

Laravel-Based E-Commerce System

Final Project Report

Course: **Web Application Development with PHP**

Instructor: **Vitalii Bohudskyi**

Semester: **Winter 2025**

Date: April 2025

Team Members:

- **Aleem Amirali Wadhvaniya (n01639084)**
- **Kiran Gandhi (n01655737)**
- **Jaspreet Sonia (n01664112)**
- **Kushal Chhetri (n01667594)**

Outline

1. Introduction and Motivations
2. Problem Statement
3. Methodology
4. Results Discussion
5. Issues Identified and Resolved
6. Limitations
7. Conclusion
8. Recommendations

1. Introduction and Motivations

This Laravel-based E-Commerce System was developed to simulate a real-world web application for online shopping. The motivation stemmed from the desire to implement a complete full-stack application following modern development standards, including authentication, dynamic cart functionality, admin dashboards, and third-party payment gateway integration.

It was designed to address practical use cases such as role-based access control, responsive UI design, secure data transactions, and containerized deployment. Additionally, the project aimed to improve skills in Laravel MVC development, Eloquent ORM, Blade templating, and deployment using Podman.

2. Problem Statement

The goal was to design and implement a robust e-commerce platform that allows users to register, log in securely, browse products, add items to a shopping cart, and checkout using Stripe payments. Administrators needed to manage products, view orders, and perform administrative functions from a separate dashboard.

Core challenges addressed include:

- Secure user management and two-factor authentication
- Order lifecycle management with cart persistence
- Responsive interface for both desktop and mobile users
- Stripe integration for secure, real-time payment processing
- System deployment using Podman containers

3. Methodology

The team followed the Software Development Life Cycle (SDLC) divided into Planning, Development, Testing, and Deployment phases:

- Laravel 11.x was chosen for its MVC support and built-in security features.
- Blade templating engine was used for dynamic and reusable front-end views.
- Eloquent ORM simplified database interactions.
- Stripe API enabled seamless payment processing.
- Podman ensured modular deployment and environment replication.
- PHPUnit covered core functional testing with 88% code coverage.
- GitHub was used for version control and code management.

Development tools included VS Code, MySQL, Postman for API testing, and Chrome Developer Tools for frontend debugging.

4. Results Discussion

The application achieved all core functionalities across both user and admin modules:

- Users could register, log in, and verify via email.
- Cart and order features worked as expected: items could be added, updated, or removed.
- Order summary displayed accurate billing information.
- Stripe checkout handled both valid and invalid payments.
- Admins could add/edit/delete products and manage orders.
- The UI was mobile-responsive and tested across multiple browsers.

Extensive testing confirmed that the application is reliable and suitable for real-world deployment.

[Note: Include screenshots in the final version to visually showcase system interfaces.]

5. Issues Identified and Resolved

Here are the major issues identified during testing and their resolutions and it is provided in more detail in QA report:

Issue ID	Description	Severity	Resolution
AUTH-002	No email verification	Medium	2FA via email confirmation implemented
ORDER-004	Cart not cleared after payment	High	Stripe callback updated to clear session
ADMIN-003	Orders not visible to admin	High	Fixed query filter in admin dashboard
CART-001	Negative quantity allowed	Medium	Client-side & server-side validation added
UI-004	Style broken on Stripe success screen	Low	Fixed route and asset path
PAY-002	Stripe failed payments not logged	Medium	Logging and admin alert system added

6. Limitations

Despite successful implementation, the system has a few limitations:

- No automated browser testing using Laravel Dusk.
- Stripe webhook signature verification is not implemented.
- No CI/CD pipeline; deployment was done manually.

- No feature for bulk CSV import/export of products.
- No in-app analytics for admin dashboards.

7. Conclusion

The Laravel E-Commerce System met all the project objectives. It demonstrated secure user flows, intuitive UI, stable backend logic, and third-party payment integration. QA testing showed high reliability and performance.

By following Laravel best practices and full lifecycle development, this project stands as a strong portfolio example of applying web development concepts in a team-based setting. The deployment-ready structure ensures scalability for future enhancements.

8. Recommendations

The following improvements are recommended for future iterations:

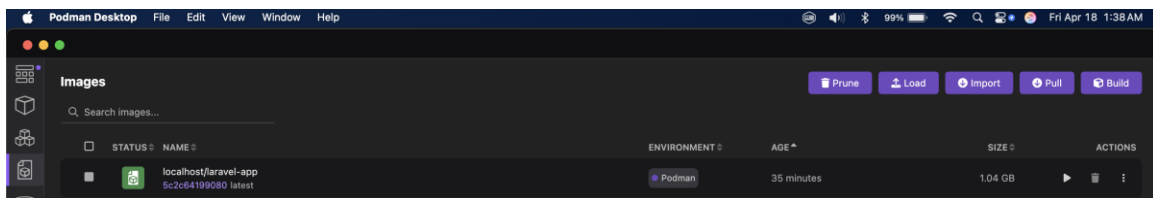
- Add Laravel Dusk for end-to-end testing
- Implement webhook signature verification for Stripe
- Setup CI/CD pipelines using GitHub Actions or GitLab
- Enable analytics dashboards and low stock alerts
- Add CSV upload functionality for product management

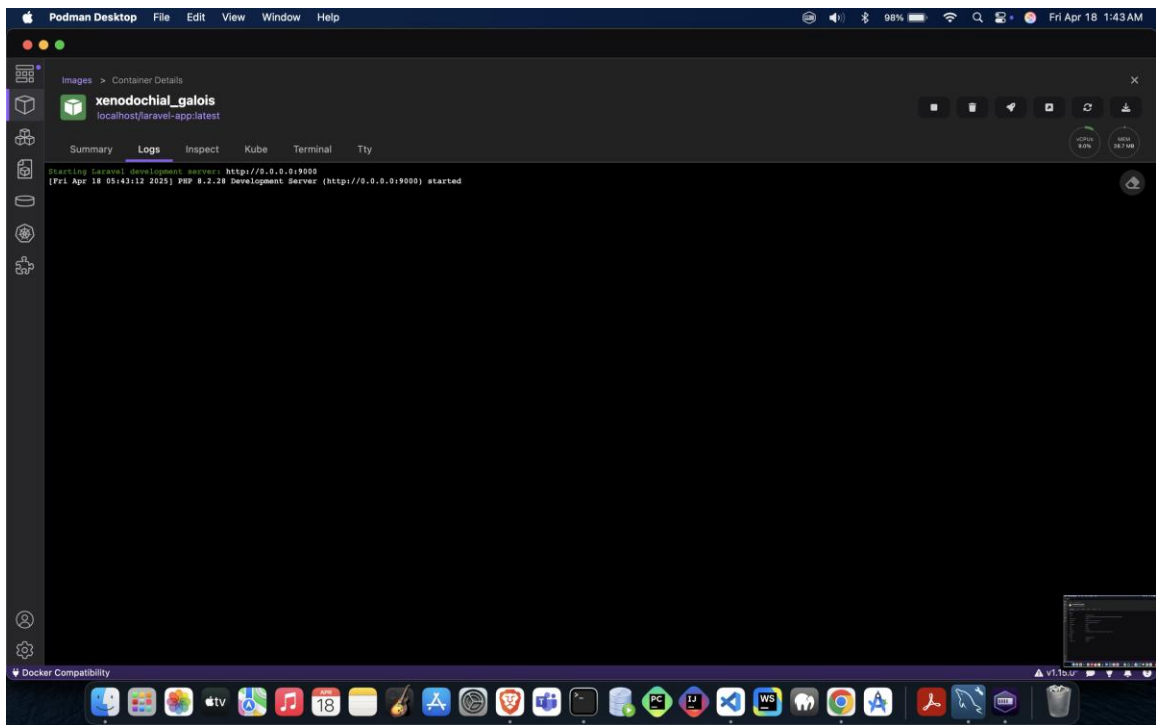
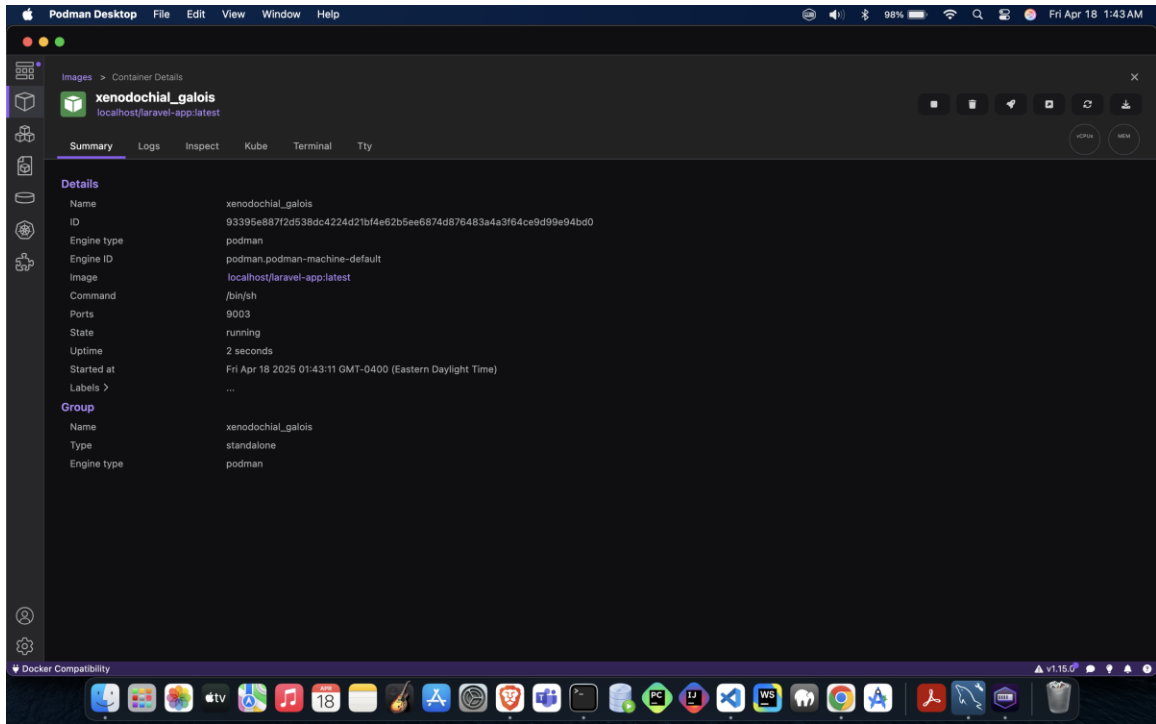
Code Screenshots

The screenshot shows a macOS desktop with a code editor open to a PHP project. The file explorer on the left shows the project structure, including files like `checkout.blade.php`, `StripeWebhookController.php`, `SslCommerzPaymentController.php`, `CartController.php`, and `.env`. The `.env` file is selected, showing configuration for a Laravel application, including database connection details and session settings.

The terminal window at the bottom displays the output of the `podman-compose build` command. It shows the process of resolving the `php` alias, pulling the `docker.io/library/php:8.2-fpm` image, and copying the image source signatures. The output includes the following steps:

```
STEP 1/7: FROM php:8.2-fpm
Resolved "php" as an alias (/etc/containers/registries.conf.d/000-shortnames.conf)
Trying to pull docker.io/library/php:8.2-fpm...
Getting image source signatures
Copying blob sha256:4687407b574ca042602722394772ba05191f6c340b442ed7061561303c7307
Copying blob sha256:16c9c4a8e9eef85623173efb042473740e8d50d74d35e6aedd047f69fe161f
Copying blob sha256:5d20e77e2da9813ba78046a31e9835f08797c6d730b78329a4f04c12022ca8c
Copying blob sha256:2cc8e5730fe526cc83387586aee6b7883ed046c1cbf4028dd372d5e9cc4aa7ec
Copying blob sha256:705c5f6dffc44b4285f0e945a57290bb8e3e1ae585726ecc2c9828d7f9ccda
Copying blob sha256:18197a2714f8f6c202cc99f6ae0e2e0ec1a323a0b7940095c0475830b0b3
Copying blob sha256:37ee622045f6fa4e8ee5a1095b52843485a37a6703f2dcca3bc09870b8f47761
Copying blob sha256:efeb598f736e97af088dc1400e6a8593c5bec9a5e4c86a57eed742ed8a37b7
Copying blob sha256:5e9558c21c77806f3b34d77f008b71c50e2c308eaca08f6948c57495738
Copying blob sha256:4f4f0700f154461cf08271ae0b9a00c10c0b5577484a45d75e680c38e0acc1
Copying blob sha256:a330d523f9aca2783faa83c31339975629873c0c04e77514133fced4119f4c
```

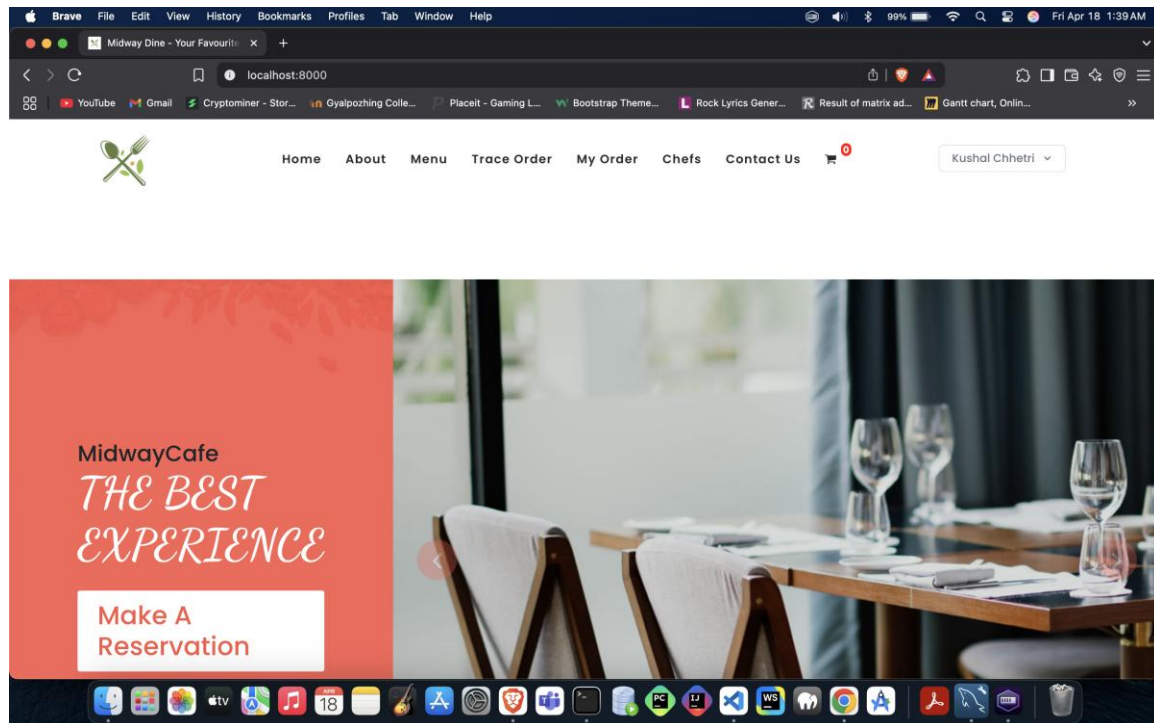


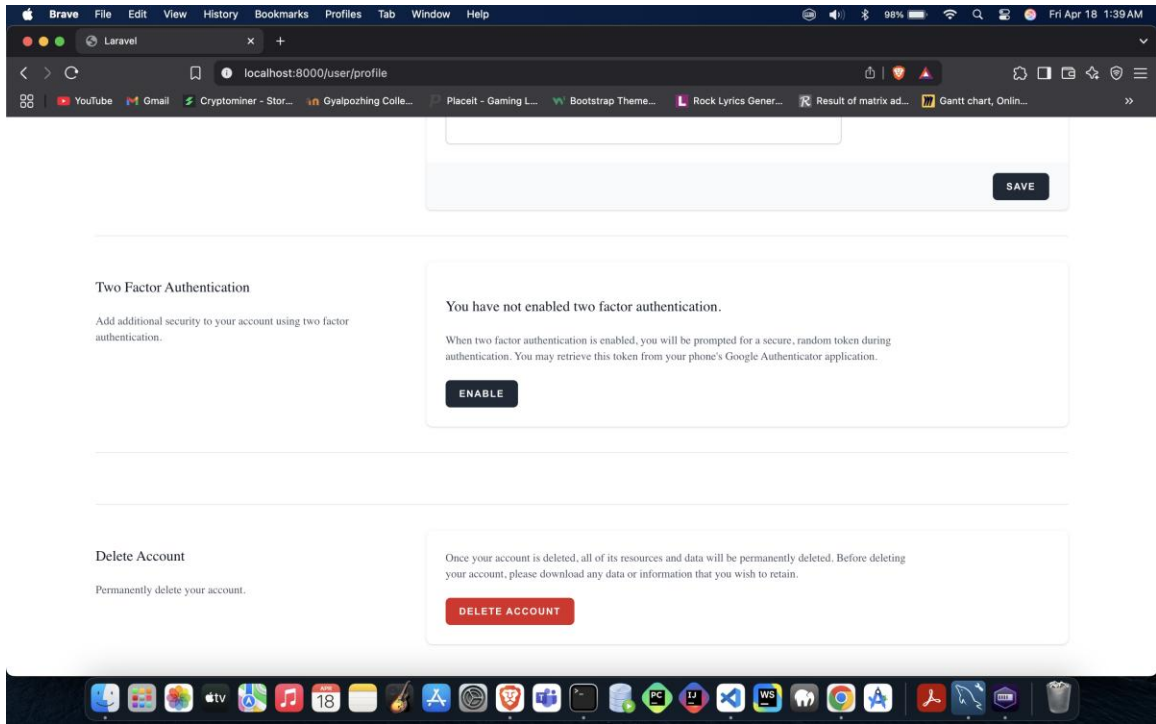


Application Screenshots

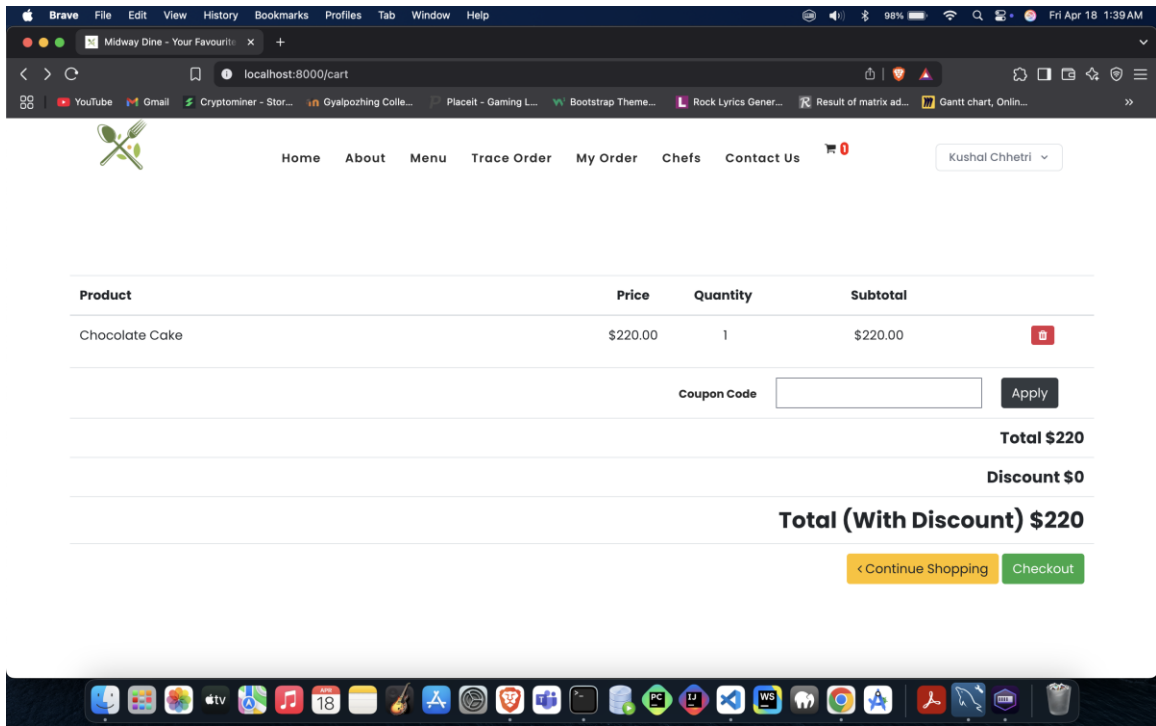
The following screenshots visually demonstrate the core functionalities of the Laravel E-Commerce System:

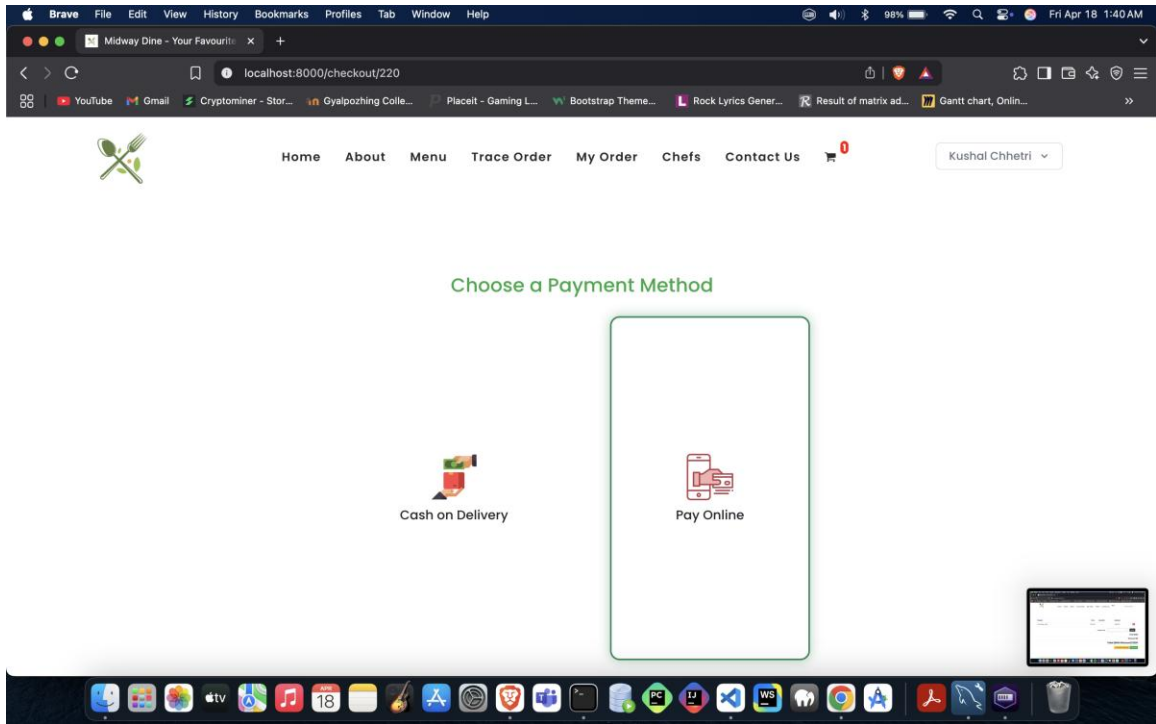
Home Page:



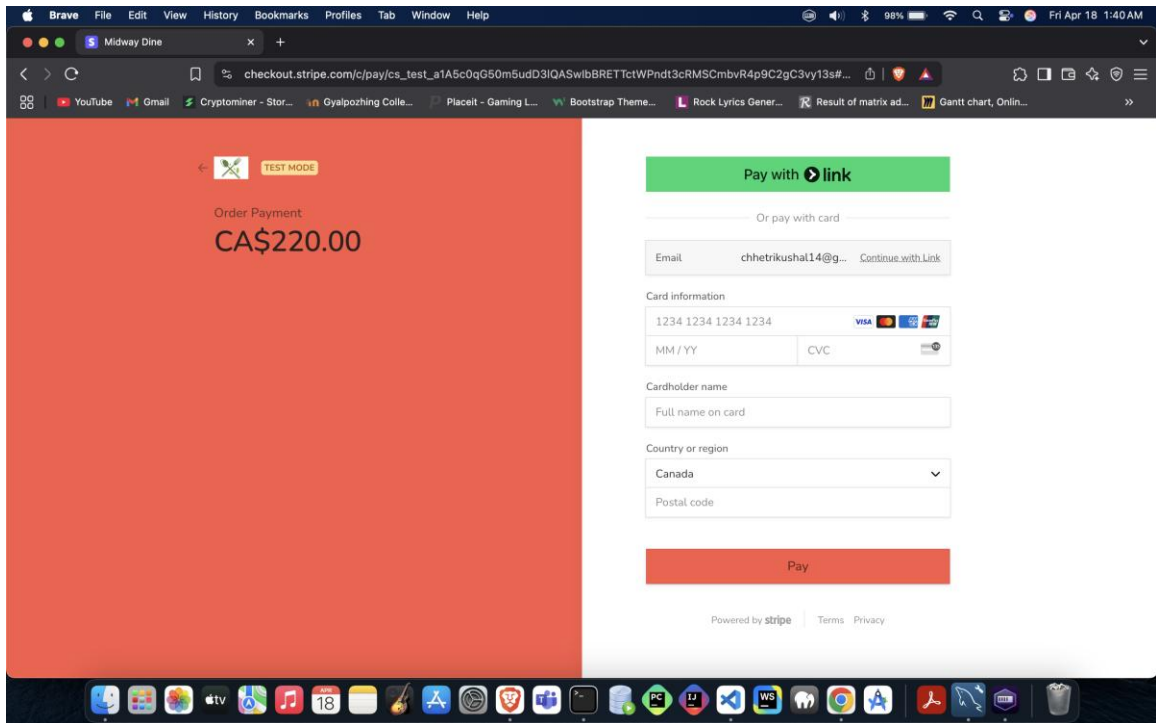


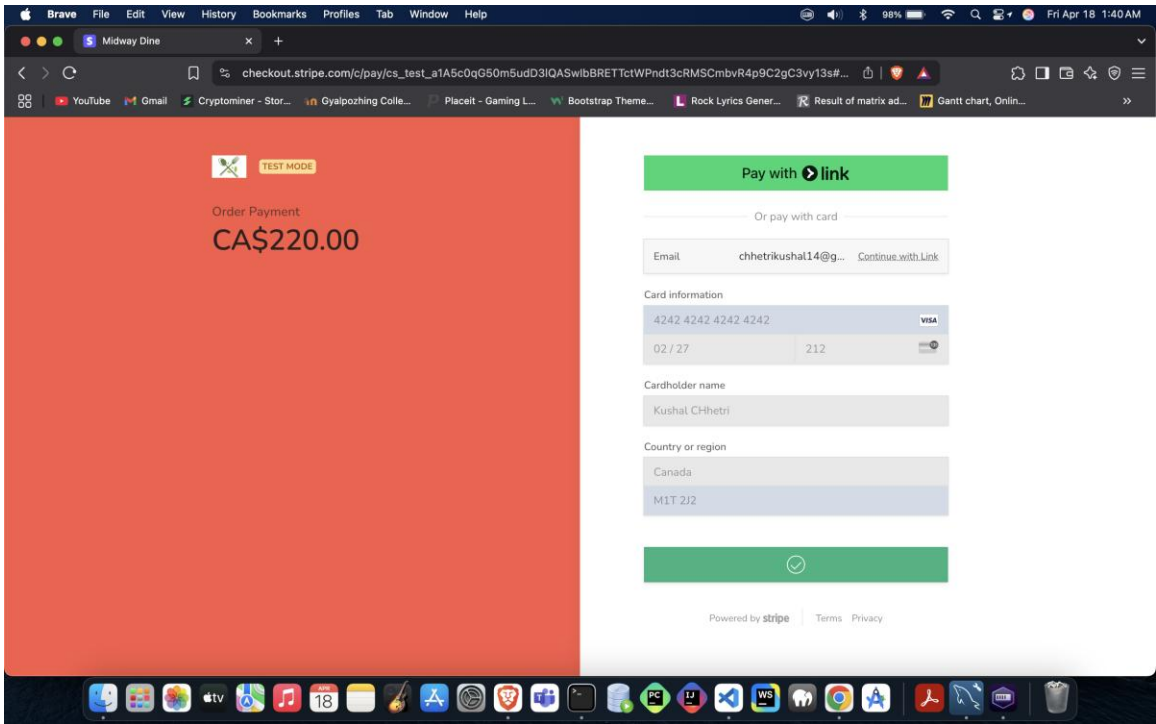
Checkout:

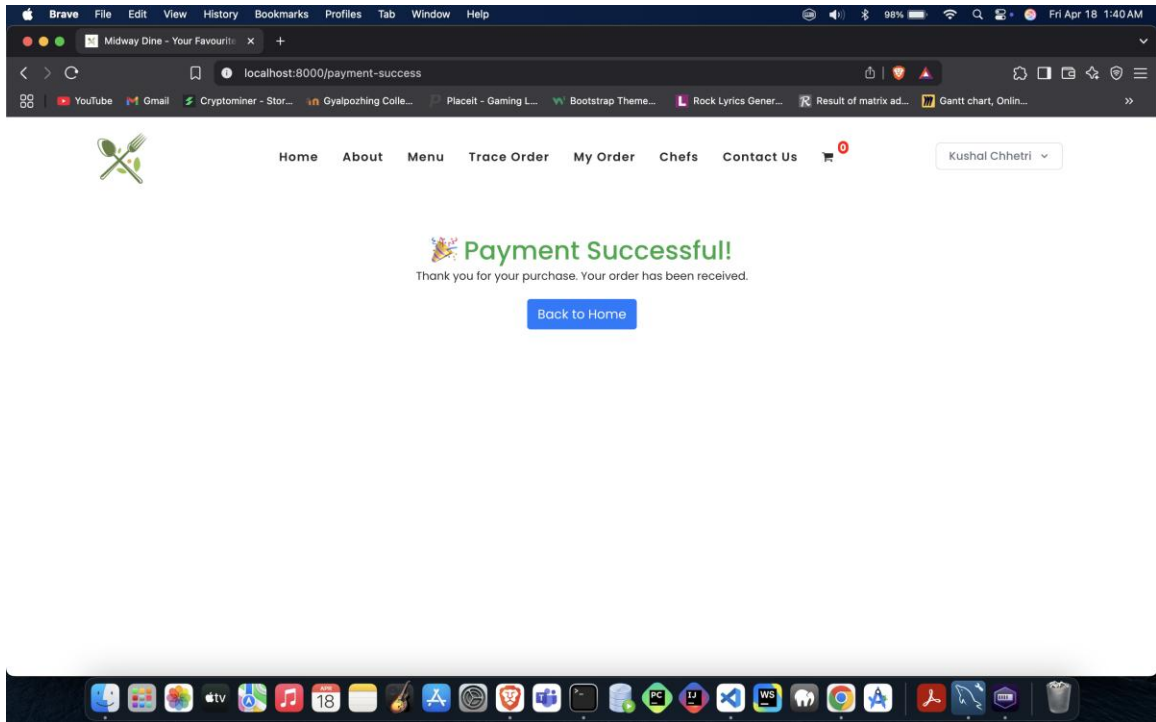




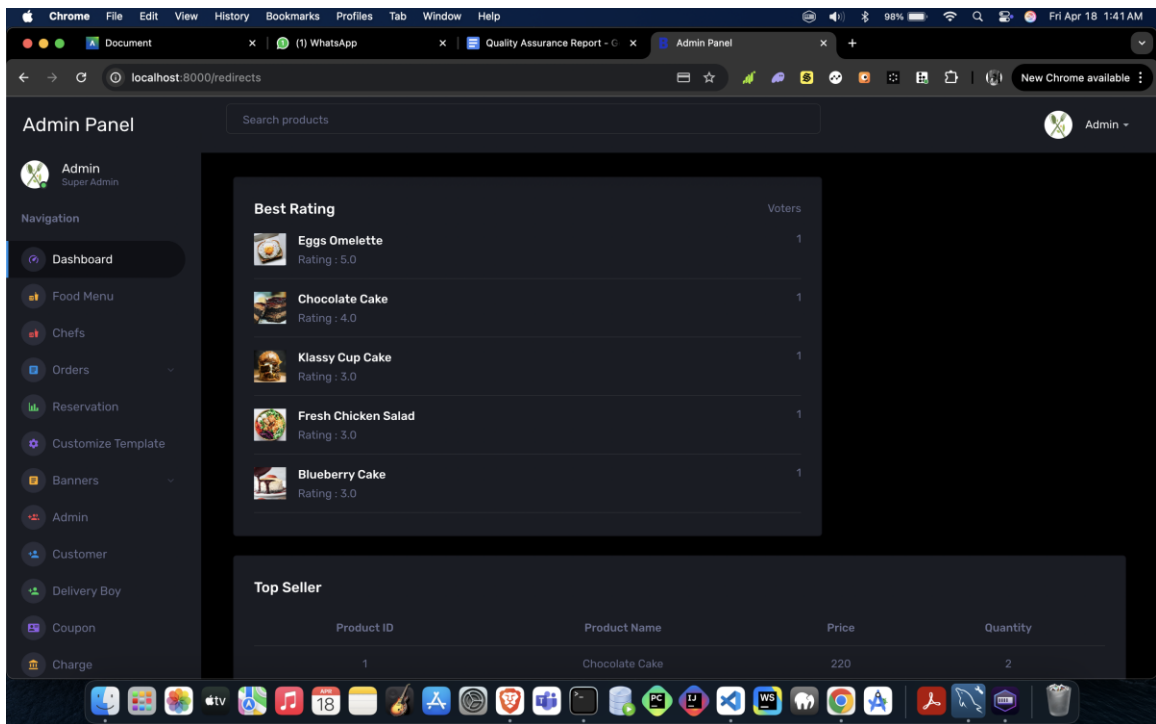
Payment Gateway:

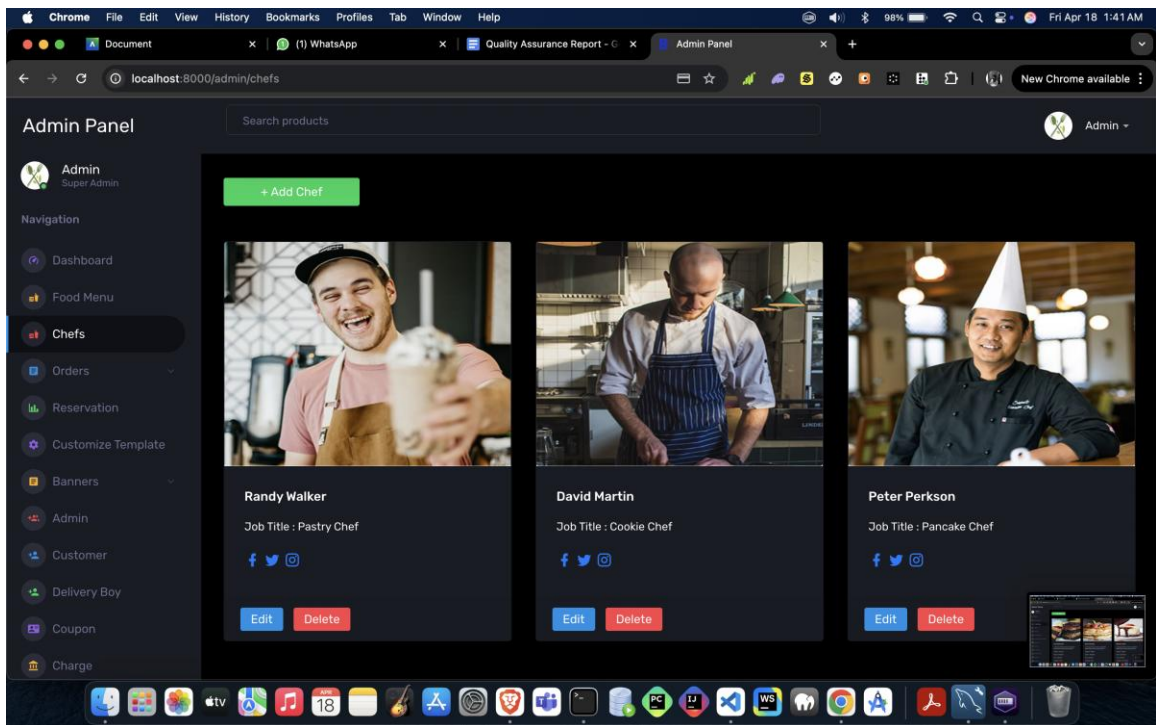
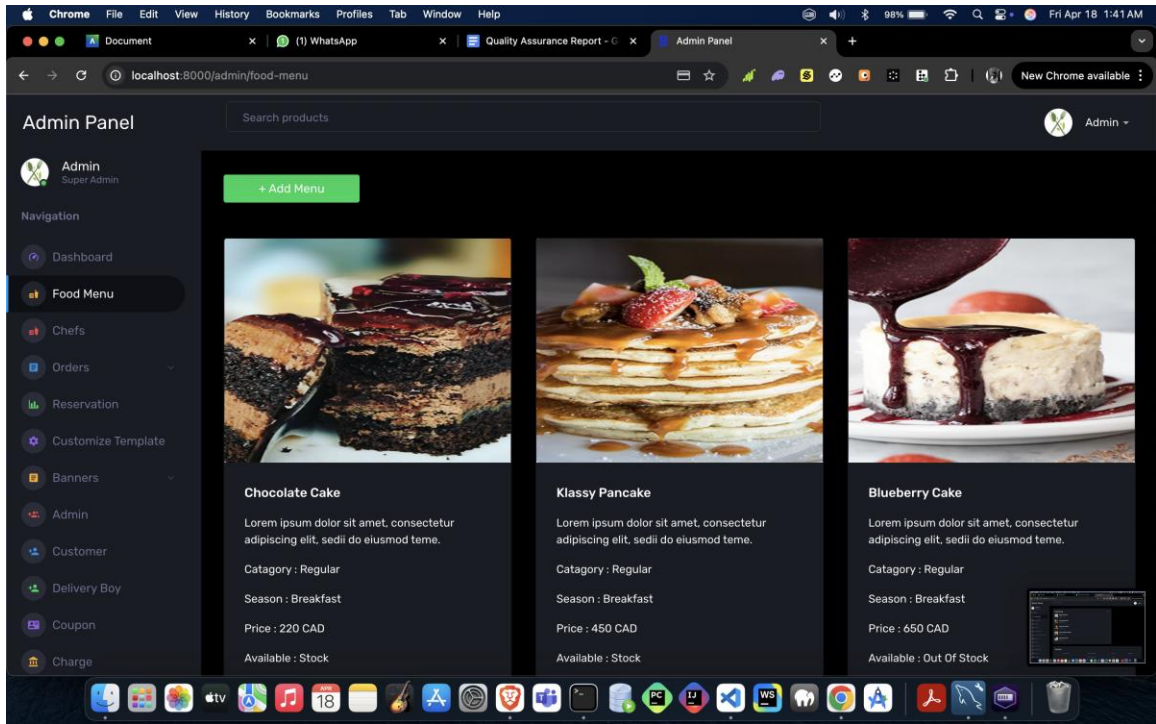


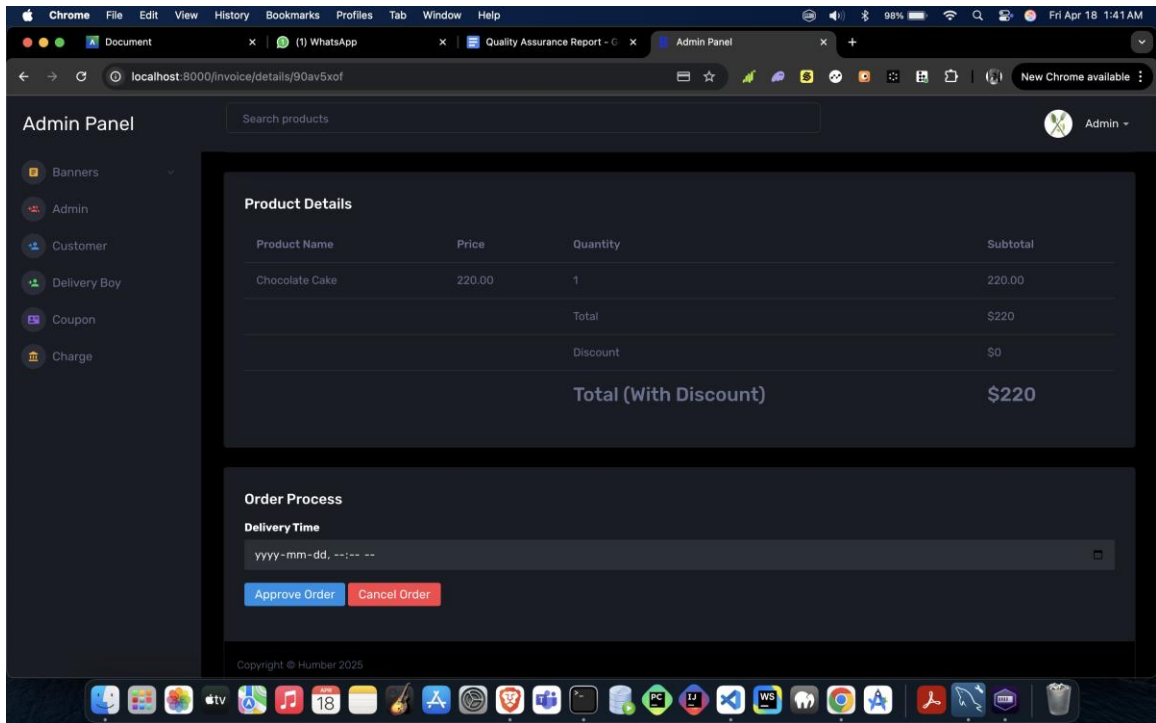
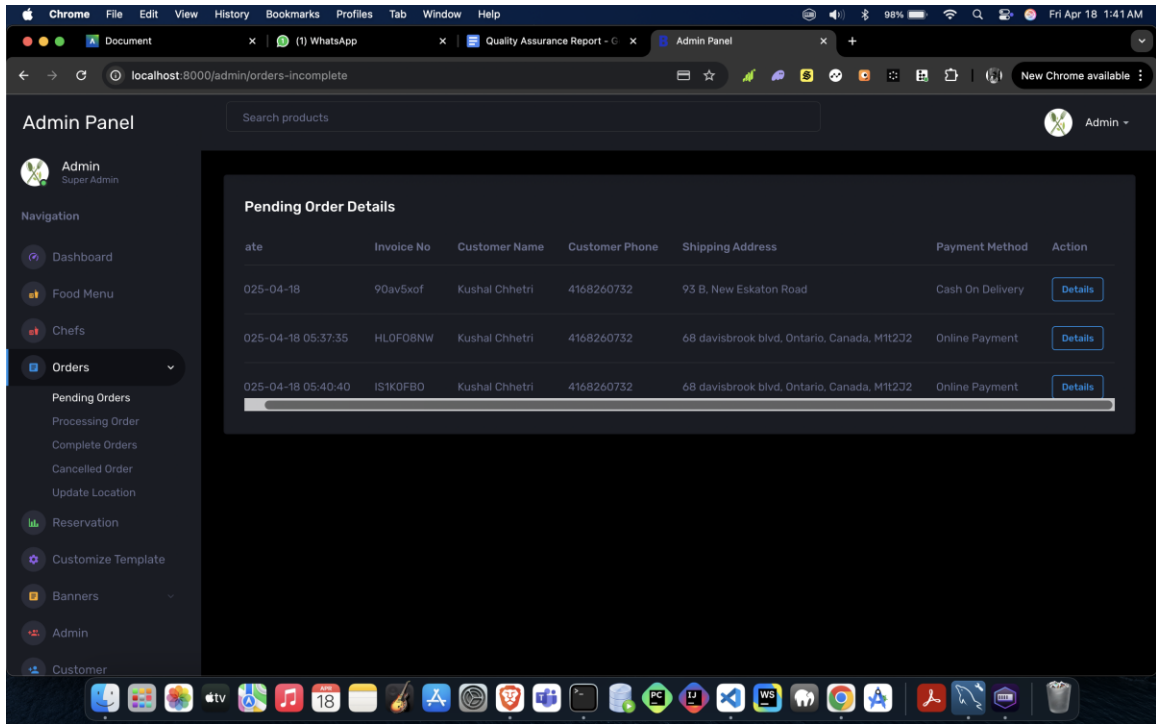




Admin Panel:







Chrome File Edit View History Bookmarks Profiles Tab Window Help

Document (1) WhatsApp Quality Assurance Report - Admin Panel

localhost:8000/admin/reservation

Admin Panel

Search products

Admin Super Admin

Navigation

- Dashboard
- Food Menu
- Chefs
- Orders
- Reservation**
- Customize Template
- Banners
- Admin
- Customer
- Delivery Boy
- Coupon
- Charge

Reservation Details

Date	Time	Name	Email	Phone	No of Guests	Message
21.07.2022	Breakfast	Sajeeb Chakraborty	sajeebchakraborty.cse2000@gmail.com	01824072334	7	rggrghrre
27.07.2022	Breakfast	Sajeeb Chakraborty	sajeebchakraborty.cse2000@gmail.com	01824072334	7	gegege
28.07.2022	Lunch	Sajeeb Chakraborty	sajeebchakraborty.cse2000@gmail.com	01824072334	7	dsvfdvb
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
27.07.2022	Breakfast	Sajeeb Chakraborty	robincb.symphony@gmail.com	01824072334	7	ascasds
21.07.2022	Breakfast	Sajeeb Chakraborty	sajeebchakraborty.cse2000@gmail.com	01824072334	7	vvvvvvgf
21.07.2022	Breakfast	Sajeeb Chakraborty	sajeebchakraborty.cse2000@gmail.com	01824072334	7	vvvvvvgf

Chrome File Edit View History Bookmarks Profiles Tab Window Help

Document (1) WhatsApp Quality Assurance Report - Admin Panel

localhost:8000/customer

Admin Panel

Search products

Admin Super Admin

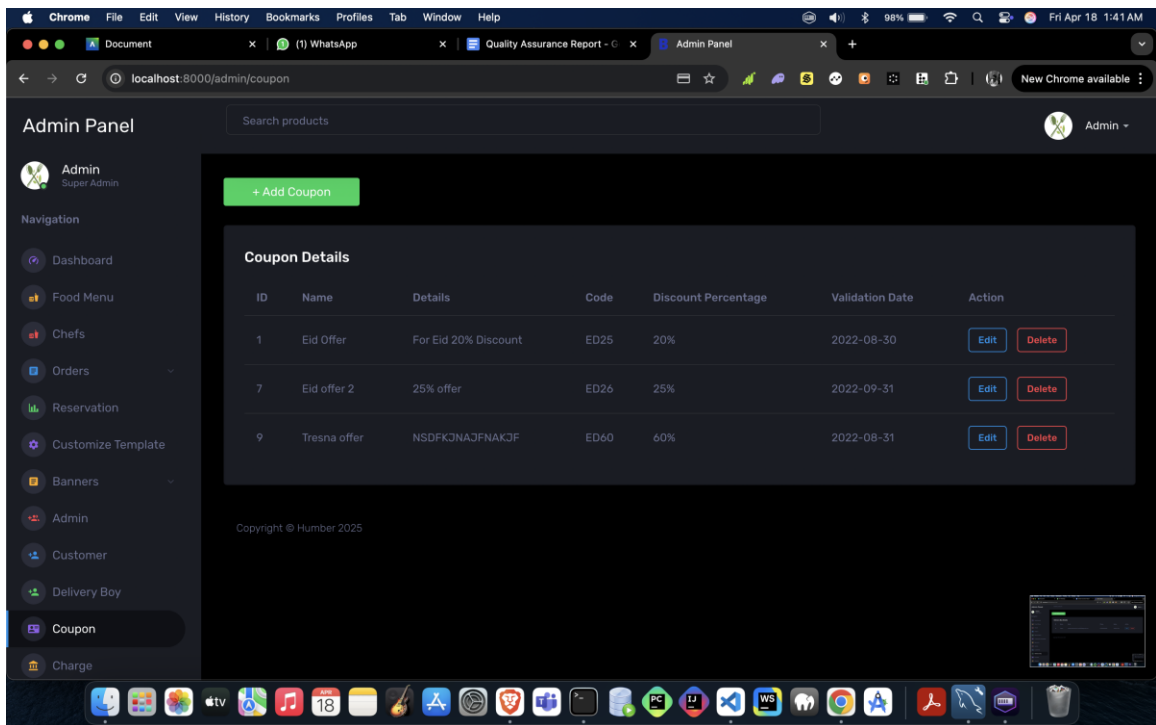
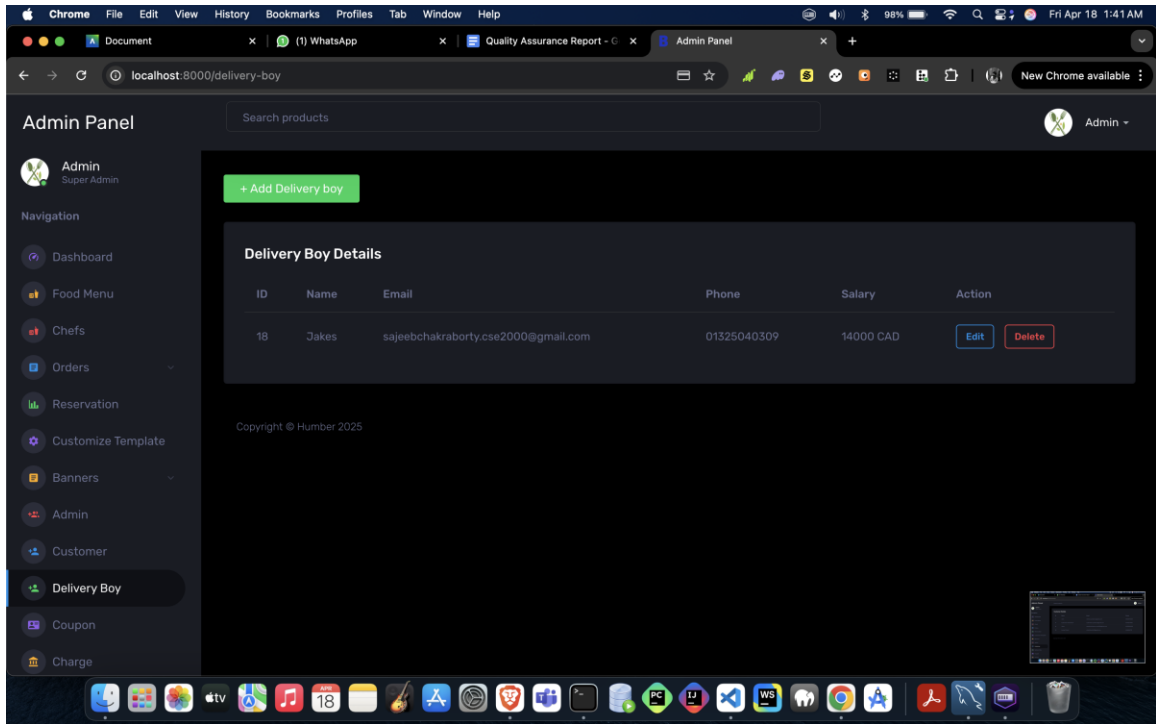
Navigation

- Dashboard
- Food Menu
- Chefs
- Orders
- Reservation
- Customize Template
- Banners
- Admin
- Customer**
- Delivery Boy
- Coupon
- Charge

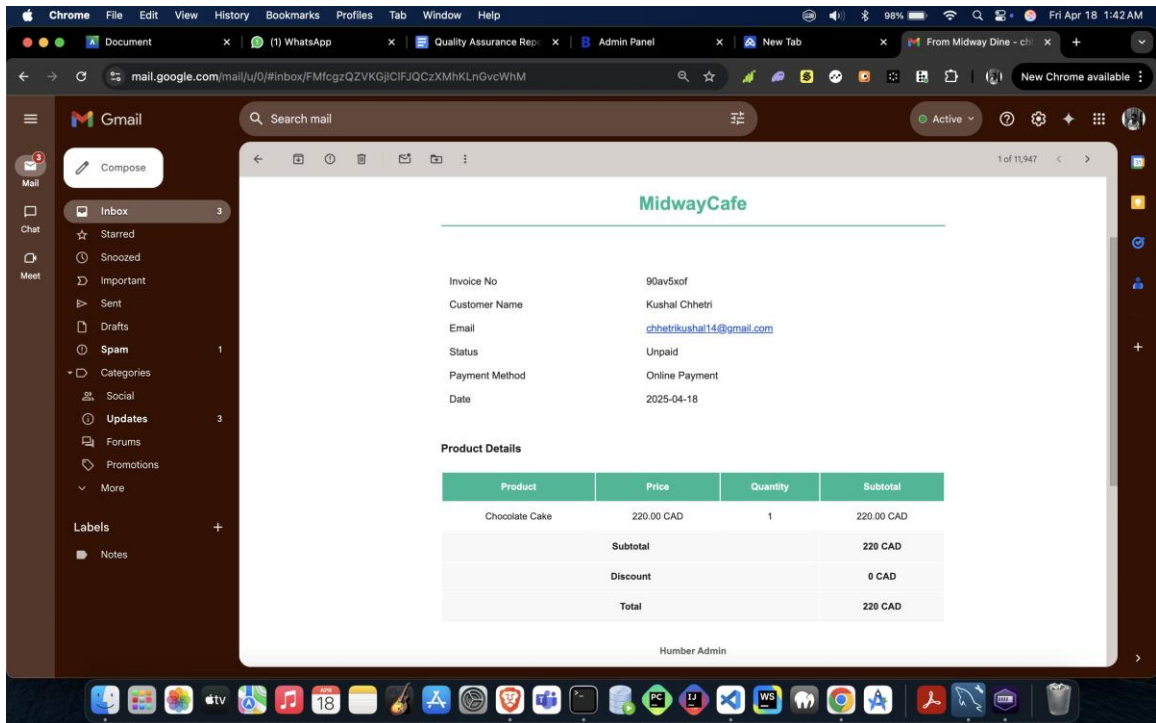
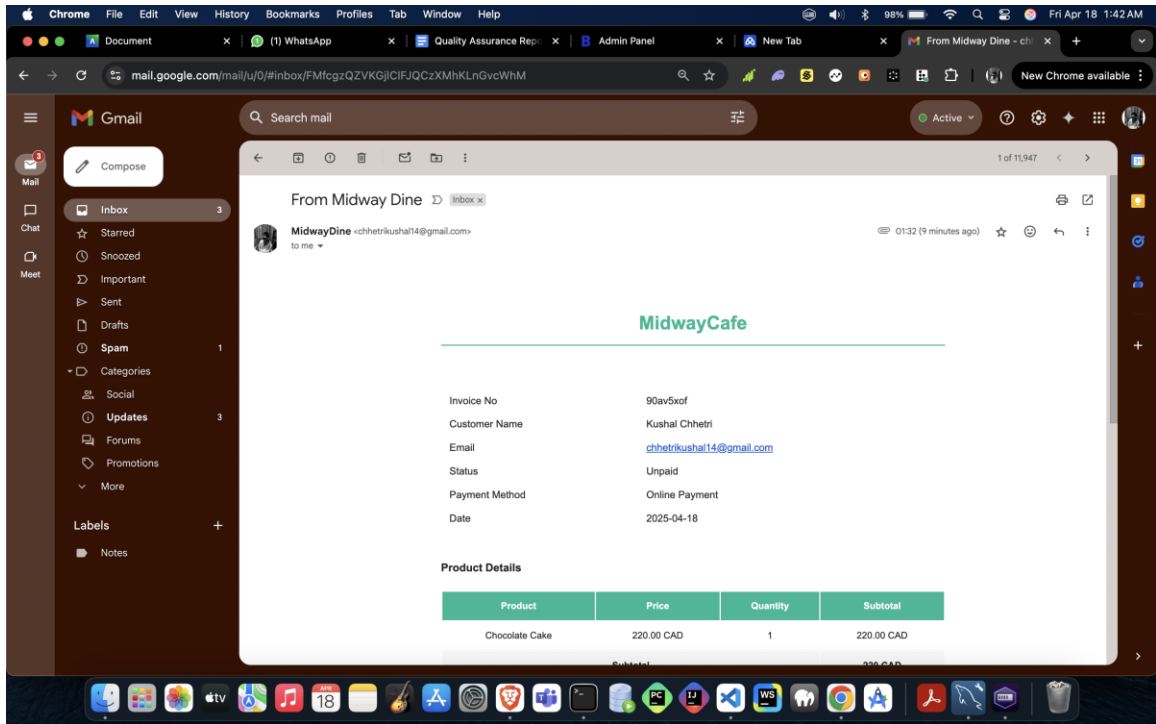
Customer Details

ID	Name	Email	Phone
3	robin	robincb.symphony@gmail.com	01824072334
14	Sudarshan Chakraborty	sudarshan.symphony@gmail.com	01770277098
18	Jakes	sajeebchakraborty.cse2000@gmail.com	01326040309
20	Kushal Chhetri	chhetrikushal14@gmail.com	4168260732

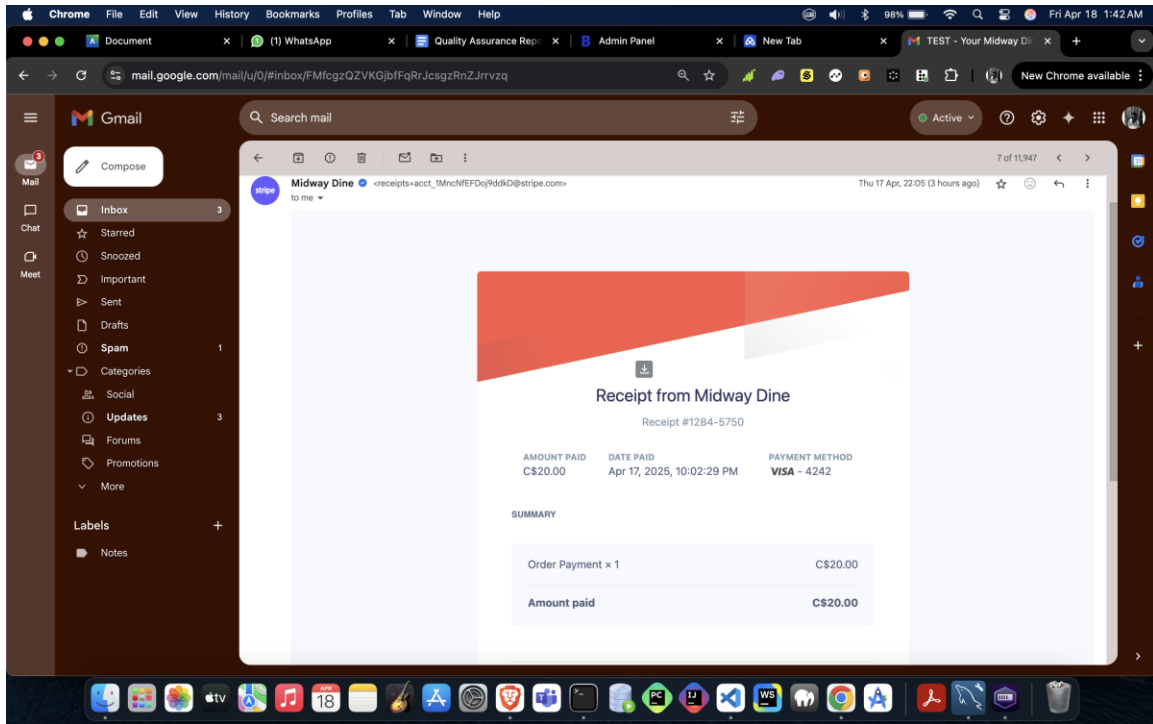
Copyright © Humber 2025



Email Notification:



Order Receipt:



9. Conclusion:

The Laravel-Based E-Commerce System successfully met all the objectives set out at the beginning of the project. By leveraging Laravel's robust MVC architecture, secure authentication middleware, and seamless Stripe integration, the application delivers a stable and user-friendly online shopping experience.

The system allows customers to easily browse products, manage their carts, and complete purchases securely, while providing administrators with tools to manage inventory and oversee orders effectively. The mobile-responsive interface ensures accessibility across devices, and comprehensive testing has confirmed the system's readiness for deployment.

This project has not only demonstrated the practical application of Laravel development skills but also emphasized collaborative teamwork, problem-solving, and adherence to real-world software development practices. With further enhancements like automated testing, CI/CD integration, and analytics, the system can be scaled for broader commercial use.