

Activity – 03**IT2080 – Information Technology Project.****Year 02 Semester 02****Agile Report****Scrap Collection and Recycling Management System – Yakadabadu.lk****Group Details**

- **Campus:** SLIIT Campus Malabe
- **Group:** Weekday Batch (Group Index – 81)

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Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Activity 03 - Agile-based Activity **Planning project scope and schedule**

Objective: Plan, prioritize, and manage the development process by employing agile methodologies.

1. Prepare a Product backlog for your project
2. Assign priority for each user story/ or requirement
3. Add relative estimates for the user stories using agile estimation method.
4. Based on the priority and estimates given, separate them into 3 sprints(duration of each sprint is two weeks). Each sprint should have a product as an outcome. The final sprint (3rd) should have the fully developed product
5. Create the Kanban board (task board) for ITP project using a suitable project management tool (Ex: Trello, Jira or any other). Ensure following steps in creating the Kanban board.

Add all user stories in product backlog to the Kanban board. Add all tasks identified in each user story.

You may attach a screenshot for the submission

6. Provide a sprint plan showing the tasks allocated for each member.

Activity – 03
IT2080 – Information Technology Project.
Year 02 Semester 02
Question 01

Order ID	User Story ID	User Story	Issue Type	Est. Hours	Priority	Status	Assignee	Sprint	Tags
1	001	As a user, I want to register with my email and phone number, so I can create an account	Feature	10	Show-Stopper	To Be Started	Kularathne	Sprint 1	user-management
2	002	As a user, I want to log in securely using a password, so I can access my account.	Feature	8	Show-Stopper	To Be Started	Kularathne	Sprint 1	user-management
3	003	As a user, I want to reset my password via email verification, so I can recover my account.	Feature	8	Show-Stopper	To Be Started	Kularathne	Sprint 1	user-management
4	004	As a user, I want to update my profile information, so I can keep my details up to date.	Feature	6	Major	To Be Started	Kularathne	Sprint 1	user-management
5	005	As an admin, I want to manage and verify user accounts, so I can prevent fake registrations.	Feature	10	Show-Stopper	To Be Started	Kularathne	Sprint 1	user-management

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Order ID	User Story ID	User Story	Issue Type	Est. Hours	Priority	Status	Assignee	Sprint	Tags
6	006	As a user, I want to request a scrap pickup by selecting my location, so my scrap can be collected.	Feature	12	Show-Stopper	To Be Started	Amarasinghe	Sprint 1	pickup-management
7	007	As a user, I want to set a preferred date for pickup, so I can schedule it conveniently	Feature	10	Major	To Be Started	Amarasinghe	Sprint 1	pickup-management
8	008	As a user, I want to track my pickup request status, so I know when my scrap will be collected.	Feature	12	Major	To Be Started	Amarasinghe	Sprint 1	pickup-management
9	009	As a driver, I want to accept or reject pickup requests, so I can manage my schedule.	Feature	10	Critical	To Be Started	Fernando	Sprint 2	Driver & route management
10	010	As an admin, I want to monitor all scheduled pickups, so I can ensure smooth operations.	Feature	10	Critical	To Be Started	Fernando	Sprint 2	Driver & route management

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

11	011	As a driver, I want to receive a list of assigned pickups, so I can plan my daily route.	Feature	8	Critical	To Be Started	Fernando	Sprint 2	Driver & route management
12	012	As a driver, I want to see an optimized route for multiple pickups, so I can save time and fuel.	Feature	12	Critical	To Be Started	Fernando	Sprint 2	Driver & route management
13	013	As a driver, I want to update the pickup status as "Completed" after collection, so the user is notified.	Feature	8	Major	To Be Started	Fernando	Sprint 2	Driver & route management
14	014	As a user, I want to see the estimated arrival time of the pickup driver, so I can prepare my scrap.	Feature	8	major	To Be Started	Fernando	Sprint 2	Driver & route management
15	015	As an admin, I want to monitor driver activity and performance, so I can ensure efficient pickups.	Feature	10	Major	To Be Started	Fernando	Sprint 2	Driver & route management
16	016	As an admin, I want to generate reports on collected scrap materials, so I can analyze trends.	Feature	12	Critical	To Be Started	Fernando	Sprint 2	Driver & route management
17	017	As an admin, I want to track the total weight of recycled materials, so I can measure impact.	Feature	10	Critical	To Be Started	Amarasinghe	Sprint 3	Pickup management

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

18	018	As a user, I want to see an overview of my scrap contributions, so I can track my recycling efforts	Feature	8	Major	To Be Started	Amarasinghe	Sprint 3	Pickup management
19	019	As an admin, I want to categorize collected materials by type, so I can manage recycling better.	Feature	10	Major	To Be Started	Amarasinghe	Sprint 3	Pickup management
20	020	As a business partner, I want to access reports on available recycled materials, so I can purchase them.	Feature	12	Major	To Be Started	Pathirage	Sprint 3	Resell Management
21	021	C	Feature	10	Major	To Be Started	Gunawardena	Sprint 3	Financial Management
22	022	As a user, I want to browse listed items, so I can purchase second-hand materials.	Feature	12	Critical	To Be Started	Pathirage	Sprint 3	Resell Management
23	023	As a user, I want to check the current price per kilogram of different scrap materials, so I can estimate my earnings.	Feature	8	Major	To Be Started	Gunawardena	Sprint 3	Financial Management
24	024	As a buyer, I want to chat with sellers, so I can negotiate prices and discuss details.	Feature	8	Major	To Be Started	Pathirage	Sprint 3	Resell Management
25	025	As a seller, I want to receive notifications when someone is interested in item, so I can respond quickly.	Feature	6	Normal	To Be Started	Pathirage	Sprint 3	Resell Management
26	026	As a driver, I want to view my salary details, so I can track my earnings and payments	Feature	10	Major	To Be Started	Gunawardena	Sprint 3	Financial Management
27	027	As an owner, I want to calculate staff monthly salaries, so I can ensure accurate payroll management	Feature	10	Major	To Be Started	Gunawardena	Sprint 3	Financial Management

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Question 2 Answer

Priority Scale Descriptions

-  **Show-stopper (1)**
 - **Definition:** Critical to the core functionality of the system. Without this, the platform **cannot operate** as expected.
 - **Urgency:** **Immediate** development required.
 - **Examples:**
 - User registration and login via email and phone number..
 - Scrap pickup request initiation by users.
 - Admin verification of user accounts and management
 - Driver acceptance and rejection of pickup requests.
 -
-  **Critical (2)**
 - **Definition:** High priority for a smooth user experience and system stability. If delayed, it may **significantly impact** users.
 - **Urgency:** **High**, must be completed soon.
 - **Examples:**
 - Status tracking of scrap pickups for users.
 - Driver route optimization for better efficiency.
 - User notifications on pickup status or driver arrival.
 - Admin monitoring of all scheduled pickups and driver activities.
-  **Major (3)**
 - **Definition:** Enhances **business operations and efficiency**. Delays won't break the system but may cause inconvenience.
 - **Urgency:** **Moderate**, should be implemented in a reasonable timeframe.
 - **Examples:**
 - Profile updates for users and drivers.
 - Admin reports on collected scrap materials.
 - Tracking the total weight of recycled materials.
 - Chat feature for buyers and sellers of scrap materials.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

-  **Normal (4)**
 - **Definition:** Improves **usability and engagement**. Adds **convenience** but isn't urgent.
 - **Urgency:** **Low**, can be implemented after higher-priority tasks.
 - **Examples:**
 - Personalized reminders for users regarding scrap pickup.
 - Display of current scrap material prices for user reference.
 - Display of staff performance and salary details for drivers.
-  **Minor (5)**
 - **Definition:** **Non-essential** tasks that mostly enhance aesthetics or secondary functions.
 - **Urgency:** **Lowest**, can be implemented later.
 - **Examples:**
 - UI/UX improvements.
 - Additional notification customization.
 - Dark mode/theme selection.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Question 3 Answer

Relative Estimates for the User Stories using Agile Estimation Methods

This includes Effort Categories, Story Point Estimation, and Priority Classification aligned with Agile principles.

3.1. Agile Categorization of User Stories

Agile Key Principles Applied:

- **Effort Category:** Small, Medium, Large, Extra Large (based on estimated hours)
- **Story Points:** A Fibonacci scale (1, 2, 3, 5, 8, 13, 21, 34, 55...)
- **Priority:** Show-Stopper, Critical, Major, Normal, Minor
- **Sprint Planning Ready:** Each user story can be split across Sprints

3.2 Categorized User Stories (Agile-Friendly)

◆ 3.2.1. Small (1 - 15 Estimated Hours)

Effort Level: Easy to deliver within a Sprint. Ideal for early Sprint items or quick wins. Story Points: 1, 2, 3

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
001	Register with email and phone number	10 hrs	3 pts	Show-Stopper	Kularathne
002	Log in securely with password	8 hrs	3 pts	Show-Stopper	Kularathne
003	Reset password via email verification	8 hrs	3 pts	Show-Stopper	Kularathne
004	Update profile information	6 hrs	2 pts	Show-Stopper	Kularathne
005	Manage and verify user accounts	10 hrs	3 pts	Show-Stopper	Kularathne

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

◆ **3.2.2. Medium (16 - 30 Estimated Hours)**

Effort Level: Fits comfortably in a Sprint (or split into subtasks). Medium complexity. Story Points: 5, 8

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
006	Request scrap pickup by selecting location	12 hrs	5 pts	Show-Stopper	Amarasinghe
007	Set a preferred date for pickup	10 hrs	5 pts	Major	Amarasinghe
008	Track pickup request status	12 hrs	8 pts	Major	Amarasinghe
009	Accept or reject pickup requests	10 hrs	5 pts	Critical	Fernando
010	Monitor all scheduled pickups	10 hrs	5 pts	Critical	Fernando
011	Receive a list of assigned pickups	8 hrs	3 pts	Critical	Fernando
013	Update pickup status as 'Completed'	8 hrs	3 pts	Major	Fernando
014	See estimated arrival time of the pickup driver	8 hrs	3 pts	Major	Fernando
015	Monitor driver activity and performance	10 hrs	5 pts	Major	Fernando
018	View scrap contributions overview	8 hrs	3 pts	Major	Amarasinghe
019	Categorize collected materials by type	10 hrs	5 pts	Major	Amarasinghe
020	Access reports on available recycled materials	12 hrs	8 pts	Major	Pathirage
021	Generate financial reports	10 hrs	5 pts	Major	Gunawardena

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

3.2.3. Large (31 - 50 Estimated Hours)

Effort Level: May span more than one Sprint. Split into Epics or tasks in planning. Story Points: 13, 21

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
012	See an optimized route for multiple pickups	40 hrs	13 pts	Critical	Fernando
016	Generate reports on collected scrap materials	40 hrs	13 pts	Critical	Fernando
017	Track total weight of recycled materials	40 hrs	13 pts	Critical	Amarasinghe

◆ 3.2.4. Extra Large (51+ Estimated Hours)

Effort Level: Complex functionality. Break into Epics or several Sprints. Story Points: 21, 34, 55

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
022	Browse listed items for second-hand materials	50 hrs	21 pts	Critical	Pathirage
023	Check current price per kilogram of scrap materials	50 hrs	21 pts	Major	Gunawardena
024	Chat with sellers for price negotiation	50 hrs	21 pts	Major	Pathirage
025	Receive notifications for item interest	50 hrs	21 pts	Normal	Pathirage
027	Calculate staff monthly salaries	50 hrs	21 pts	Major	Gunawardena

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

3.3. Summary by Agile Category:

Category	Effort Range	Effort Range	# Stories
Small	5 - 15 hrs	1, 2, 3 pts	10
Medium	16 - 30 hrs	5, 8 pts	12
Large	31 - 50 hrs	13 pts	3
Extra Large	51+ hrs	21 pts and up	5

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Question 4 Answer

Sprint Structure

Sprint 1 (Weeks 1-2): Basic User Management and Pickup Request Features

Product Outcome: Core user management functionalities (registration, login, password reset) and basic pickup request flow.

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
001	Register with email and phone number	10 hrs	3 pts	Show-Stopper	Kularathne
002	Log in securely with password	8 hrs	3 pts	Show-Stopper	Kularathne
003	Reset password via email verification	8 hrs	3 pts	Show-Stopper	Kularathne
004	Update profile information	6 hrs	2 pts	Show-Stopper	Kularathne
005	Manage and verify user accounts	10 hrs	3 pts	Show-Stopper	Kularathne
006	Request scrap pickup by selecting location	12 hrs	5 pts	Show-Stopper	Amarasinghe
007	Set a preferred date for pickup	10 hrs	5 pts	Major	Amarasinghe
008	Track pickup request status	12 hrs	8 pts	Major	Amarasinghe
012	Notify user when pickup is scheduled	6 hrs	2 pts	Major	Kularathne

Total Estimated Hours: 82 hours

Sprint Outcome: The system will allow users to register, log in, reset passwords, and initiate pickup requests. Admins will be able to manage and verify user accounts. Users will also have the ability to track the status of their pickup request.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Sprint 2 (Weeks 3-4): Driver Management and Advanced Pickup Features

Product Outcome: Enhanced pickup features, driver functionality, and admin monitoring.

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
009	Accept or reject pickup requests	10 hrs	5 pts	Critical	Fernando
010	Monitor all scheduled pickups	10 hrs	5 pts	Critical	Fernando
011	Receive a list of assigned pickups	8 hrs	3 pts	Critical	Fernando
013	Update pickup status as 'Completed'	8 hrs	3 pts	Major	Fernando
014	See estimated arrival time of the pickup driver	8 hrs	3 pts	Major	Fernando
015	Monitor driver activity and performance	10 hrs	5 pts	Major	Fernando
016	View driver location on map	8 hrs	3 pts	Major	Fernando
017	Track total weight of recycled materials	40 hrs	13 pts	Critical	Amarasinghe
020	Access reports on available recycled materials	12 hrs	8 pts	Major	Pathirage

Total Estimated Hours: 114 hours

Sprint Outcome: Drivers will be able to accept/reject pickup requests, and the system will allow admins to monitor scheduled pickups and driver performance. The system will also track the total weight of recycled materials. Reports will be generated for the recycled materials, aiding in decision-making for the admin.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Sprint 3 (Weeks 5-6): Resell Management, Financial Management, and Final Features

Product Outcome: Complete product with resell management, financial features, and full functionality.

Order ID	User Story	Estimated Hours	Story Points	Priority	Assignee
018	View scrap contributions overview	8 hrs	3 pts	Major	Amarasinghe
019	Categorize collected materials by type	10 hrs	5 pts	Major	Amarasinghe
021	Generate monthly financial reports	12 hrs	8 pts	Major	Gunawardena
022	Browse listed items for second-hand materials	50 hrs	21 pts	Critical	Pathirage
023	Check current price per kilogram of scrap materials	50 hrs	21 pts	Major	Gunawardena
025	Receive notifications for item interest	50 hrs	21 pts	Normal	Pathirage
026	View salary details for drivers	10 hrs	5 pts	Major	Gunawardena
027	Calculate staff monthly salaries	50 hrs	21 pts	Major	Gunawardena

Total Estimated Hours: 240 hours

Sprint Outcome: The complete product will include resell management (scrap materials), financial management (staff salaries), and a final review of all functionalities.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Summary of the 3 Sprints:

Sprint	Product Outcome	Estimated Hours
Sprint 1	User Management, Pickup Request	66 hrs
Sprint 2	Driver Management, Advanced Pickup	101 hrs
Sprint 3	Full Product with Resell, Financial Management	239 hrs

The third sprint will be the most intensive, ensuring the product is fully developed with all core features implemented, including resell management, financial features, and complete driver functionality.

By the end of Sprint 3, you will have a fully functional system ready for final testing and deployment.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

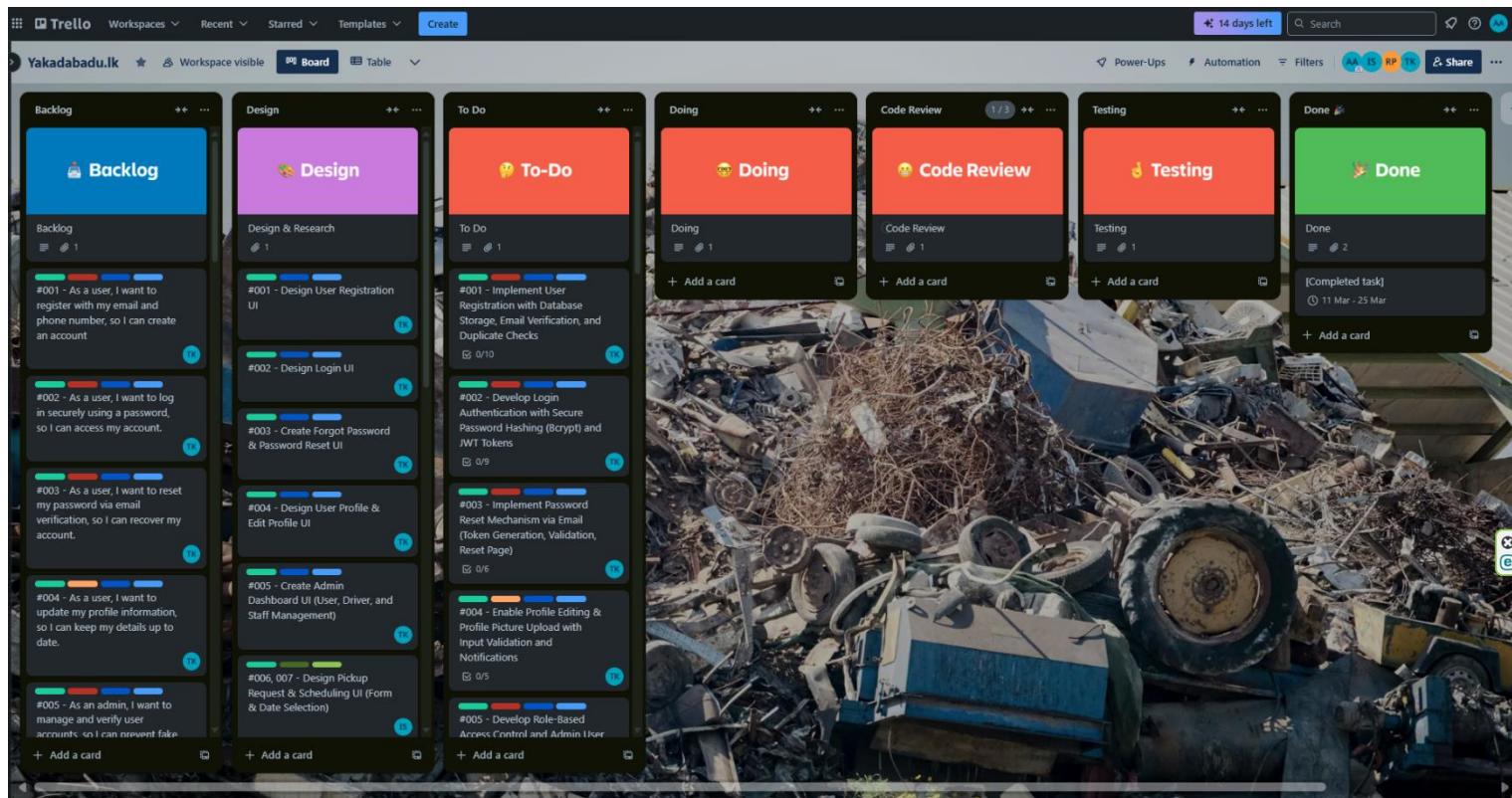
Question 5 Answer

Kanban Board Implementation (Trello)

A Kanban board was created on **Trello**, containing:

- **Columns:** Backlog, Design, To-Do, Doing, Code Review, Testing, done.
- **Tasks:** Each user story is broken into subtasks (e.g., database setup, validation, API development, testing).
- **Labels:** Tasks categorised by Sprint, Module, and Priority.
- **Members Assigned:** Each task has an **owner** responsible for completion.

📌 Attached Screenshot of Trello Board



Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02



The image shows a Trello board on the left and a photograph of a car accident on the right.

Trello Board:

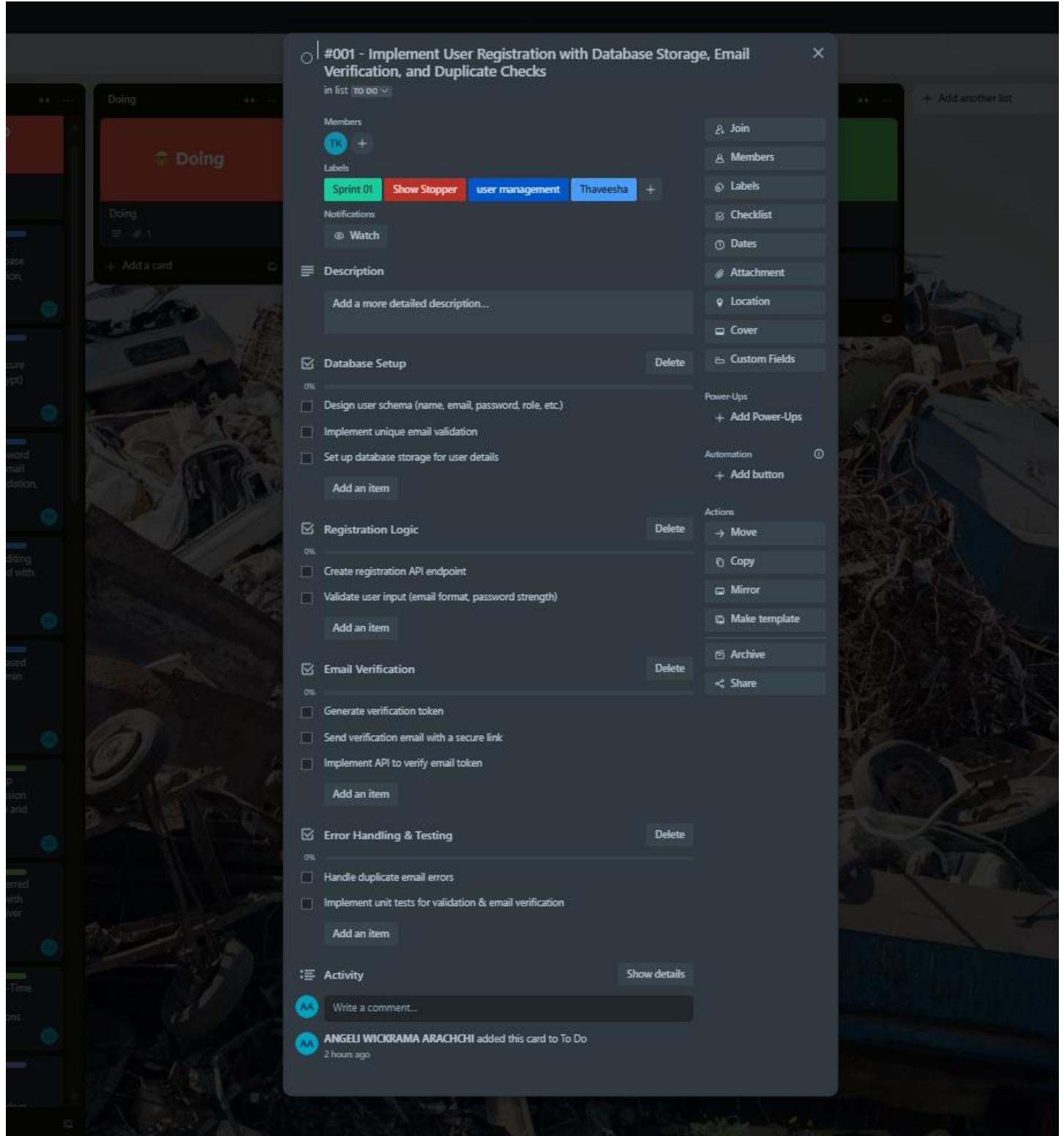
- Backlog:** Contains numerous cards, mostly green, representing user stories or requirements. Examples include:
 - FIRE01 - As a user, I would like to register with my email and phone number, so I can consider one account.
 - FIRE02 - As a user, I would like to log in with my registered account, so I can access my account.
 - FIRE03 - As a user, I would like to change my password via visual verification, so I can remember my account.
 - FIRE04 - As a user, I would like to upload my profile picture, so I can keep my details up to date.
 - FIRE05 - As an activity, I would like to manage my daily tasks, so I can present later my progress.
 - FIRE06 - As a user, I would like to request a merge pickup by selecting my location, set my start-end points for collection.
 - FIRE07 - As a user, I would like to set a preferred date for pickup, so I can schedule my collection.
 - FIRE08 - As a user, I would like to track my pickup requests, so I know when my merge will be collected.
 - FIRE09 - As a driver, I want to accept my rejected pickup requests, so I can manage my schedule.
 - FIRE10 - As an activity, I would like to receive all scheduled pickups, so I can manage my responsibilities.
 - FIRE11 - As a driver, I want to update my pickup requests, so I can plan my driving route.
 - FIRE12 - As a driver, I want to see an optimized route for multiple pickups, so I can save time and fuel.
 - FIRE13 - As a driver, I want to update the pickup status as "On Route" after collecting, so the user is notified.
 - FIRE14 - As a user, I would like to have notifications, so I can receive pickup requests from my pickup point.
 - FIRE15 - As a driver, I would like to receive direct delivery and performance, so I can receive efficient pickups.
 - FIRE16 - As a user, I would like to generate reports on collection history, so I can analyze trends.
 - FIRE17 - As a user, I would like to book the initial weight of recycled materials, so I can measure impact.
 - FIRE18 - As a user, I would like to use an electronic scale to measure weight, so I can track my recycling efforts.
 - FIRE19 - As a user, I want to categorize collected materials by type, so I can manage recycling better.
- Design:** Contains cards for design and development phases, mostly green and blue.
- To Do:** Contains cards for tasks, mostly green.
- Doing:** Contains cards for tasks in progress, mostly orange.
- Code Review:** Contains cards for code review, mostly green.
- Testing:** Contains cards for testing, mostly red.
- Done:** Contains cards for completed tasks, mostly green.

Photograph: A white car is shown partially submerged in water, tilted at an angle, suggesting it has been involved in a drowning accident.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02



#001 - Implement User Registration with Database Storage, Email Verification, and Duplicate Checks

in list **To do**

Members: [] +

Labels: Sprint 01, Show Stopper, user management, Thaveesha, +

Notifications: Watch

Description: Add a more detailed description...

Database Setup (0%)

- Design user schema (name, email, password, role, etc.)
- Implement unique email validation
- Set up database storage for user details

Add an item

Registration Logic (0%)

- Create registration API endpoint
- Validate user input (email format, password strength)

Add an item

Email Verification (0%)

- Generate verification token
- Send verification email with a secure link
- Implement API to verify email token

Add an item

Error Handling & Testing (0%)

- Handle duplicate email errors
- Implement unit tests for validation & email verification

Add an item

Activity:

AA Write a comment...

AA ANGELI WICKRAMA ARACHCHI added this card to To Do 2 hours ago

Actions:

- Join
- Members
- Labels
- Checklist
- Dates
- Attachment
- Location
- Cover
- Custom Fields

Power-Ups

+ Add Power-Ups

Automation

+ Add button

Actions

→ Move

Copy

Mirror

Make template

Archive

Share

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

Question 6 Answer

Sprint Plan for Scrap Collection and Recycling Management System – Yakadabadu.lk

This Sprint Plan outlines the tasks allocated to each team member across three sprints for the Yakadabadu.lk project, following Agile Scrum methodology. Each sprint is designed to deliver a working product increment, ensuring balanced workloads and addressing dependencies.

Sprint Plan Overview

Sprint Duration: 2 Weeks

Effort Capacity per Sprint per Member: ~80 hours

Outcome of Each Sprint: Working product increment

6.1. Sprint 1 Plan: Core User Management & Pickup Request Features

Team Member	Tasks	Est. Hours
K T A Kularathne (User Management)	<ul style="list-style-type: none"> • Register with email and phone number • Log in securely with password • Reset password via email verification • Update profile information • Manage and verify user accounts 	10 hrs + 8 hrs + 8 hrs + 6 hrs +10 hrs = 42 hrs
S A R U Amarasinghe (Pickup Management)	<ul style="list-style-type: none"> • Request scrap pickup by selecting location • Set a preferred date for pickup • Track pickup request status 	12 hrs + 10 hrs + 12 hrs = 34 hrs

Outcome:

- Users can register, log in, reset passwords, and initiate pickup requests.
- Admins can manage and verify user accounts.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02

6.2. Sprint 2 Plan: Driver & Route Management

Team Member	Tasks	Est. Hours
Fernando (Driver Management)	<ul style="list-style-type: none"> • Accept/reject pickup requests • Update pickup status and upload proof • Track estimated arrival time • Monitor driver performance 	10 hrs + 10 hrs + 8 hrs + 10 hrs = 38 hrs
S A R U Amarasinghe (Scrap Tracking)	<ul style="list-style-type: none"> • Generate reports on collected scrap materials • Track total weight of recycled materials • Personal scrap contribution tracking for users 	10 hrs + 10 hrs + 10 hrs = 30 hrs

Outcome:

- Drivers can manage pickup requests and update statuses.
- The system tracks and reports recycling statistics.

6.3. Sprint 3 Plan: Marketplace & Financial Management

Team Member	Tasks	Est. Hours
Pathirage (Marketplace & Buyer-Seller Management)	<ul style="list-style-type: none"> • List categorized scrap materials for sale • Enable business partner access to reports • Implement buyer-seller chat system • Notify sellers of interested buyers 	10 hrs + 10 hrs + 8 hrs + 8 hrs = 36 hrs
Gunawardena (Financial Management)	<ul style="list-style-type: none"> • Generate financial reports (Revenue, Expenses) • Implement scrap price check system • Manage driver salary details • Develop staff payroll system 	12 hrs + 8 hrs + 10 hrs + 10 hrs = 40 hrs

Outcome:

- Marketplace feature enables scrap selling and buyer-seller communication.
- Financial reports and payroll systems are integrated.

Activity – 03

IT2080 – Information Technology Project.

Year 02 Semester 02
