

# **Final Project Report**

## **Vehicle Assistance and Maintenance Service (TheekKardo)**

**Prepared by:**

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## 1. Project Introduction

TheekKardo is a web-based platform connecting vehicle owners with nearby mechanics and service providers for emergency repairs, car washing, and general maintenance. The system features real-time service tracking, secure payments, and a rating system to ensure quality service.

### Key Objectives:

- Reduce vehicle breakdown stress by providing instant assistance.
- Streamline service scheduling and payments.
- Enhance transparency through user-provider ratings.

## 2. Functional & Non-Functional Requirements

### Functional Requirements

- User Management (REQ-1 to REQ-3): Registration, login, and profile updates.
- Service Booking (REQ-4 to REQ-6): Service requests, scheduling, and status tracking.
- Location-Service Integration (REQ-7 to REQ-9): Live location sharing and route optimization via Google Maps.
- Admin Dashboard (REQ-19 to REQ-21): User management and analytics.

### Non-Functional Requirements

- Performance: 10,000 concurrent users; <3s response time.
- Security: JWT Authentication, Role-based access.
- Usability: Intuitive UI compatible with all devices.

## 3. User Stories (15 Total)

### Aamna Saeed (5 Stories)

- As a user, I want to register via email/phone to access services.
- As a mechanic, I want to accept/reject requests to manage my workload.

- As an admin, I want to suspend fraudulent accounts to ensure safety.
- As a user, I want to rate mechanics to share feedback.
- As a mechanic, I want to track earnings for financial transparency.

#### **Tashfeen Hassan (5 Stories)**

- As a user, I want to request emergency assistance to avoid delays.
- As a user, I want to pay via digital wallets for convenience.
- As a mechanic, I want to view nearby jobs to optimize travel time.
- As an admin, I want to generate service reports for analysis.
- As a user, I want to reschedule services to adjust my plans.

#### **Mesam-e-Tamaar (5 Stories)**

- As a user, I want live mechanic service tracking to estimate.
- As a mechanic, I want to update job status to keep users informed.
- As a user, I want SMS notifications for real-time updates.
- As an admin, I want to verify mechanic credentials to ensure quality.
- As a user, I want to view service history for record-keeping.

### **4. Product Backlog**

ID	User Story	Priority
US-1	User registration/login	High
US-2	Emergency service requests	High
US-3	Live Service tracking	High
US-4	Secure payment gateway	High
US-5	Admin dashboard	Medium

## 5. Sprint Backlogs

### Sprint 1 (Core Features)

- User authentication (US-1).
- Service request system (US-2).
- Basic GPS integration (US-3).

### Sprint 2 (Enhancements)

- Payment processing (US-4).
- Admin dashboard (US-5).
- Rating system (US-14).

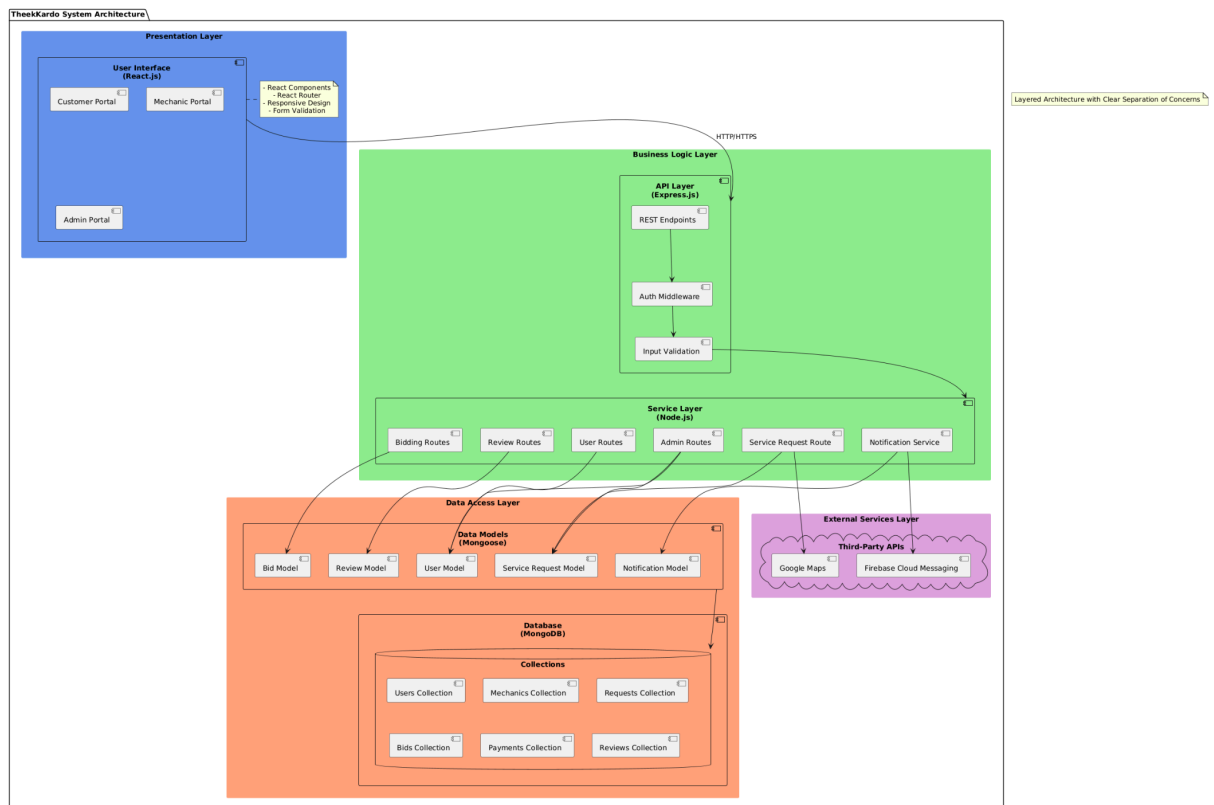
## 6. Project Plan

- **Timeline:** 12 weeks (3 sprints).
- **Tools:** React.js (Frontend), Node.js (Backend), MongoDB (DB).

### Milestone

- **Sprint 1:** MVP with authentication and requests.
- **Sprint 2:** Rating and reviewing, admin tools, backend completion.
- **Sprint 3:** Improved frontend, Testing and deployment.

## 7. Architecture Diagram



## 8. Design (Sprint 3 Items)

### UI Mockups:

- User dashboard with service history.
- Mechanic interface for job acceptance.
- Database Schema:
- Collections: Users, Services, Payments, Reviews.

9. Implementation Screenshots

On-Site Car Wash

Car wash at your location.

Request Service

Request

Vehicle Make

Toyota

Vehicle Model

Camry

Vehicle Year

2025

Plate Number

ABC123

Your Location

33.7233, 73.0435

Issue Description

something to do with the battery or ignition

Preferred Time

01/05/2025, 01:00 PM

Cancel

Submit Request

Roadside Assistance

Immediate help for vehicle breakdowns.

Request Service

Mechanic request page:

Theekkardo

Home

Service Requests

☐ Emergency Only

Toyota Camry 2025

snaogan

[View Location](#) 1 minutes ago

Place Bid

Toyota Corolla 2025

OSNOGAN

[View Location](#) 17 minutes ago

Place Bid

Mechanic place bid:

requests

mry 2025

ion ⌚ 2 minutes

rolla 2025

ion ⌚ 18 minutes

### Place a Bid

×

Bid Amount (\$)

Estimated Time

Message

be there in 10 min|

Submit Bid

User gets notification:

Home Features ↵

**Bid from Tashfeen Hassan Received**  
4/28/2025, 7:49:33 PM

User gets bid:

Service Request Details

Service Type

Scheduled Maintenance

Location

33.7233 73.0435

Issue Description

snaogan

Vehicle

Toyota Camry 2025

Preferred Time

1/2/2026, 7:00:00 AM

Mechanic Bids (1)

Tashfe

Tashfeen Hassan

☆ 0

\$10

be there in 10 min

Accept Bid

User accepts it:

Preferred Time

Confirm Selection

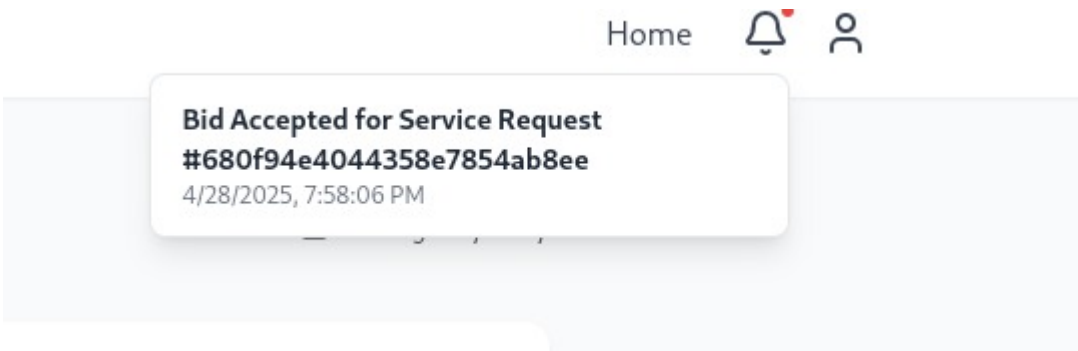
Are you sure you want to accept the bid from Tashfeen Hassan for \$10?

Cancel

Confirm



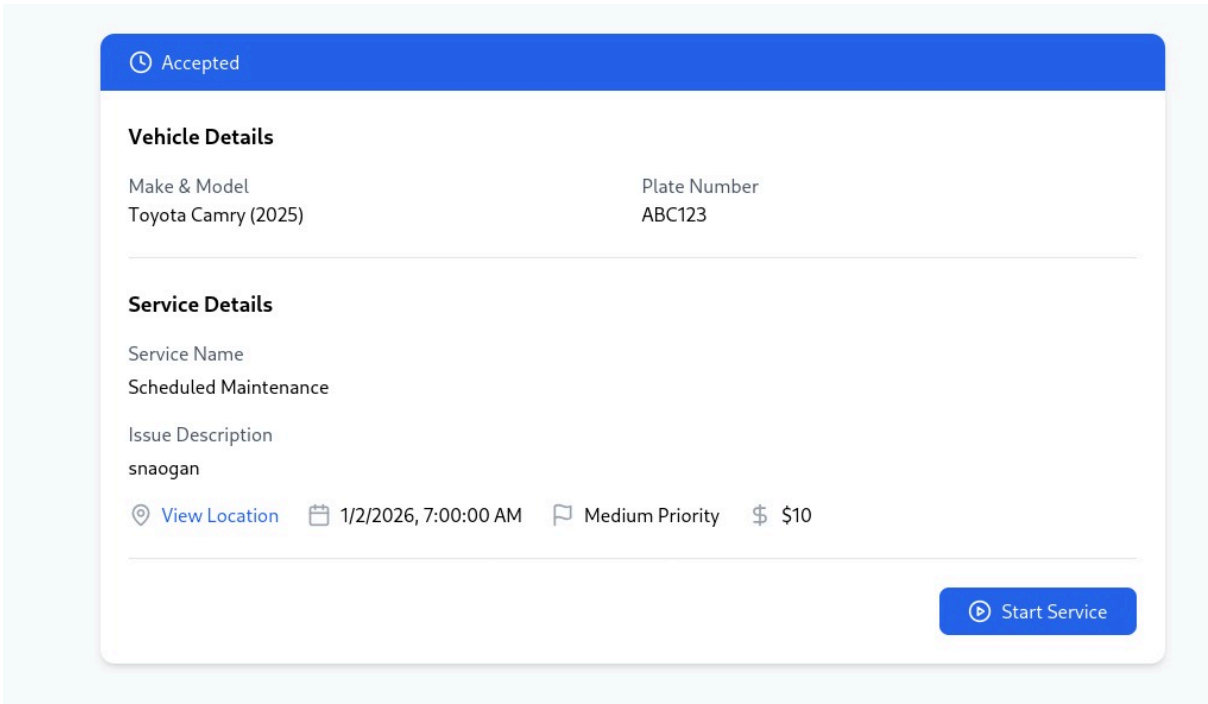
Mechanic gets notified:



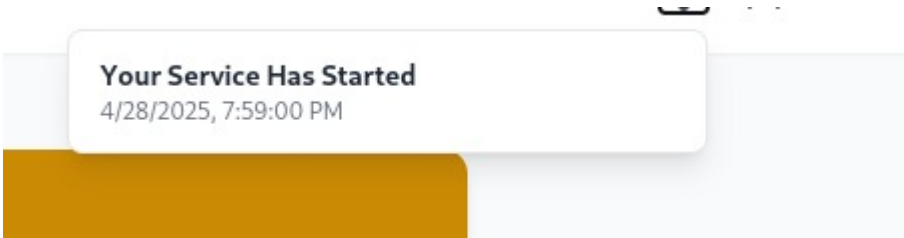
mechanic

starts

service:



User gets it notification:



Mechanic completes service and mark it:

In Progress

Vehicle Details

Make & Model

Toyota Camry (2025)

Plate Number

ABC123

Service Details

Service Name

Service

Issue Description

snaogan

View Location

1/2/2026, 7:00:00 AM

Medium Priority

\$ \$10

Complete Service

User gets notification

Completed

Mechanic Information

Tashfeen Hassan

Vehicle Details

Vehicle

Toyota Camry 2025

Plate Number

ABC123

Service Details

Service Name

Scheduled Maintenance

Issue Description

snaogan

Lat: 33.7233, Lng: 73.0435

1/2/2026, 7:00:00 AM

Rate & Review

Your Service Is Complete

4/28/2025, 7:59:58 PM

Your Service Has Started

4/28/2025, 7:59:00 PM

User rates mechanic:

Rate Your Experience

★★★★☆

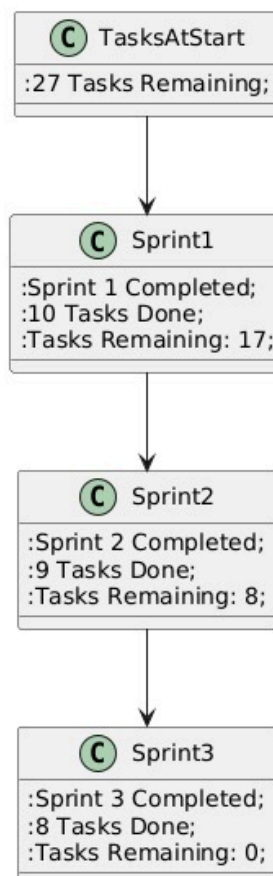
Your Review

good mechanic!

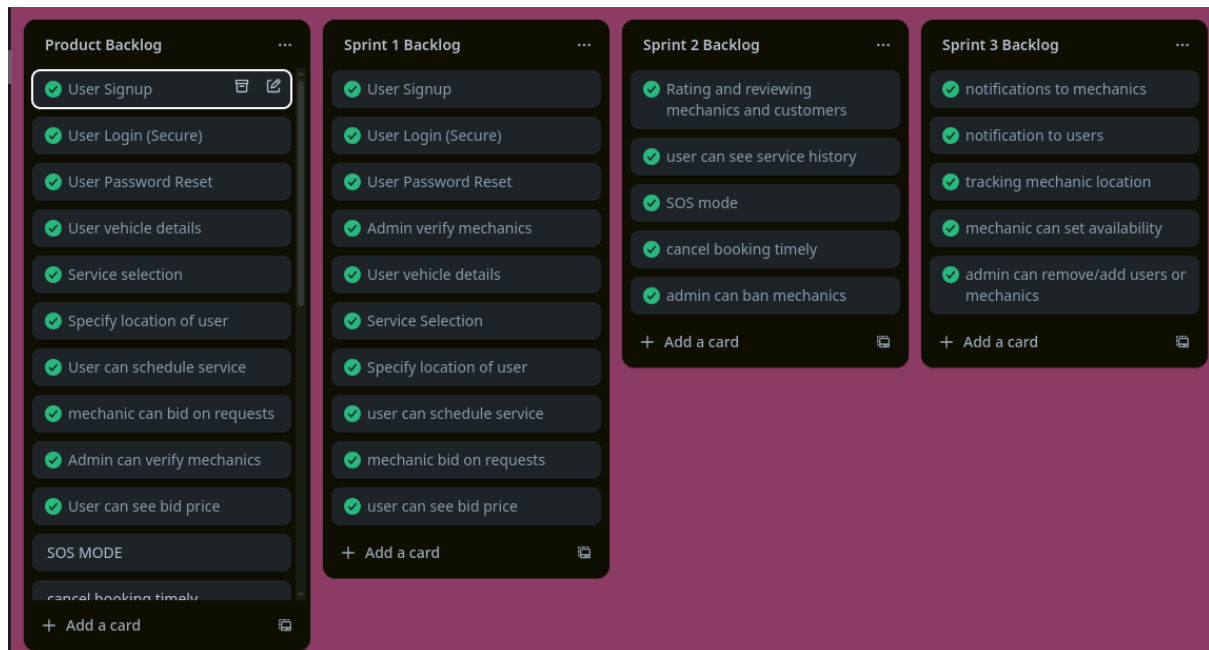
Cancel Submit Review

## 10. Product Burndown Chart

### Burndown Chart Simulation - TheekKardo (3 Sprints)



## 11. Trello Board Screenshots



## 12. Test Cases

### Black-Box Testing

TestCase ID	Page/Component	Input Data (Request Body)	Expected Output
TC-1	LandingPage.jsx	Click "Request Service" button, fill form: { make: "Toyota", model: "Camry", year: 2020, plateNumber: "ABC123", location: "40.7128,-74.0060", issueDescription: "Car won't start", preferredTime: "2025-05-01T10:00" }, click "Submit Request"	Modal closes, toast: "Service request submitted successfully!", redirect to /bids/:requestId
TC-2	LandingPage.jsx Missing fields	Click "Request Service" button, fill form: { make: "Toyota", model: "", year: 2020 }, click "Submit Request"	Toast: "Vehicle Model must be at least 2 characters.", modal stays open

TC-3	MechanicRequestsPage.jsx	Click "Place Bid" button, fill form: { bidAmount: 100, estimatedTime: "1-2 hours", message: "I can fix this quickly" }, click "Submit Bid"	Toast: "Bid amount must be a positive number.", "Please provide a valid estimated time.", "Message must be at least 10 characters.", modal stays open
TC-4	MechanicRequestsPage.jsx	Click "Place Bid" button, fill form: { bidAmount: "", estimatedTime: "", message: "Short" }, click "Submit Bid"	Toast: "Bid amount must be a positive number.", "Please provide a valid estimated time.", "Message must be at least 10 characters.", modal stays open
TC-5	MechanicRequestsPage.jsx	Click "Place Bid" button on a non-existent request (mocked), fill form: { bidAmount: 100, estimatedTime: "1-2 hours", message: "I can fix this quickly" }, click "Submit Bid"	Toast: "Failed to place bid", modal stays open
TC-6	BidsPage.jsx	Click "Accept Bid" button, confirm in modal	Modal closes, toast: "Bid accepted successfully! The mechanic has been notified.", redirect to /service/:requestId
TC-7	LoginPage.jsx	Fill form: { email: "test@example.com", password: "password123" }, click "Login"	Toast: "Login Successful", redirect to / (for customer) or /mechanic/requests (for mechanic)
TC-8	SignupPage.jsx	Select role: "user", fill form: { fullName: "John Doe", email: "john@example.com", phone: "1234567890", password: "password123", confirmPassword: "password123" }, click "Create Account"	Alert: "Signup Successful! Redirecting to login...", redirect to /login

TC-9	SignupPage.jsx Mismatched passwords	Select role: "mechanic", fill form: { fullName: "Jane Smith", email: "jane@example.com", phone: "0987654321", password: "password123", confirmPassword: "different123" }, click "Create Account"	Error message: "Passwords do not match", form remains unchanged
TC-10	MechanicServicePage.jsx	On a request with status "accepted", click "Start Service" button	Toast: "Service started successfully", status banner updates to "in-progress" (yellow background)
TC-11	MechanicServicePage.jsx	On a request with status "in-progress", click "Complete Service" button	Toast: "Service completed successfully", status banner updates to "completed" (green background)
TC-12	UserServicePage.jsx	On a completed request, click "Rate & Review", set rating: 4 stars, write review: "Great service!", click "Submit Review"	Modal closes, toast: "Review submitted successfully!", redirect to /profile

### Boundary Value Analysis

ID	Page/Component	Input Data	Expected
BVA-1	LandingPage.jsx	Fill form: { ..., year: 1899 }, click "Submit Request"	Toast: "Vehicle year must be between 1900 and 2026!", modal stays open
BVA-2	LandingPage.jsx	Fill form: { ..., year: 2027 }, click "Submit Request"	Toast: "Vehicle year must be between 1900 and 2026!", modal

			stays open
BVA-3	MechanicRequestsPage.jsx	Fill form: { bidAmount: 0, ... }, click "Submit Bid"	Toast: "Bid amount must be a positive number.", modal stays open
BVA-4	MechanicRequestsPage.jsx	Fill form: { bidAmount: 1, ... }, click "Submit Bid"	Modal closes, toast: "Bid placed successfully!", form clears
BVA-5	UserServicePage.jsx	Click "Rate & Review", set rating: 0 stars, click "Submit Review"	Toast: "Please select a rating", modal stays open

## White-Box Testing

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	71.42	61.37	65.67	73.48	
AdminDashboard.jsx	57.81	43.58	57.89	59.64	31-32,56-57,71-94,160,190,244
BidsPage.jsx	86.95	76.92	87.5	88.88	65,102-107,227
LoginPage.jsx	83.78	61.11	80	83.78	43-48,52,55,113
MechanicRequestsPage.jsx	61.17	51.11	66.66	65.38	48-60,69-91,218-239
MechanicServicePage.jsx	100	81.57	100	100	115,121-127,131,165,208,222
UserServicePage.jsx	59.25	66.66	42.85	58.49	23-24,51-77,95,236,249-283

## 13. Work Division

Member	Responsibilities
Aamna Saeed	UI Design, User Stories 1-5
Tashfeen Hassan	Backend Development, User Stories 6-10
Mesam-e-Tamaar	Database, APIs, User Stories 11-15

## **14. Lessons Learned**

- Communication: Regular stand-ups prevented task overlaps.
- Flexibility: Adjusted sprint goals based on feedback.
- Testing: Early QA reduced post-deployment bugs.

## **15. Conclusion:**

TheekKardo successfully delivers a reliable platform for vehicle maintenance, meeting all core requirements. Future enhancements could include AI-driven diagnostics and predictive maintenance.