



Software Product and Process Management. 2024-25.

Coursework 01: Stage 02

Minimum Viable Product and Sprint Plan.

Date: 11 Apr 2025.

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GROUP MEMBERS.

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Introduction.

The **Community Volunteer Platform** is a prototype solution developed to bridge the gap between individuals seeking meaningful volunteer opportunities and the organizations that provide them. In a world where digital engagement plays a crucial role in community involvement, this platform enables seamless interaction among volunteers, non-profit organizations, community leaders, educational institutions, and donors.

This assignment focuses on delivering the **Minimum Viable Product (MVP)**, a streamlined version of the platform that includes the core functionalities required for early deployment and user validation. These include user registration, support request management, and a donation system with transparency and confirmation features.

Through a structured and agile approach, this report presents a detailed **story map**, sprint planning for each feature, individual development tasks, and user-focused test cases. The overall goal is to create a robust foundation for community-driven engagement, ensuring transparency, accessibility, and user satisfaction.

By focusing on real-world use cases and prioritizing essential features, this MVP lays the groundwork for future enhancements while addressing the immediate needs of stakeholders involved in community development.

Minimum Viable Product (MVP).

The Minimum Viable Product (MVP) of the Community Volunteer Platform is a functional prototype designed to address the core needs of connecting volunteers with community service opportunities. The MVP will include the most essential features that deliver immediate value to users and stakeholders while allowing room for improvements based on feedback.

Goals of the MVP:

- Enable user registration and authentication
- Allow users to submit support requests and track responses
- Facilitate donations with confirmation and transparency
- Provide basic admin functionality for managing submissions

Story Mapping.

Theme	Registr	ation	Request :	Support	Dona	ation
feature	User Sign-Up / Profile Creation	User Login / Authentic ation	Submit Support Request	Track Request Status	Make a Donation	View Donation History & Receipts
Sprint 1	Design and build sign-up form (name, email, password)	Build login page, connect to backend auth logic	User interface design for request form (title, category, description)	Display submitted requests in a user dashboard	User interface for donation form (amount, currency, method)	Display donation history in user dashboard (list + totals)
	Set up a Database Schema for User profiles	After login save the password in the Email or the device		Create dashboard layout to list user's past requests		
Sprint 2	Input validation, account creation backend, email verification	Add secure password storage (hashing)	Backend for submitting & storing requests, input validation	Backend logic for updating and retrieving request status	Payment gateway integration (PayPal) with currency conversion	Add downloadabl e receipts (PDF/HTML) for each transaction

		Add "Remember Me", logout feature, and login audit logs		Backend API for fetching & updating request status by admin	Add test payment integration + error handling (invalid card, limits)	
Sprint 3	Profile edit support, profile image upload, user feedback page	Forgot password flow, email- based reset.	Add file attachments, success confirmation, and notification email	Implement email/push notifications for updates, status filters (e.g. pending/reso lved)	Confirmation page with receipt, automated thank-you email	Filters for search (date, amount), export full donation report
	Create an interface for "Delete Account Permanently"		Allow draft saving, show submission preview, add success modal	Implement filters (status/date), color-coded status tags	Real payment processing, donation summary page with share options	Add charts (e.g., donation trends), export to Excel

Development Tasks.

Task ID	T1
Story ID	504
Task Title	Implement Secure Login System for Users
Task Size	Medium
Dependencies	User accounts must already exist (from S03 or DB seeding)
Subtasks	* Create a login form on the frontend with fields for email and password, including appropriate labels and placeholders * Add client-side form validation to ensure no empty inputs and proper email format using RegEx * Set up a backend /api/login endpoint that receives credentials and returns auth status * Use bcrypt to validate entered password against hashed password in the database * Generate a secure JWT token on successful authentication with appropriate expiration time * Set HttpOnly and Secure flags for the token when sending it to the client as a cookie * Create middleware on the backend to protect routes and check for valid tokens before granting access * Design and implement a "Forgot Password" screen with email input and send a reset link using a token * Log each login attempt (success/fail), and flag suspicious behavior after multiple failed attempts from the same IP

Task ID	T2
Story ID	508
Task Title	Develop Admin Interface for Support Requests
Task Size	Large
Dependencies	T1
Subtasks	* Implement a user-facing support request form with fields for subject, category, and detailed message
	* Validate the form inputs on both frontend and
	backend before saving to DB
	* Create a new SupportRequests table in the

	database with user ID, message, status, priority, and timestamps * Develop an admin-only dashboard view to list and filter support tickets by status (e.g. open, pending, resolved) * Enable status updates, assignment of tickets to admins/support agents, and internal comments on tickets * Implement real-time or email/in-app notifications when a ticket is updated or responded to * Enable threaded conversations between user and support team inside the ticket view * Display admin metrics: total open tickets, average resolution time, etc. * Apply role-based access control (RBAC) to restrict this dashboard to admins and support agents only
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Task ID	Т3
Story ID	S10
Task Title	Build Transparent Donation Management
	System
Task Size	Large
Dependencies	None
Subtasks	* Design a normalized database schema
	including tables for: Donations, Expenses,
	Reports, and Donors
	* Create backend API endpoints to add, update,
	and retrieve donation and expense entries
	* Build an admin interface to enter and
	categorize expenditures linked to donation
	sources
	* Implement data visualizations (pie/bar charts)
	comparing used vs. available funds over time
	* Automate generation of donation reports
	(monthly/quarterly) showing income, expense,
	and allocation
	* Provide functionality to export donation

reports as downloadable PDF files
* Implement email delivery of personalized
reports to donors summarizing their
contributions and impact
* Add date range and donor/project filters to
dynamically adjust report outputs
* Maintain a secure, immutable audit log of all
financial transactions and report changes
* Integrate with donor history and payments for
full traceability from incoming donation to
expense allocation

Task ID	T4
Story ID	S03
Task Title	Create user account
Task Size	Medium
Dependencies	None
Subtasks	 Enter the donor's data into the database (Name, contact number, email address, etc.)
	 Submit all required donor information to the system's portal. Generate unique id
	 Send email along 3 topics → Personal information check confirmation
	→ Request to create a password (required for logging in with the unique ID and password)

→ Link for 2FA setup
 Send a welcome email after successful registration including terms and conditions.

Task ID	T5
Story ID	S11
Task Title	Smart Donation Through Digital receipt (QR Code)
Task Size	Medium
Dependencies	T4
Subtasks	 Add donor Details (Name ,contact number,email address, payment amount ,unique id of Donor) Complete payment through correct gateway method (Google pay,paypal) Generate QR Code with proper information through proper library (Javascript,Python,C#) Creation of Digital Receipt (PDF format)
	Ensure the Functionality of the QR Code

Send the code to donor email address

Task ID	Т6		
Story ID	S12		
Task Title	Two Factor Authentication(2FA) for safe transaction		
Task Size	Medium		
Dependencies	T5		
Subtasks	 Activate 2FA option to Donor device (Google Authenticator, Microsoft Authenticator). 		
	 Generate code (usually 6 digits and short lived code) and send it via donor's email or sms. 		
	 Verify and implement the code from the donor within the time limit, as it is short-lived. 		
	 Confirm the amount and proceed with the transaction. 		
	Complete payment.		

Task ID	Т7	
Story ID	S06	
Task Title	Volunteer Request Management and Escalation System	
Task Size	Medium	
Dependencies	None	
Subtasks	Build a monitoring tool that flags volunteer requests not addressed within 48 hours. Let be a second of the flags volunteer requests not addressed within 48 hours.	
	Implement auto-reminder functionality to notify the assigned organization via email or dashboard alert.	
	Allow volunteers and organizations to mark their requests as "Resolved" with a comment box. Stars are obtained to the end of the end	
	 Store resolution status and timestamps in a support ticket database. Trigger escalation to admin if the request exceeds 72 hours without action. 	

Task ID	T8	
Story ID	S07	
Task Title	Smart Resource Request Form with Admin Workflow	
Task Size	Medium	
Dependencies	None	
Subtasks	Create an accessible form for project leaders to input project name, type of resources, and urgency.	
	Validate data and store each submission in the backend with a status set to "Pending."	
	Send automatic notification to the admin with a link to the request.	
	Build an admin dashboard to approve/reject the request, with notes.	
	Notify the project leader with the decision and estimated resource delivery timeline.	

Task ID	T9	
Story ID	S09	
Task Title	Donation Logging & Transparency Dashboardk Donations in System	
Task Size	Large	
Dependencies	None	
Subtasks		
	Design a robust schema to log donations: donor ID, amount, currency, date, purpose.	
	Implement real-time transaction logging linked to payment gateways.	
	Create an admin dashboard for browsing/filtering donation records.	
	Enable export to PDF/CSV for financial reports.	
	Automate monthly summary reports sent to stakeholders to enhance transparency	

Task ID	T10	
Story ID	S01	
Task Title	Record Volunteering Hours	
Task Size	Medium	

Dependencies	None
Subtasks	 Create form to log volunteer hours (date, activity, duration). Link hours to user profile. Verify hours with organization's approval. Update total hours in the user's dashboard. Send notification to user upon approval.

Task ID	T11		
Story ID	S02		
Task Title	Personalized Recommendations System		
Task Size	Large		
Dependencies	T10		
Subtasks	 Develop user interest and skills input form. Implement recommendation algorithm using filters (location, interest, skill match). Show top 5 recommended opportunities on dashboard. Allow feedback on recommendations to improve accuracy. Send weekly email with updated suggestions. 		

Task ID	T12		
Story ID	S05		
Task Title	Request Help for an Opportunity		
Task Size	Medium		
Dependencies	None		
Subtasks	 Design help request form (title, description, deadline). 		
	 Enable attachments for relevant documents or images. Route request to support team/admin. Enable user to track the status of request. Send notification once response is available. 		

TEST CASES

User story 1

Test ID: TC1	Test Description: Make sure admin can review, approve, reject or edit volunteering submissions			
Story ID:	Story Narrative: As an educational institution, I want to be able to access and manage student			
S01	volunteering records so tha	t I can attach them to acader	mic records for scholarship shortlisting.	
Step ID:	Step Description	Test Data	Expected Result	
1	Admin logs in and	Username: admin	Dashboard showing all volunteer	
	access dashboard	Password: admin123	submissions	
2	Selects a particular	Good gym, 3 hours in	All records of the particular	
	submission	total	submission is displayed.	
3	Approves the	Record matches the	Students points are updated, green	
	submission	given guidelines	tick is displayed.	
4	Admin selects another	Charity shop, 20	All records of the particular	
	submission	minutes in total	submission is displayed.	
5	Rejects the submission	Record fails to match	The submission is removed from the	
		with the institution	dashboard. Students points remains	
		guidelines	same.	
6	Admin chooses to edit	Modifies the total	Updated record is displayed.	
	the record.	hours.		

Test ID:TC2	Test Description: Ensure that the admin can filter, and view student's volunteering submissions			
	based on organization's name, hours and location.			
Story	Story Narrative: As an educational institution, I want to be able to access and manage student			
ID:S01	volunteering records so that	I can attach them to acade	emic records for scholarship shortlisting.	
Step ID:	Step Description	Test Data	Expected Result	
1	Admin logs in to the	Username: admin	Dashboard is displayed.	
	system.	Password: admin123		
2	Navigates to the	-	List of student submission is displayed	
	volunteer submission			
	section.			
3	Selects a filter with	"Charity Shop"	Submission only from the Charity Shop	
	organization's name		organization is shown.	
4	Selects a range of hours	Hours filter input: 0	Only records with volunteering hours	
	from 0 to 30 minutes.	to 30	upto 30 minutes is shown	

USER STORY 2:

Test ID: TC3	Test Description: Ensure that an user can create an account successfully.			
Story ID:	Story Narrative: As a new user, I would like to register an account so I can access the platform,			
S03	manage my profile, and take	manage my profile, and take advantage of the features without limitations. The registration		
	process should be smooth a	nd secure, allowing me to	easily verify my identity.	
Step ID:	Step Description Test Data Expected Result			
1	Click on sign in	-	Two options. Register as a new user or	
			Log in.	
2	User selects register as	Name:	All fields expect input.	
	a new user.	Email:		
		Password:		
3	Click "Register"	-	Form is submitted. "Registration link	
			has been sent" is displayed.	
4	Opens email and click	-	Redirects to the dashboard. "Account	
	on verify.		is successfully created" message	
	,		displayed.	

Test ID: TC4	Test Description: Ensure the user and successfully amange and update their profile details.				
Story ID: S03	Story Narrative: As a new user, I would like to register an account so I can access the platform, manage my profile, and take advantage of the features without limitations. The registration process should be smooth and secure, allowing me to easily verify my identity.				
Step ID:	Step Description	Step Description Test Data Expected Result			
1	User clicks on sign in	Email:	Successfully logged in message is		
		Password:	displayed.		
2	Clicks on account	-	Different fields are shown.		
	settings.				
3	User heads over to "edit profile"	-	Editable fields are displayed.		
4	Update full name.	From "Tris" to "Tris	Field is updated. "Successfully		
		Smith"	updated" message is shown		
5	User clicks on "update	From "" to	Field is updated. "Successfully		
	password".	"Newpassword23"	updated" message is shown		
6	Click "Save"	-	"Profile updated successfully"		
			message is displayed		

User story 3:

Test ID:	Test Description: Ensure a volunteer can submit an inquiry to a non-profit organization		
TC5			
Story ID:	Story Narrative: As a non-profit organization, I want to receive and respond to volunteer		
S06	inquiries, so that I can provide clear guidance and improve engagement.		
Step ID:	Step Description	Test Data	Expected Result

1	Volunteer navigates to a particular organization page	"Good Gym"	A side-option showing "Send an enquiry"
2	Clicks on the "Send an enquiry" button.	-	Inquiry form opens
3	Fill in name and email field	Name: John Email: john23@yahoo.com	Details are accepted, shows a green tick beside the fields.
4	Volunteer writes their message	"I want to know more about volunteering options"	Text is accepted.
5	Click on "Submit" option	-	"Your enquiry has been sent, please check your email for confirmation" text is displayed
6	Volunteer check email.	-	"Your enquiry is received, please download your digital receit" email is displayed

Test ID: TC6	Test Description: Non-profit organization responds to an inquiry		
Story ID: S06	Story Narrative: As a non-profit organization, I want to receive and respond to volunteer inquiries, so that I can provide clear guidance and improve engagement.		
Step ID:	Step Description	Test Data	Expected Result
1	Organization admin signs in	Username: admin Password: admin123	Dashboard loads
2	Heads over to "inquiries" section	-	All inquiries submitted is shown
3	Selects a particular inquiry.	Inquiry from John	All the inquiry details is shown. Inquiry message as well as name and email
4	Types a reply.	"Thanks for you interest! Here are the details"	Text is accepted, and "Send" button turns green.
5	Clicks "Send".	-	"Reply sent successfully!" is displayed
6	Volunteer receives email regarding the reply to his inquiry	-	Volunteer can see the reply as well as login option to his portal is suggested.

User Story 4:

Test ID:	Test Description: Ensure that a leader in community can submit a valid resource request for a			
TC7	project	project		
Story ID:	Story Narrative: As a leade	r in the community, I wo	ould like to seek more volunteers or	
S08	resources for a project to guarantee its successful implementation.			
Step ID:	Step Description Test Data Expected Result			
1	Community leader logs	Username:leader123	Dashboard is displayed showing all	
	in	Password: leaderdoe	available options	
2	Navigates to a particular	"Clean water"	All the details regarding the	
	project page.	project	project is displayed.	
3	Clicks on "Request	-	A text-box appears	
	resources"			

4	Enters resource details	Item "Pipes.	Form accepts input and "Send
		Quantity: 3"	request" button turns green
5	Clicks "Send request"	-	"Resource successfully sent"
			message appears.
6	System updates project	-	Additional requests are displayed
	details		along the project.

Test ID: TC8	Test Description: Ensure that when the administrator approves a resource request, the community leader receives notification.		
Story ID: S08	Story Narrative: As a leader in the community, I would like to seek more volunteers or resources for a project to guarantee its successful implementation.		
Step ID:	Step Description	Test Data	Expected Result
1	Admin logs in the platform	Username: Password:	Dashboard is shown.
2	Navigates to the "pending requests" section	-	List of projects is shown
3	Selects a specific request to review	Request ID: M890	Request details is shown, as well as time when request is received and
4	Admin reviews the request.	Checks the review and checks their available resources.	Two option is displayed "Approve" or "Disapprove"
5	Clicks "Approve" button.	-	Request status changes to "Approve" and turns green.
6	An email is sent to the community leader.	-	Digital receipt is available in the email inbox.

User Story 5:

Test ID: TC9	Test Description: Ensure that the system displays real-time conversiona rates and donation is broken down for easier understanding for the donor.			
Story ID: S12	Story Narrative: As a donor, I seek a seamless multi-currency payment system that transcends borders, allowing me to contribute effortlessly from my local currency to the charity's preferred currency. I desire a hassle-free transaction process with real-time conversion rates, ensuring complete transparency and a clear understanding of my donation's exact value.			
Step ID:	Step Description Test Data Expected Result			
1	User navigates to the donation page.	-	Donation page loads, showing all the available options to donate money and an "amount" box	
2	User type a donation amount.	30 pound	Input accepted.	
3	Selects country of origin.	Country: Canada	Country of origin changes and amount.	
4	System displays real- time conversion	30 Pound is converted to 54 Canadian dollar.	Details showing the converted amount. "Donate" button is turned green.	
5	User clicks on "Donate" button	-	Page reloads, then displays "Donation is sent successfully".	

6	User receives a	"You donated 54	User views his digital receipt.
	confirmation in their	Canadian dollar."	
	email.		

Test ID: TC10	Test Description: Ensure that the donor can select from multiple payment methods to complete a donation			
Story ID: S12	Story Narrative: As a donor, I seek a seamless multi-currency payment system that transcends borders, allowing me to contribute effortlessly from my local currency to the charity's preferred currency. I desire a hassle-free transaction process with real-time conversion rates, ensuring complete transparency and a clear understanding of my donation's exact value.			
Step ID:	Step Description	Test Data	Expected Result	
1	User navigates to the donation payment page.	-	Different payment options are shown to choose from.	
2	User choose particular amount and currency	Amount: 50 BDT	Amount is accepted. A green tick is shown right next to the text field.	
3	User clicks on "View payment options"	-	PayPal, Google Pay, Visa, Klarna, Clearpay displayed	
4	User clicks on "Visa"	-	"You have selected Visa payment" message is displayed	
5	Authenticate and confirm payment	Valid card number, expiry date and address details.	Transaction is successful.	
6	Email receipt is sent to the users email.	Email:johnsmith@yahoo.com	Receipt includes currency conversion, transaction ID and payment method that was selected	

Conclusion

Overall, we all had a great experience developing our project and implementing essential Agile and Scrum methodologies to structure our workflow. From building the Product Backlog to breaking down each task during Sprint Planning, story mapping, and writing test cases, our team collaborated effectively throughout the process. Regular Sprint Reviews allowed us to gather valuable feedback, helping us continuously improve and stay focused on our goals.

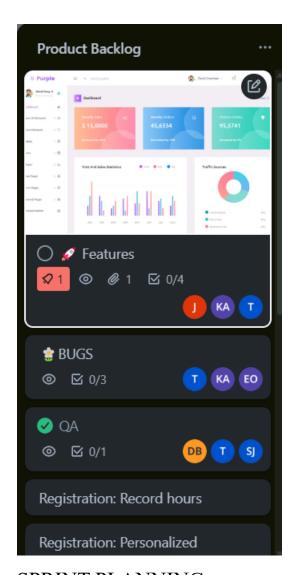
Each sprint gave us a clearer picture of what was working and what needed to change. By identifying priorities, adjusting our approach when necessary, and committing to iterative progress, we were able to produce results more efficiently. The structured yet flexible nature of Agile helped our team stay organized, communicate better, and deliver a solution that meets the project's needs.

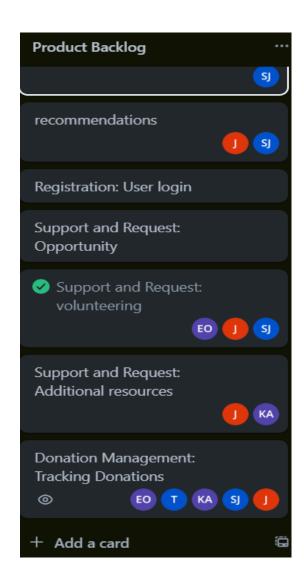
In the end, not only did we complete the technical work, but we also grew as a team—learning how to manage time, solve problems collaboratively, and adapt to challenges in a real-world development environment.

Appendix.

PRODUCT BACKLOG

Product Backlog is the central point in Agile and Scrum development. It includes all the tasks required for the project, organized according to priority, and fulfils all the requirements needed to deliver a complete software product. It also includes any necessary bug fixes and enhancements. The Product Owner is responsible for managing and prioritizing the Product Backlog.

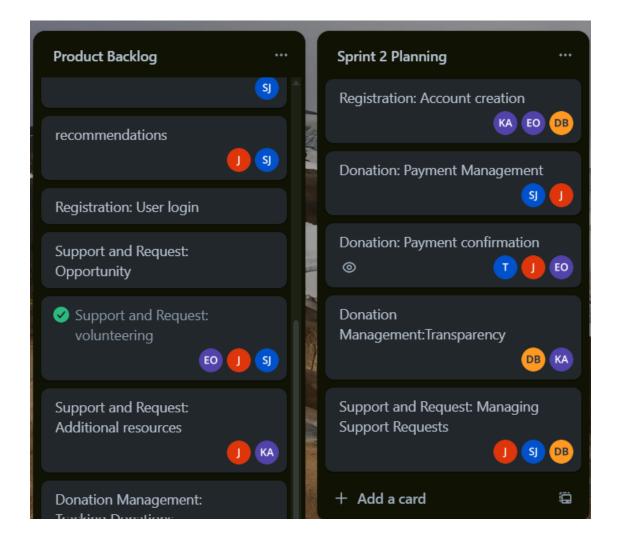




SPRINT PLANNING

It is the beginning of a new sprint, where the team decides what they will work on and how they will accomplish it. During the meeting, the Product Owner selects items from the product backlog, and the development team discusses how to implement them. By collaborating, the team selects user

stories that can realistically be completed during the sprint and defines a clear sprint goal. These stories are then broken down into smaller, manageable tasks. The outcome of this planning session is the Sprint Backlog — a list of tasks that need to be completed during the sprint. The MVP is discussed to prioritize the core features that are essential for the first release, such as user registration, payment processing, and receipt generation.



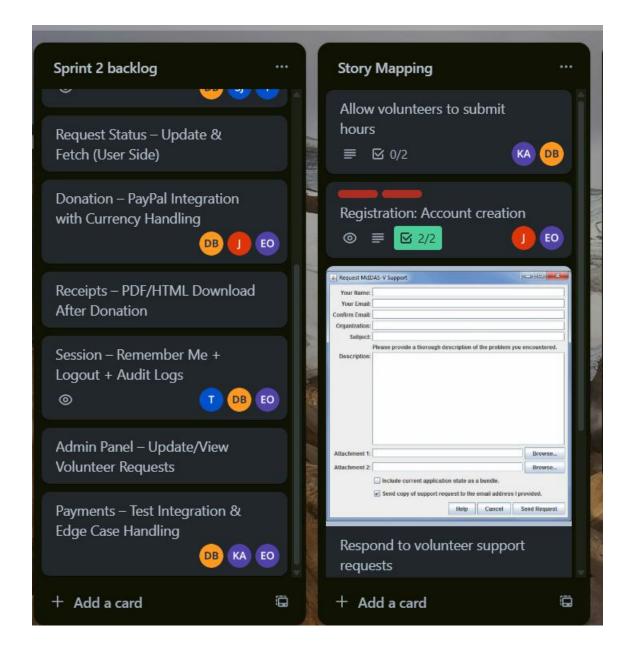
SPRINT BACKLOG

The Sprint Backlog contains a list of selected tasks and user stories that the development team commits to completing during the given sprint. It is created during the Sprint Planning meeting by the team and includes all the work needed to achieve the sprint goal. The difference between the Sprint Backlog and the Product Backlog is that the Product Backlog contains everything that may be needed for the entire project, while the Sprint Backlog focuses only on what needs to be completed

within a specific sprint. This focused list helps the team break down work into smaller tasks, estimate time effectively, and stay aligned and productive throughout the sprint.

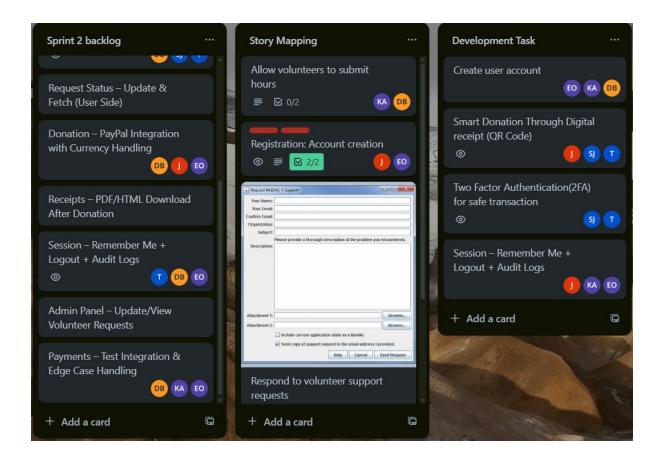
STORY MAPPING

In Agile development, story mapping is a technique used to organize user stories based on the requirements of the project. It helps the team analyze what the user needs and identify which features are required to support those needs. In a typical story map, high-level user activities and core features are placed at the top and given the highest priority, while related user stories and supporting tasks are listed underneath. This structure makes it easier to identify the Minimum Viable Product (MVP), which the team can then focus on delivering first.



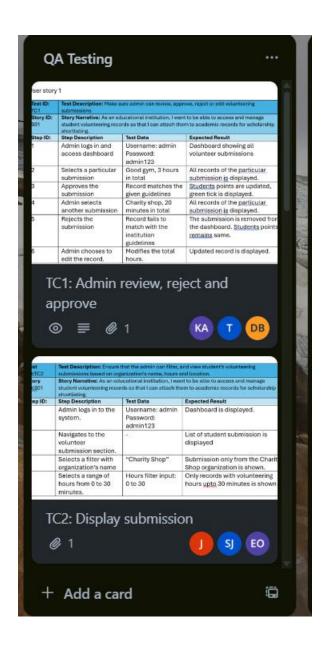
DEVELOPMENT TASK

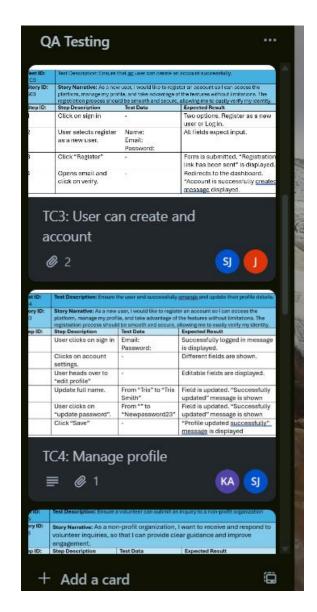
It mainly focuses on technical work such as coding, debugging, optimizing, and testing. The larger tasks from the sprint backlog are broken down into smaller, more granular actions, typically with a shorter time span. This method helps the team track progress quickly, often through the use of checklists, ensuring that each part of a feature or fix is completed systematically.

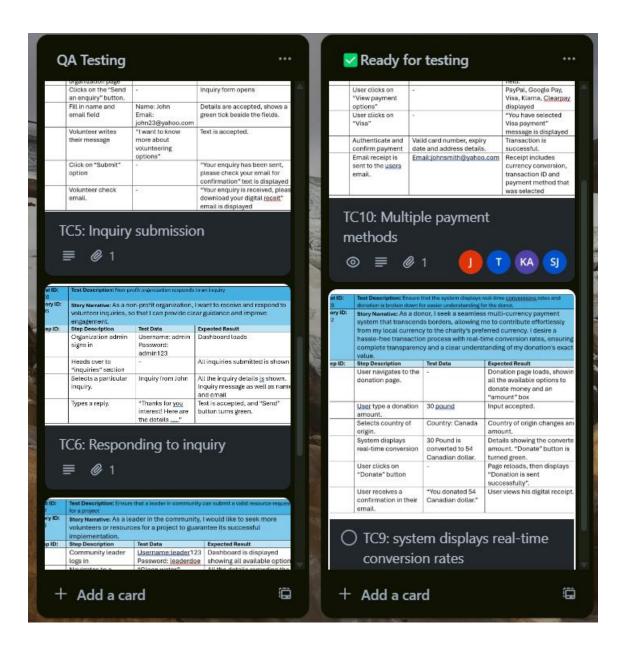


TEST CASES

Test cases are specifically developed to verify that certain features of a software application are behaving as expected. They typically contain inputs, expected results, and the final result. In Agile and software development, test cases are important for validating that the features and functionalities meet the required specifications outlined by the project stakeholders.



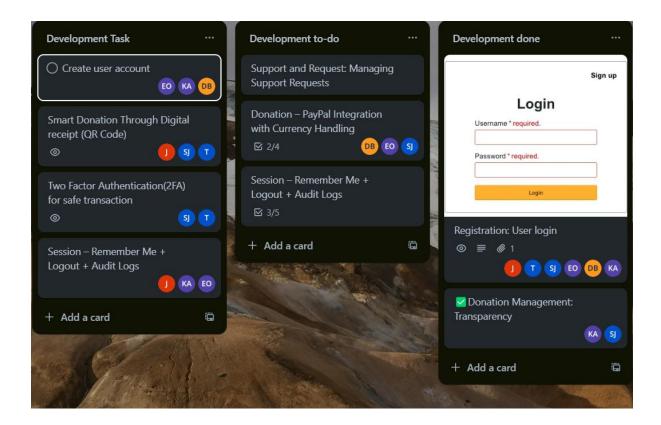




In our project, we used the test case template provided to us. It contains the test ID, story narrative, and test description. Each test is broken down into several steps, which include a step description, expected result, and input.

DEVELOPMENT PROGRSS

In this step, the developer continues working on completing tasks. They use a template to visualize what's done, what needs to be done, and how much work has been completed. This helps the team track how much time is spent on each task and analyze whether they will be able to meet deadlines.



SPRINT REVIEW

At the end of each sprint, we conducted a **Sprint Review** to gather feedback from all involved stakeholders, including team members and the Product Owner. This review was essential for ensuring that the work completed during the sprint aligned with the project goals and met expectations. During the review, the development team demonstrated the features or improvements they had completed, while stakeholders had the opportunity to provide valuable insights and feedback.

This process not only helped us identify areas for improvement but also provided an opportunity for the team to highlight challenges they faced, which could then be addressed in future sprints. It was an important step in refining our work process and ensuring that we stayed on track.

