A

PROJECT REPORT
ON

RapidReach -Courier Service Web Application

Submitted in partial fulfillment for the award of

Post Graduate Diploma in Advance Computing

(PG-DAC)
from

INSTITUTE OF EMERGING TECHNOLOGIES

Authorized Training Centre

Under the Guidance of

Name of the Guide

BY

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CERTIFICATE

This is to certify that the project report entitled **RapidReach – Courier Service Application** is a bonfire work carried out by **Durveshsingh Thakur, Kunal Sapkal, Pradnya Rajugade, Vaibhav Singh** and submitted in partial fulfilment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of Aug 2019.

Course Coordinator **External Examiner**

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ACKNOWLEDGEMENT

This project **RapidReach – Courier Service Web Application** was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC).

We are very glad to mention the **Name of the Guide** for her valuable guidance to work on this project. Her guidance and support helped us to overcome various obstacles and intricacies during the course of project work.

Our most heart full thanks goes to ***Mr. Sangram Patil*** **(Director, IET)** who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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Abstract

RapidReach – Courier Service Web Application is a web-based solution developed to automate and streamline the entire courier management process. This system provides dedicated modules for Users, Staff, and Admins. Users can book courier orders, track parcels, and raise complaints through an intuitive interface. Staff can handle parcel entries, update delivery statuses, and search couriers using tracking numbers. Admins can manage branches, staff, complaints. The project aims to enhance customer satisfaction, reduce operational delays, and increase transparency within courier operations. With features like tracking, complaint management, branch-wise control, and automated reporting, RapidReach delivers an efficient, secure, and scalable courier service management system.

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1. Introduction

In today's fast-paced world, courier services play a crucial role in enabling fast, reliable, and secure. The **RapidReach-Courier Service Web Application** is an online platform designed to make courier services faster, easier, and more reliable. It helps customers, staff, and admin manage all the activities related to courier delivery in a simple and organized way.

This system replaces the old manual method, where orders were written down or handled face-to-face. Manual processes often lead to errors, delays, and confusion. Our system solves these problems by digitizing the entire courier process.

The platform allows users to send parcels, check delivery status, give feedback, and contact the courier company from anywhere. It is designed with a modern and easy-to-use or user-friendly interface so anyone can access it comfortably.

The application is divided into three primary modules:

- **User Module**: Allows user to register, login, place orders, track parcels, and give feedback. They can also view notification and contact details.
- **Staff Module**: Enables branch staff to enter courier details, update delivery statuses, and search parcels using tracking numbers. It helps monitor operational metrics such as total pickups, deliveries, and shipments.
- **Admin Module**: Provides the admin with full control over the system. Admins can manage branches, staff, user and website content. They can also have access control and monitor overall performance.

This system helps the courier company become more organized, transparent, and efficient and offer customers real-time access to their shipments. also improving the overall service quality.

2. Problem Definition

2.1 Problem Definition

Courier companies often face challenges in managing day-to-day operations due to outdated, manual systems. These include booking couriers, tracking delivery statuses, resolving complaints, and maintaining staff and branch records. Manual methods are slow, error-prone, and not suitable for large-scale operations.

Problems observed:

- Lack of real-time parcel tracking for customers.
- High chances of human error in data entry and delivery updates.
- No centralized control for administrators to manage staff or branches.
- Difficulty in generating reports and tracking business performance.
- Poor customer satisfaction due to delayed services or miscommunication.

To overcome these issues, an automated and user-friendly system is needed that can streamline and manage courier services efficiently.

2.2 Goals & Objectives

The objective of **RapidReach – Courier Service Application** is to replace manual operations with a fully digital courier management solution. This system will improve speed, accuracy, and transparency in courier services.

Goals:

- Provide a centralized system for managing all courier operations.
- Offer real-time tracking for customers using tracking numbers.
- Allow users to book couriers and raise complaints online.
- Enable staff to manage and update delivery status quickly.
- Give administrators full access to control branches, staff, and reports.
- Improve customer satisfaction and business productivity.

Objectives:

- To build an easy-to-use web application with role-based access.
- To reduce human error and operational delays.
- To enable faster response and support for users.
- To ensure secure and accurate data storage for business records.

2.3 Major Constraints & Outcomes

Constraints:

- Internet connectivity is required for smooth system operation.
- Proper training must be provided to staff for using the system effectively.
- The application performance is dependent on server stability and database uptime.
- Integration with third-party services (SMS/email) may incur additional costs.

Expected Outcomes:

- Streamlined courier booking and delivery process.
- Real-time parcel tracking for better customer satisfaction.
- Reduced manual workload and improved operational efficiency.
- Automated report generation and better decision-making for admins.
- A scalable and maintainable solution that supports business growth.

3. Software Requirement Specification

3.1 Proposed System

The **RapidReach – Courier Service Application** is a web-based software system that automates and manages courier service operations in a digital format. It offers a multi-user environment with different roles: **User**, **Staff**, and **Admin**, each with specific permissions and functionalities.

Main Features of the Proposed System:

- **User Module:**
  - User registration/login.
  - Courier booking with sender/receiver details.
  - Parcel tracking using tracking number.
  - Feedback form is there.
- **Staff Module:**
  - Add new courier records and assign tracking numbers.
  - Update status of parcels (picked, in-transit, delivered).
  - Search and manage courier data by reference number.
- **Admin Module:**
  - Manage branches and staff

- View courier details and reports.
- Manage user complaints

The system is built with a responsive UI for both desktop and mobile access, ensuring smooth operation across devices. It uses a relational database for secure data storage and supports real-time updates for users.

3.2 Scope

The system is built to enhance efficiency and improve the customer experience in courier operations. It offers complete visibility and control over each stage of parcel movement, from booking to delivery.

Scope Includes:

- End-to-end courier management (user → staff → admin)
- Multi-role access with authentication and authorization
- Parcel tracking and delivery updates
- Complaint and enquiry handling
- Branch-wise and staff-wise monitoring

3.3 Functional Requirements

1. **User Login & Registration**
   - New users can register by filling personal details.
   - Registered users can log in with username and password.
2. **Courier Booking**
   - Users can book a courier by entering sender, receiver, parcel details.
   - A unique tracking number is generated.
3. **Parcel Tracking**
   - Users can track courier status using the tracking ID.
4. **Complaint Management**
   - Users can raise complaints; admins can review and respond.
5. **Branch & Staff Management**
   - Admin can add/edit/delete branch and staff details.
6. **Status Updates**
   - Staff can update parcel status (Picked, In-transit, Delivered).

3.4 Non-Functional Requirements

1. **Performance Requirements**
    - System should handle at least 50–100 concurrent users.
    - Parcel status should update in less than 2 seconds.
2. **Reliability**
    - The application must be available 99.9% of the time.
3. **Scalability**
    - System should support increasing user base and courier volume.
4. **Security**
    - User passwords must be encrypted.
    - Role-based access control to protect data integrity.
5. **Usability**
    - The UI should be user-friendly and responsive on all devices.

4. System Modules

The **RapidReach – Courier Service Application** is divided into three main modules: **User Module**, **Staff Module**, and **Admin Module**. Each module is designed with specific features and responsibilities to ensure a smooth and organized courier management process.

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1. User Module

- Allows users to **register and log in** to the system.
- Users can **book a courier** by filling in details such as sender address, receiver address, parcel weight, and dimensions.
- Users receive a **unique tracking number** for each booking.
- Real-time **tracking of parcel** using the tracking number.
- Users can **submit feedback**
- Access to “About Us” and “Contact Us” pages.

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2. Staff Module

- Staff login with valid credentials assigned by admin.
- **Add courier details** after receiving the parcel from the customer.
- **Update courier status** (e.g., Picked up, In-transit, Delivered).
- **Search courier records** using reference or tracking numbers.
- View **daily parcel reports** including Total Picked, In-transit, Delivered, etc.

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3. Admin Module

- Full control over the system dashboard.
- **Manage branches** (add/edit/remove).
- **Manage staff records** and assign roles or access.
- View all **courier details**, status updates, and booking history.
- Handle **complaints and enquiries** raised by users.
- **Update site content** like About Us and Contact Us.

5. Performance Requirements

To ensure the **RapidReach application** runs efficiently and reliably, the following performance and system requirements must be met:

5.1 Hardware Requirements

- **Processor:** Intel Core i3 or higher
- **RAM:** Minimum 4 GB (8 GB recommended)
- **Storage:** At least 100 GB HDD or SSD
- **Internet Connection:** Required for web access

5.2 Software Requirements

- **Operating System:** Windows 10
- **Web Server:** IIS Server
- **Database:** MSSQL
- **IDE:** Visual Studio, VS Code
- **Frontend:** HTML, CSS, JavaScript, Bootstrap, React.js

- **Backend:** ASP.NET Core Web API

5.3 Security and Reliability

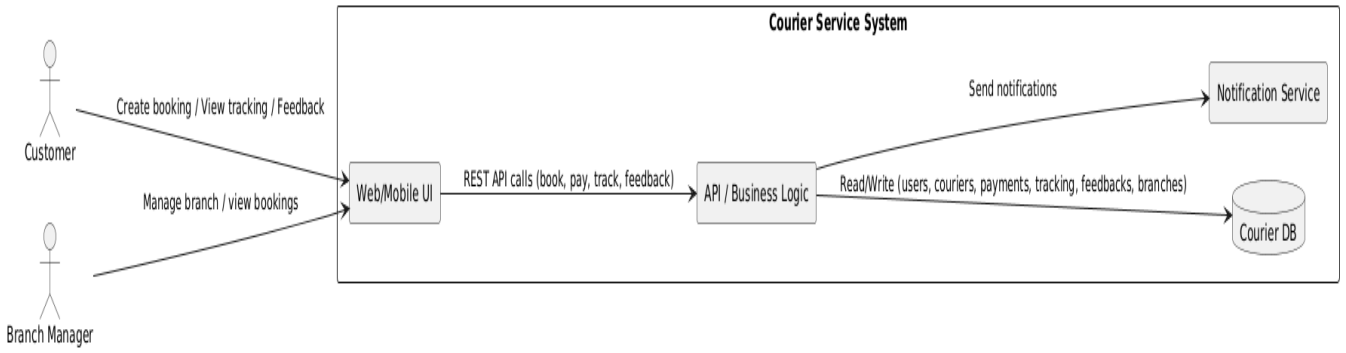
- Secure login with encrypted passwords and session tokens.
- Role-based access (User, Staff, Admin) to restrict unauthorized access.

6. UML Diagrams

Unified Modeling Language (UML) diagrams help in visualizing and designing the system before development. These diagrams represent the **workflow, data flow, structure, and interactions** between components of the application.

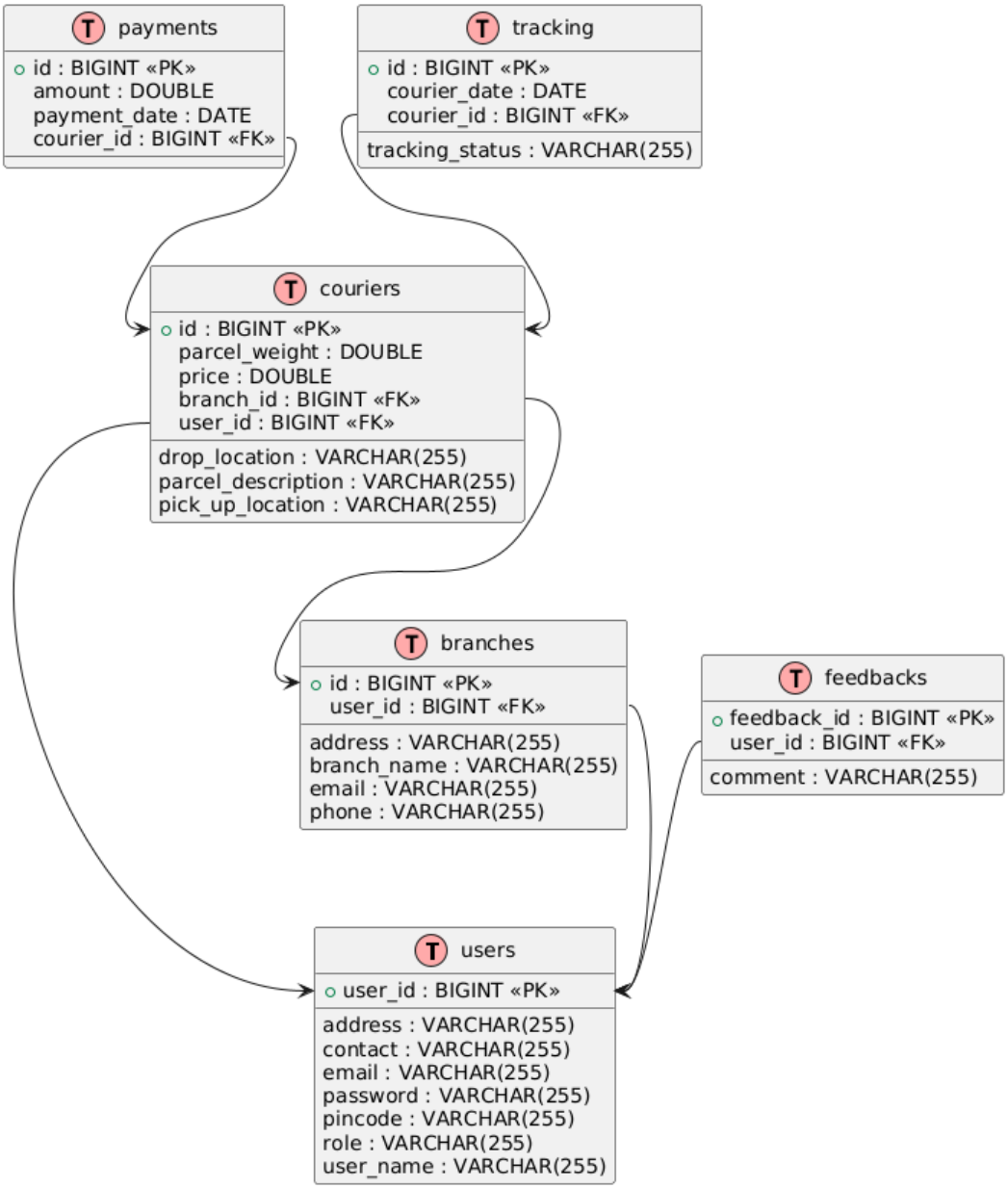
6.1 DFD (Data Flow Diagram)

A Data Flow Diagram shows **how data moves** through the system. It includes input, process, and output components.

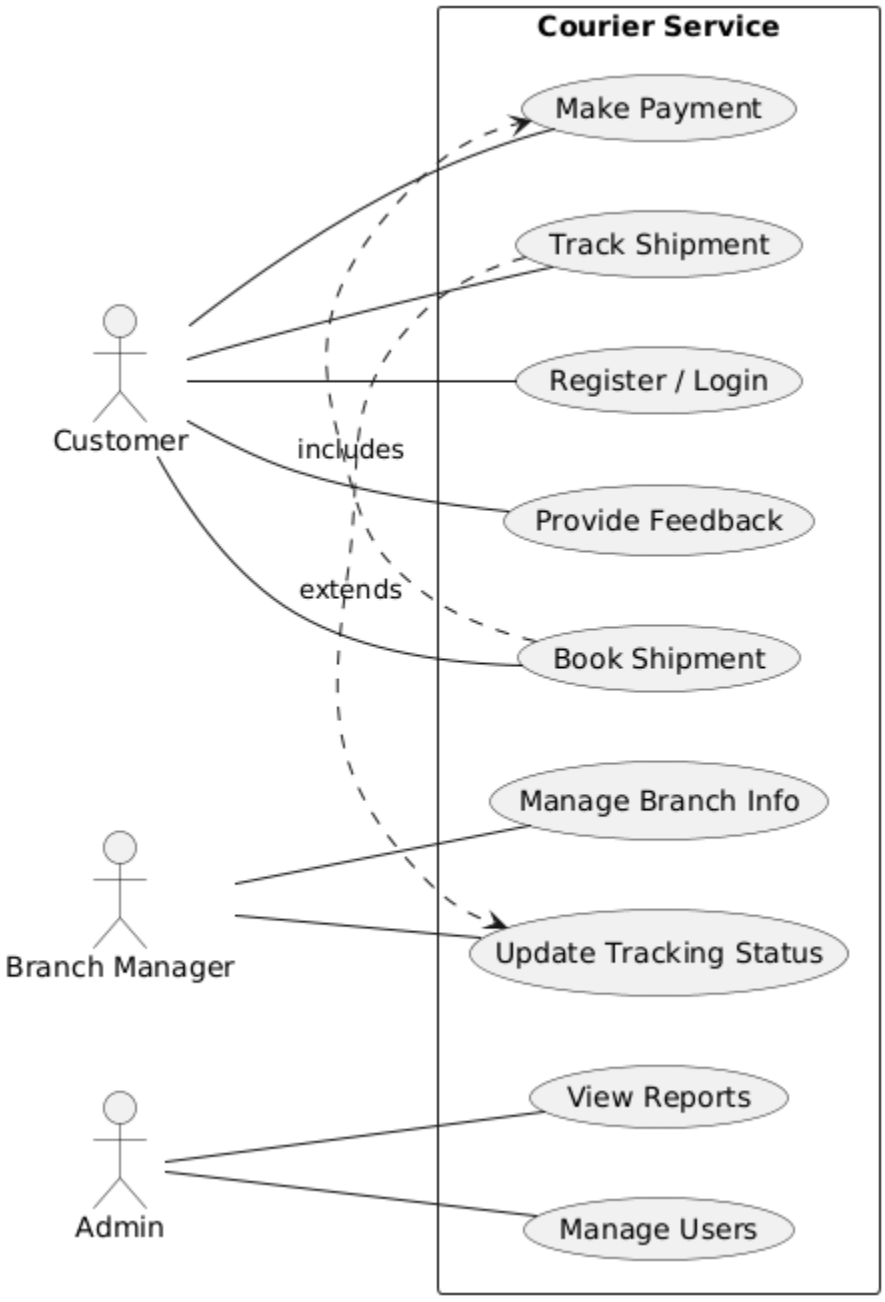


6.2 ERD (Entity Relationship Diagram)

An ERD shows **the database structure** of the system and the relationships between tables/entities.

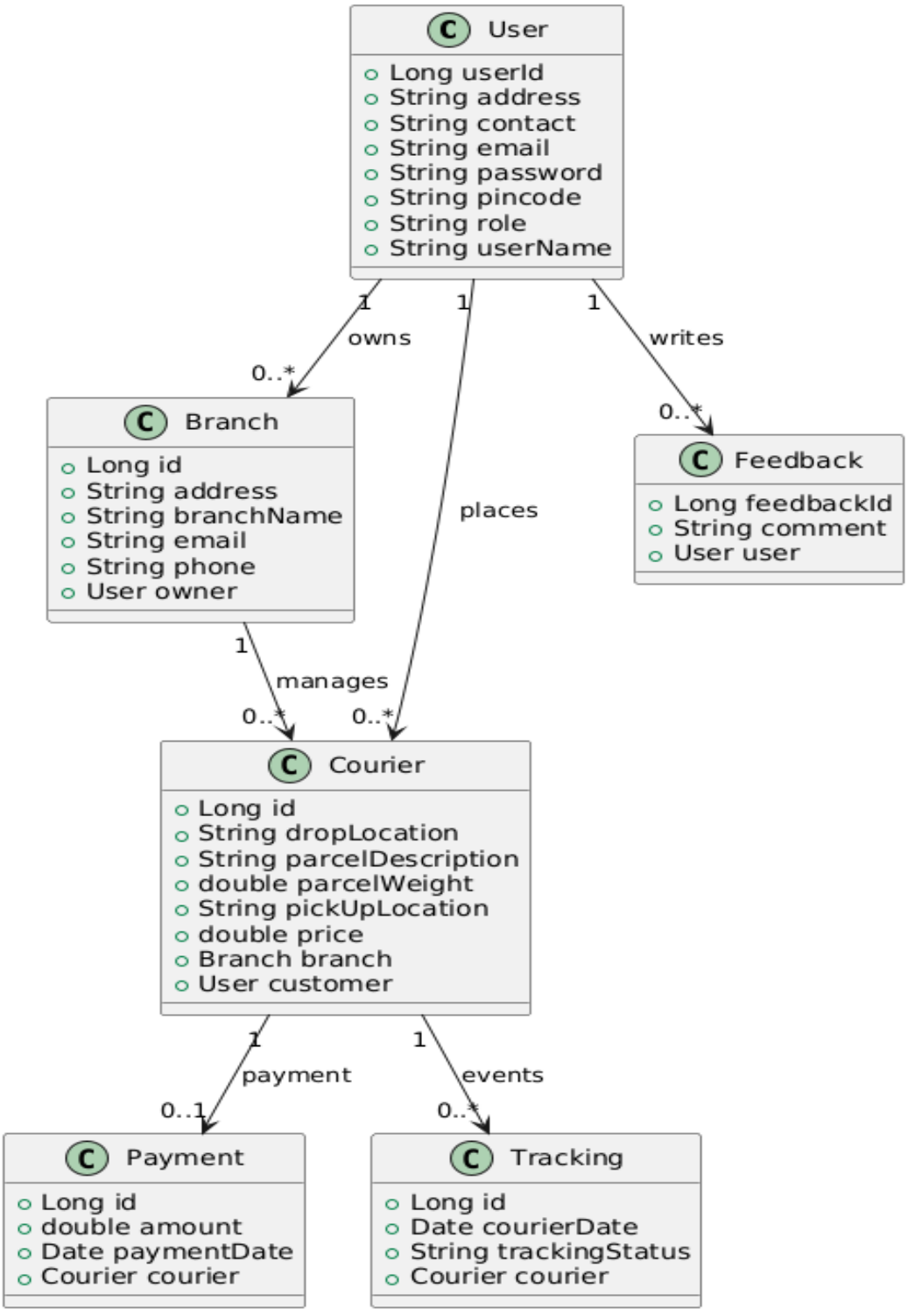


6.7 Use Cases Diagram

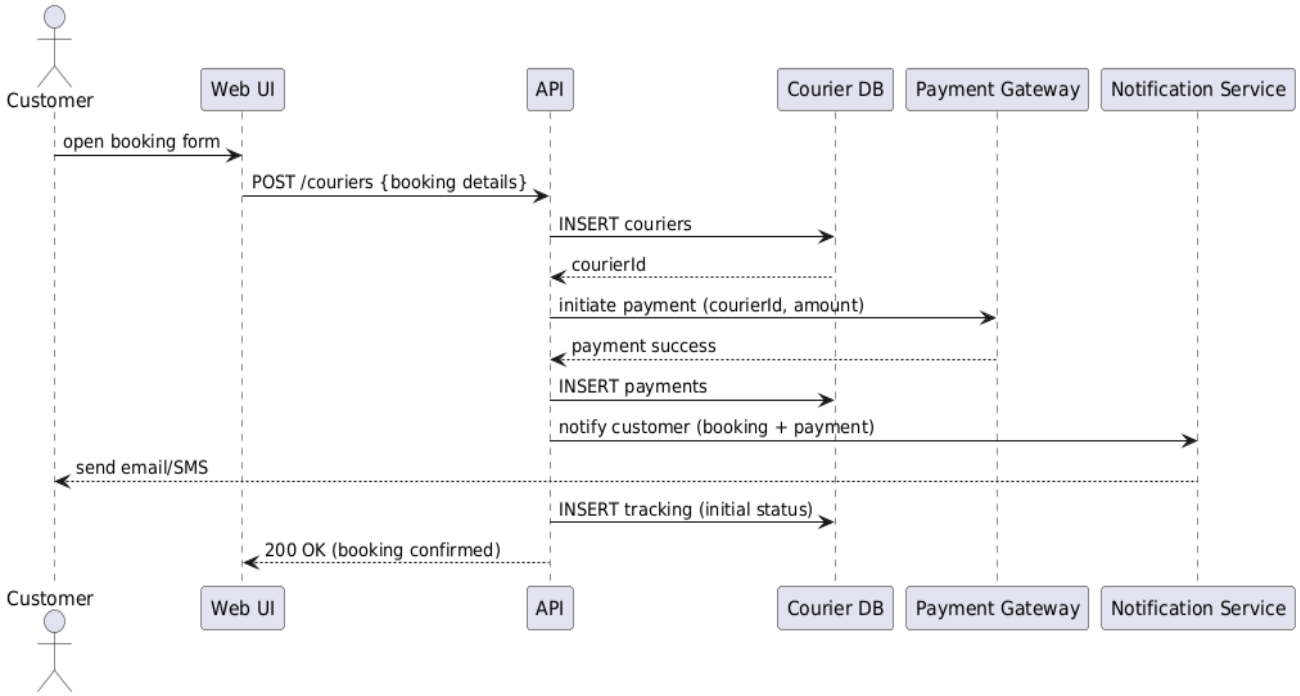


6.4 Class Diagram

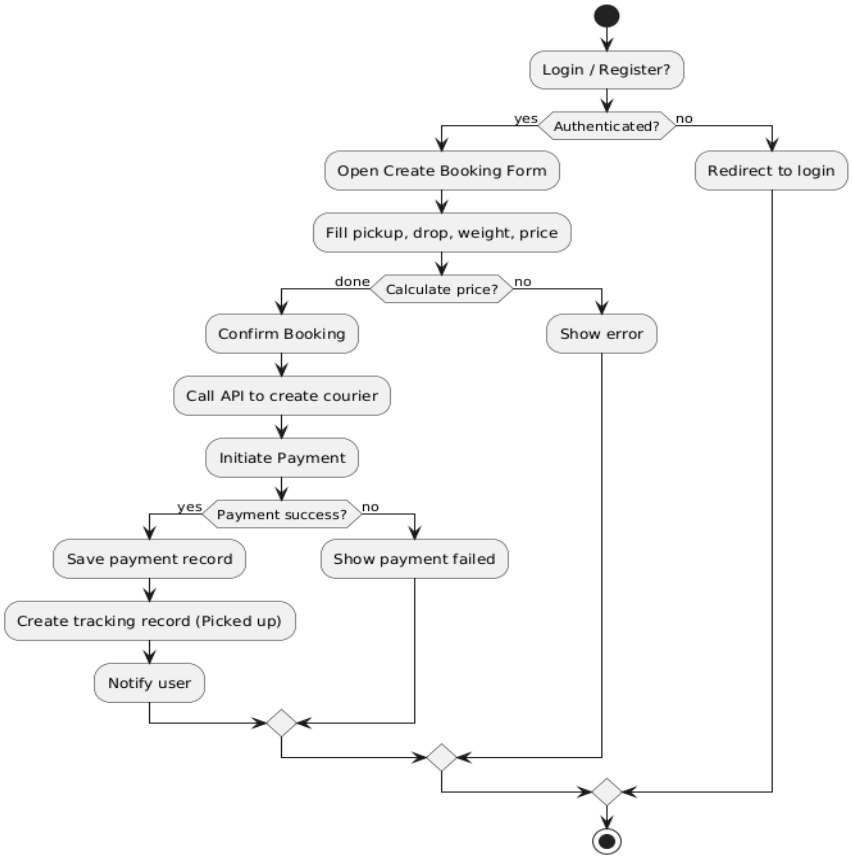
A Class Diagram shows the **structure of the system in terms of classes and objects.**



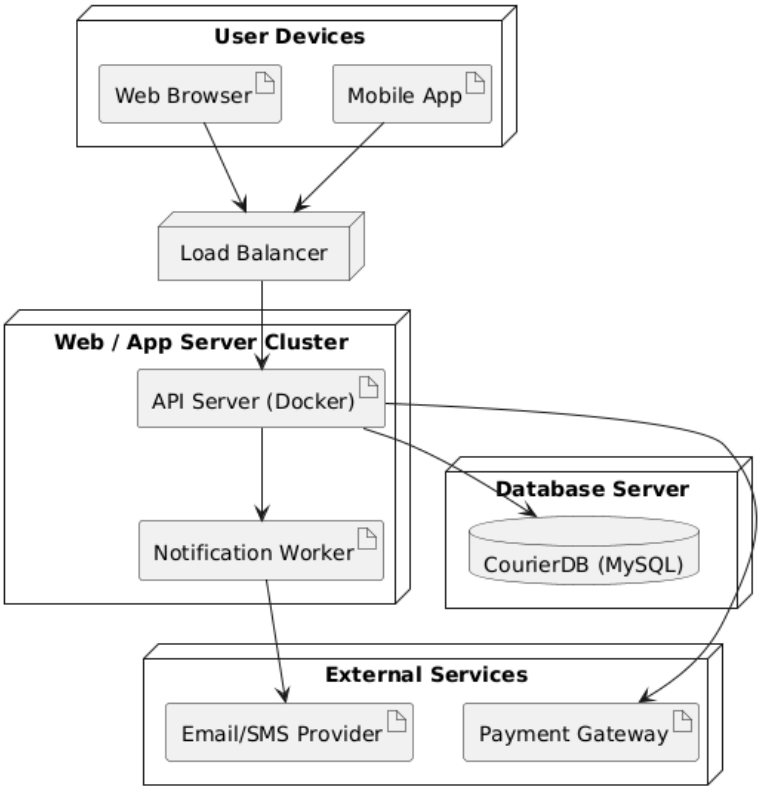
6.5 Sequence Diagram



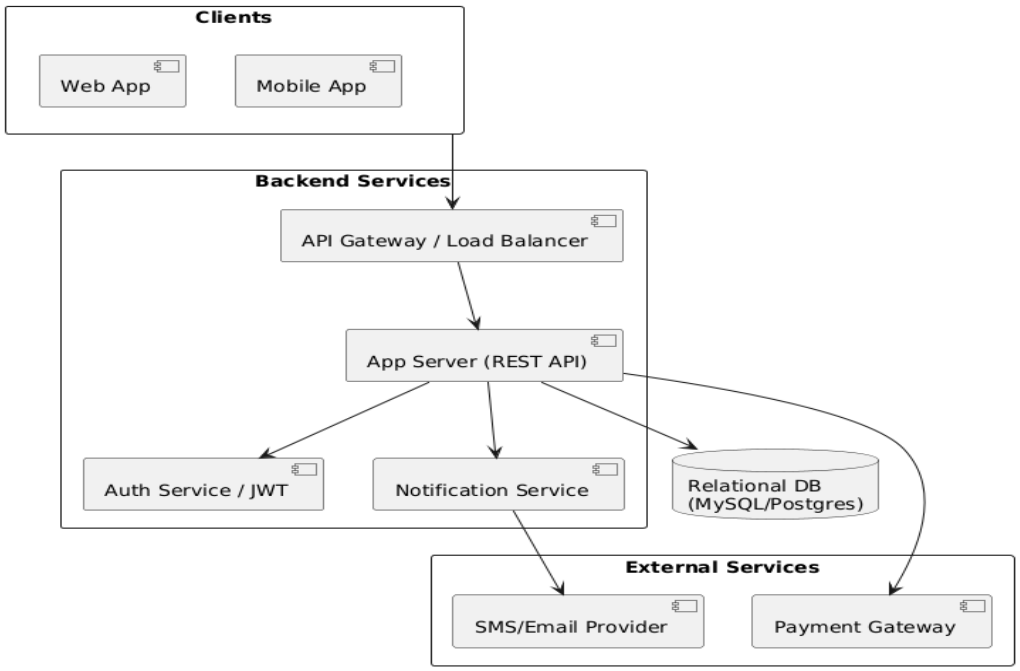
6.6 Activity Diagram



6.7 Deployment Diagram



6.8 System Architecture



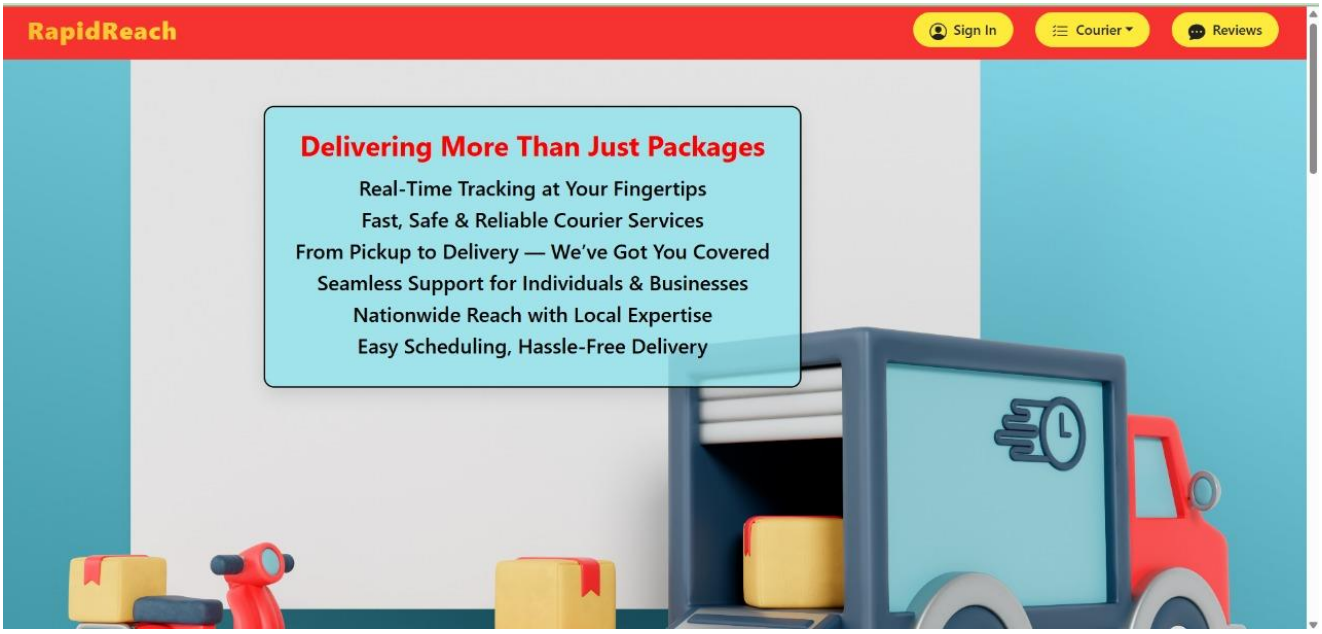
7. Test Cases

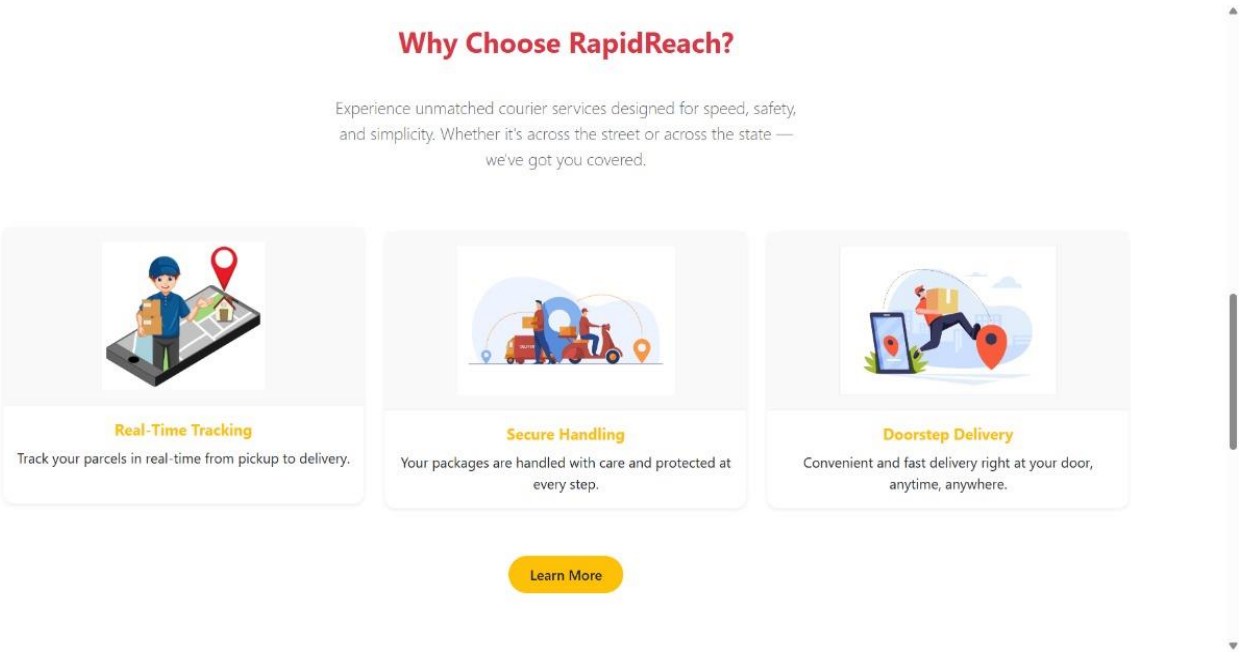
Testing is a critical step to ensure the application works correctly and meets its requirements. Below are some major test cases executed during system testing:

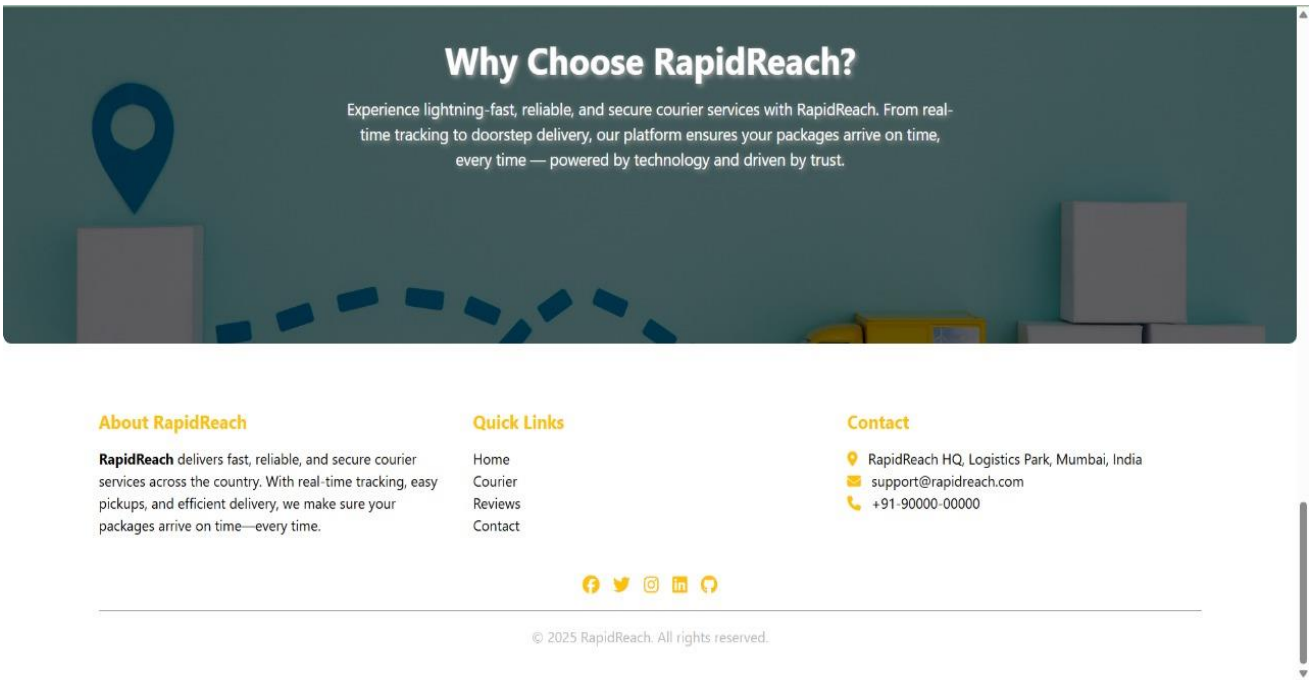
Sr. No.	Test Case	Expected Result	Actual Result	Status
1	Register New User	User is registered and redirected to login page	Same	Pass
2	Login with valid credentials	Dashboard is displayed	Same	Pass
3	Place Courier Order	Tracking ID generated and order saved	Same	Pass
4	Track Parcel using valid tracking number	Parcel status is shown	Same	Pass
5	Submit Complaint	Complaint saved and visible to admin	Same	Pass
6	Add Staff (Admin Panel)	Staff record added successfully	Same	Pass
7	Change Courier Status (Staff Panel)	Status updated correctly	Same	Pass
8	View Reports (Admin Panel)	Report data displayed	Same	Pass
9	Invalid login attempt	Shows error message	Same	Pass
10	Logout	Redirects to login/home page	Same	Pass

8. Screenshots

1. Home Page

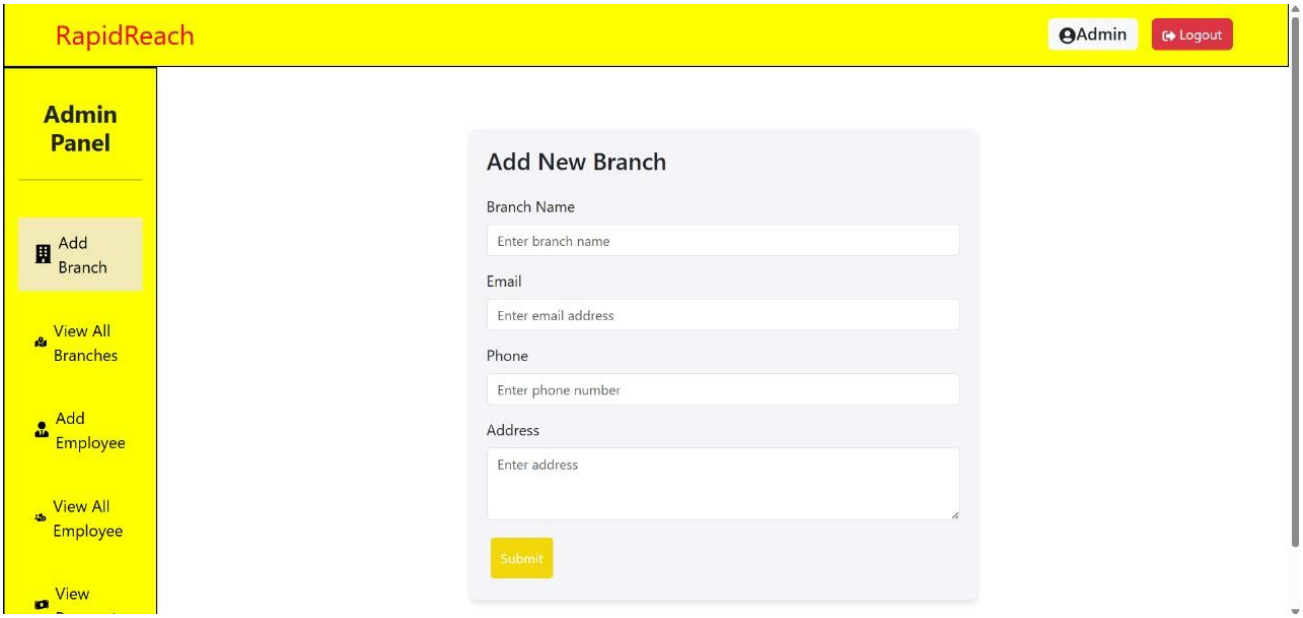




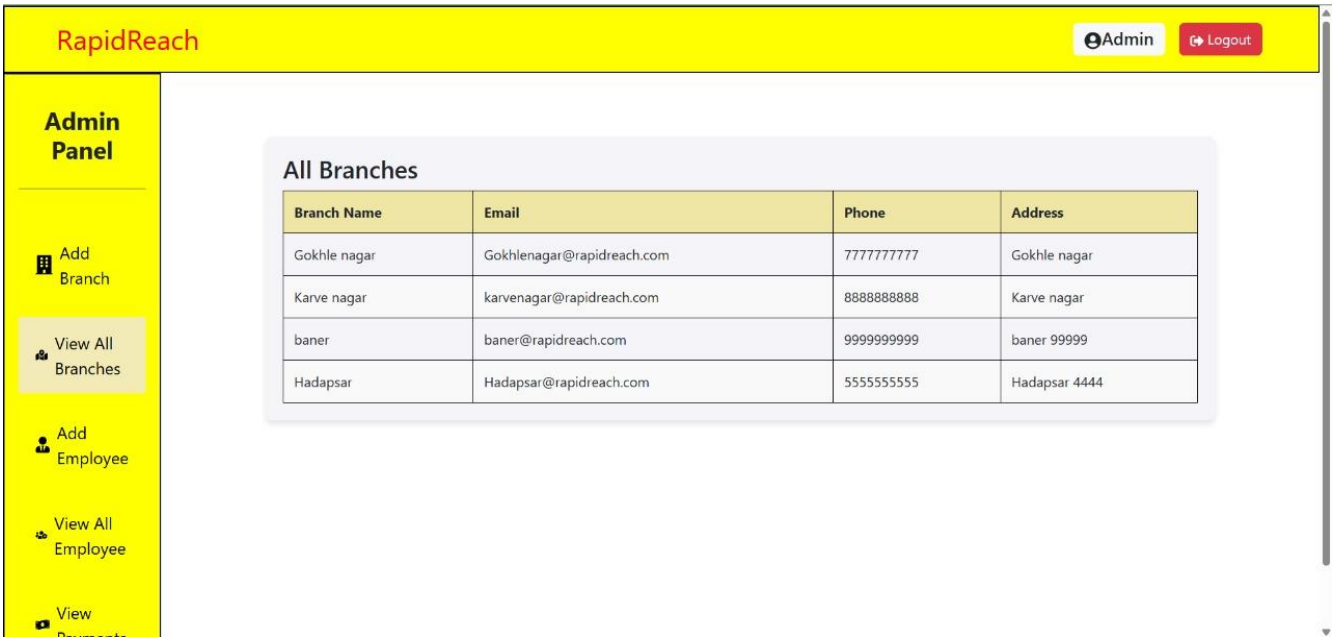


2. Admin Pages

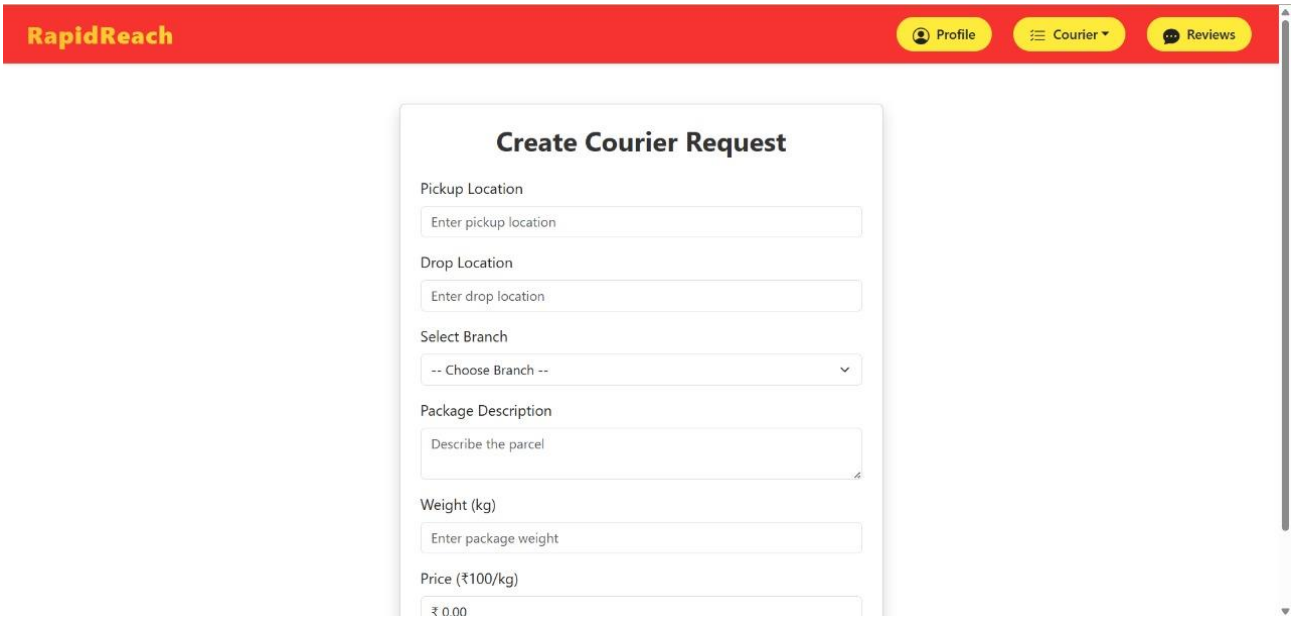
3. Add New Branches Page



4. All Branches Page

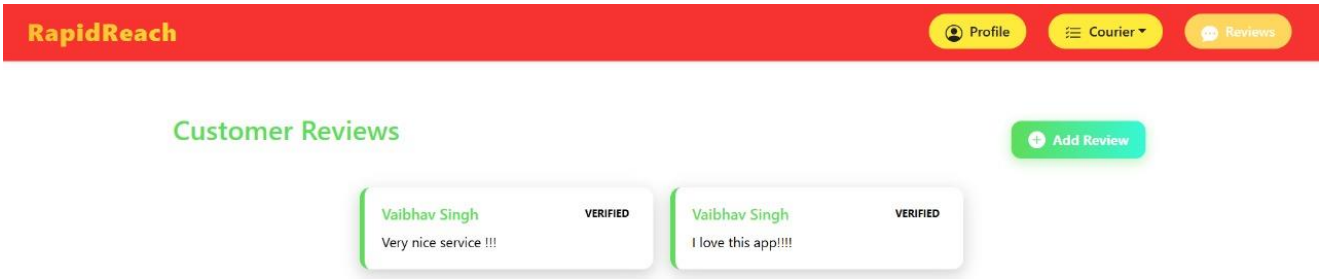


6. Create Courier Request



7. Courier History Page

8. Customer Reviews



9. References

The following websites and tools were referred to during the design, development, and documentation of the project:

1. https://getbootstrap.com – UI styling and responsive layout
2. https://www.w3schools.com – Web development references
3. https://www.dtdc.in – Courier service inspiration
4. https://draw.io – UML diagram creation
5. https://developer.mozilla.org – HTML/CSS/JavaScript docs
6. https://fonts.google.com – Fonts used in design
7. http://www.google.com – General research