during functional testing. | Logging and coordinating fixes | 04:00PM | 05:00PM | 1 hours |
| 5 | Supporting UAT test preparation with the QA team. | Preparing test data and scenarios | 05:00PM | 07:00PM | 2 hours |
|  |  |  |  |  | 8 hours |

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|  |  | UAT Timesheet of a BA |  |  |  |
| S.No. | Tasks | Actionable Items | Start time | End time | Duration |
| 1 | Coordinating with end-users for UAT preparation. | Ensuring users are ready for UAT | 10:00AM | 12:00PM | 2 hours |
| 2 | Reviewing UAT test scenarios and adjusting based on feedback. | Fine-tuning test cases and data | 12:00PM | 01:30PM | 1.5 hours |
| 3 | Assisting end-users with test execution and capturing feedback. | Observing and guiding users | 02:30PM | 04:00PM | 1.5hours |
| 4 | Tracking and resolving any issues raised during UAT. | Managing defects and retesting | 04:00PM | 05:00PM | 1 hours |
| 5 | Preparing final UAT sign-off documentation and reports. | Wrapping up UAT phase | 05:00PM | 07:00PM | 2 hours |
|  |  |  |  |  | 8 hours |
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|  |  | Deployment and Implementation Timesheet of a BA |  |
| S.No. | Tasks | Actionable Items | Start time | End time | Duration |
| 1 | Assisting with the final preparation for deployment. | Coordinating with the technical team | 10:00AM | 12:00PM | 2 hours |
| 2 | Communicating with stakeholders about the deployment plan. | Preparing stakeholders for go-live | 12:00PM | 01:30PM | 1.5 hours |
| 3 | Reviewing post-deployment issues and assisting with troubleshooting. | Addressing initial bugs and queries | 02:30PM | 04:00PM | 1.5hours |
| 4 | Participating in post-deployment support and training for end-users. | User training and system monitoring | 04:00PM | 05:00PM | 1 hours |
| 5 | Final review and project closure activities. | Finalizing documentation and closing project | 05:00PM | 07:00PM | 2 hours |
|  |  |  |  |  | 8 hours |

* **Design Phase:** BA works closely with stakeholders to ensure the design aligns with business requirements, making sure functional specs and user stories are defined correctly.
* **Development Phase:** BA clarifies requirements, works with the development team, and refines user stories to guide the development process.
* **Testing Phase:** BA ensures that all business requirements are met by reviewing test cases, managing defects, and validating the test results.
* **UAT Phase:** BA is heavily involved in ensuring that the solution works as expected from the user’s perspective, helping end-users with test execution and capturing feedback.
* **Deployment & Implementation:** BA ensures smooth deployment and assists in post-deployment activities, such as training users and monitoring system performance.

These timesheets provide an overview of the typical activities a BA would engage in at each stage of the SDLC. The actual hours and tasks may vary depending on the project's scope and complexity.