INSTITUTE FOR ADVANCED COMPUTING AND SOFTWARE DEVELOPMENT, AKURDI, PUNE

"Bake Buddy"

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Submitted By:

Group No: 55

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ABSTRACT

BakeBuddy is a bakery management platform designed to streamline operations for bakery owners and customers. It provides features for bakery registration, product management, order tracking, and secure payment processing. Built with Spring Boot on the backend and integrated with JWT authentication, the system ensures a secure and scalable experience. BakeBuddy enables bakery owners to manage their inventory, track sales, and generate reports efficiently.

ACKNOWLEDGEMENT

I take this occasion to thank God, almighty for blessing us with his grace and taking our endeavor to a successful culmination. I extend my heartfelt thanks to our esteemed guide, **Mrs.Megha Mane** for providing me with the right guidance and advice at the crucial juncture and showing me the right way. I sincerely thank our respected Centre Coordinator, **Mr. Rohit Puranik**, for allowing us to use the available facilities. I would also like to thank the other faculty members at this occasion. Last but not least, I would like to thank my friends and family for the support and encouragement they have given me during our work.

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1. INTRODUCTION

The Bakery Management System represents a significant advancement in the food service industry, providing a sophisticated and user-centric solution to the challenges faced by both bakery owners and customers. In a world where efficiency and customer satisfaction are paramount, this system seeks to revolutionize bakery operations by offering a seamless and efficient platform for managing orders, inventory, sales, and customer interactions. This innovative project addresses the complexities of traditional bakery management processes by introducing a digital infrastructure that enhances accessibility, convenience, and operational control.

In response to the evolving demands of modern businesses and consumers, the Bakery Management System leverages cutting-edge technology to streamline the entire operational lifecycle. From intuitive online interfaces that allow customers to effortlessly place orders and explore bakery offerings to robust backend systems that enable bakery owners to manage inventory, track sales, and optimize production, this project is set to redefine efficiency in the baking industry. By combining technological innovation with user-friendly design principles, the Bakery Management System not only enhances customer experience but also improves operational efficiency and profitability for bakery businesses in an increasingly competitive market.

1. Admin Role

The **Admin role** is the most powerful in the **BakeBuddy System**, with full control over the platform's functionalities. Admins are responsible for managing the system, bakery owners, sellers, and customers. They ensure the smooth operation of the entire platform. Typical admins are bakery owners, managers, or IT personnel.

Responsibilities:

1.User Management

- Create, manage, and delete employee, seller, and customer accounts.
- Assign roles and permissions to users (Seller, Customer).
- Monitor user activities and ensure compliance with bakery policies.

Inventory Management

- Oversee product listings and stock levels across multiple sellers.
- Manage categories and product attributes.
- Set reorder levels for raw materials and key items.

Order Management:

- View, process, and manage all customer orders.
- Handle escalations for returns, refunds, and order disputes.
- Monitor seller order fulfillment and performance.

Payment Management:

- Oversee and manage all payments processed through the platform.
- Resolve payment disputes and issue refunds when necessary.

System Configuration:

- Configure platform settings (tax rates, discount rules, shipping options).
- Manage platform content (banners, promotions, announcements).

Access Level:

- Full access to all features and data.
- Ability to override settings and user actions.
- Access to sensitive financial and personal information.

2.Seller Role:

The **Seller role** represents individual or business owners selling products through the BakeBuddy platform. Sellers manage their product inventory, process orders, and handle customer interactions related to their products.

Responsibilities:

Inventory Management:

- Add, update, or delete product information for their bakery.
- Monitor stock levels of products and ingredients.
- Set reorder levels for raw materials.

Order Management:

- View, process, and manage orders for their products.
- Handle returns, exchanges, and customer queries.

Product and Pricing Management:

- Update product details, images, descriptions, and pricing.
- Apply discounts and manage promotional offers.

Payments and Payouts:

- Track payment history and payouts from BakeBuddy.
- Resolve payment-related issues for their store.

Access Level:

- Full access to manage their products and orders.

- No access to other sellers' data or global platform settings.
- Access to customer order details only for their own sales.

3. Customer Role

The **Customer role** in the BakeBuddy system allows users to browse products, place orders, and manage their personal accounts. Customers interact primarily with the front-end interface.

Responsibilities:

Order Placement:

- Browse products from multiple sellers.
- Add items to the cart and place orders.
- Track order status and view order history.

Profile Management:

- Update personal information (name, address, contact details).
- Manage account settings, including password changes.

Payments:

- Make payments for orders via the integrated Razorpay gateway.
- View payment history and download receipts.

Support Requests:

- Raise support tickets for order issues or product inquiries.
- Communicate with customer support for assistance.

Access Level:

- Limited access based on assigned permissions.
- Can view and interact with features like order placement and product browsing.
- No access to system settings or sensitive data.

1.1 Purpose

The purpose of the Bake Buddy System is to provide a comprehensive platform for managing bakery operations, including inventory, sales, and customer interactions. The system is designed to streamline bakery workflows, reduce manual efforts, and enhance overall efficiency and customer satisfaction.

1.2 Scope

The scope of the Bake Buddy System includes the design, development, deployment, and maintenance of a feature-rich digital platform tailored to the needs of bakery businesses. This includes functionalities such as inventory tracking, order management, sales processing, customer engagement, and analytics, ensuring smooth business operations for both small and large bakeries.

1.3 Objective of Bake Buddy

The objectives of the Bakery Management System define its core purpose and focus on improving efficiency, security, and customer satisfaction:

1. **Efficient Inventory Management** – Keep track of ingredients and finished products to prevent stock shortages or wastage.
2. **Streamlined Order Processing** – Automate order handling, including online and in-store purchases.
3. **Enhanced User Experience** – Provide an intuitive interface for customers to browse and place orders easily.
4. **Robust Security and Access Control** – Secure user data and transactions using authentication and encryption.
5. **Scalable and Flexible Architecture** – Adapt to the bakery's growing needs and integrate with third-party services.

6. **Comprehensive Reporting and Analytics** – Provide insights into sales trends, inventory usage, and customer behavior.
7. **Cost Optimization** – Reduce operational costs by automating manual processes.
8. **Improved Customer Engagement** – Implement features such as loyalty programs and personalized recommendations.
9. **Compliance and Audit Readiness** – Ensure compliance with industry standards and data protection regulations.

1.4 Functionalities Provided by Bake Buddy

1. User Management

- User Registration and Login: Secure authentication for admins, employees, and customers.
- Role-Based Access Control: Permissions based on user roles (Admin, Employee, Customer).
- Profile Management: Users can update their details and manage accounts securely.
- .

2. Inventory Management

- Product Catalog Management: Add, update, and delete bakery products.
- Stock Level Monitoring: Real-time tracking of ingredient stock and finished goods.
- Inventory Adjustment: Manage ingredient usage, wastage, and replenishment.
- Automated Reordering: Alerts for low-stock ingredients to facilitate timely restocking.

3. Sales Management & Order Management:

Order Processing: Customers can place orders online or in-store.

Payment Integration: Secure online payment through payment gateways.

Order Tracking: Customers can check order status in real time.

Invoicing and Billing: Automatic invoice generation for completed orders

4. Customer Management:

Customer Profiles: Maintain order history and preferences for personalized service.

Loyalty Programs & Discounts: Reward frequent customers with discounts and special offers.

2. SOFTWARE REQUIREMENT SPECIFICATION

2.1 Functional Requirements for Bake Buddy

1. User Management

- **User Registration:**

The system shall allow new users to create an account by providing personal details such as name, email, and password.

- **User Authentication:**

  The system shall authenticate users during login using their registered email and password.

- **Role-Based Access Control:**

  The system shall support role-based access, where different users (Admin, Customer) have different permissions.

- **Profile Management:**

  Users shall be able to view and update their profiles, including personal details and passwords.

2. Inventory Management

- **Product Management:**

  The system shall allow admins to add, update, and delete products from the inventory. The system shall store product details such as name, description, SKU, price, category, and images.

- **Stock Level Monitoring:**

  The system shall monitor stock levels in real time and display current inventory levels.

- **Inventory Adjustment:**
- The system shall allow manual adjustments to inventory levels to account for discrepancies, wastage, or spoilage.

3. Sales Management

- **Order Placement:**

  Customers shall be able to place orders for products from the inventory.

- **Order Processing:**

  The system shall process orders, updating inventory levels accordingly.

- **Payment Processing:**

  The system shall integrate with Razorpay to handle online payments securely.

  The system shall support various payment methods, including credit/debit cards, UPI, and wallets.

- **Order Tracking:**

  Customers shall be able to track the status of their orders from processing to delivery.

- **Invoicing:**

  The system shall automatically generate invoices for completed orders, available for download.

4. Customer Management

- **Customer Profiles:**

  The system shall maintain profiles for each customer, including order history and personal details.

- **Order History:**

  Customers shall be able to view their order history.

5. Security

- **Data Encryption:**

  The system shall encrypt sensitive data, such as payment information and personal details.

- **Authentication and Authorization:**

  The system shall enforce strong authentication mechanisms and ensure that users have access only to the functionalities allowed by their roles.

2.2 Non-Functional Requirements for Bake Buddy

1. Performance

- Response Time:

  The system shall respond to user actions within 2 seconds under normal operating conditions.
- Scalability:

  The system shall handle an increasing number of users and transactions without performance degradation. It should support at least 10,000 concurrent users.

2. Reliability

- Availability:

  The system shall have an uptime of 99.9% over a 12-month period, ensuring high availability for users.
- Fault Tolerance:

  The system shall continue to operate in the event of hardware or software failures, with minimal disruption to users.

3. Usability

- User Interface:

  The system shall have a user-friendly interface that is easy to navigate, with clear instructions and minimal learning curve.

- **Other Requirements:**

Hardware and Network Interfaces:

Back-end Server Configuration:

- Intel V Processor
- 8 GB RAM

Front-end Client Configuration:

- AMD RYZEN 5 Processor
- 128 MB SDRAM
- 10 GB Hard Disk Drive
- 104 Keys Keyboard
- PS2 Mouse with pad

Software Interfaces:

Software configuration for back-end Services:

- Java EE 17

- Spring Boot, JPA,Spring Authentication
- MySQL
- STS 3.9.18

Software configuration for front-end Services:

- ReactJS, Redux
- VS Code

Future Scope for the Bakery Management System:

1.Integration with Advanced Analytics and AI

Predictive analysis for sales trends and inventory management.
AI-based recommendations for customers based on their order history and preferences.

2.Mobile Application

Develop dedicated mobile apps for customers and sellers for enhanced accessibility.
Real-time notifications for order updates, low stock alerts, and promotional offers.

3.Multi-Language and Multi-Currency Support

Expand the platform to support multiple languages and currencies for global reach.
Localized UI/UX to cater to different regions.

4.IoT Integration for Smart Bakeries

Automate inventory tracking with IoT-enabled devices for real-time monitoring of stock levels.
Integrate with smart kitchen equipment for production tracking and quality control.

5.Customer Loyalty Program

Implement a loyalty program to reward frequent customers with discounts, cashback, or points.
Personalized offers based on purchase patterns.

6.Advanced Payment Options

Support for new payment methods like cryptocurrency and digital wallets.
Integration with multiple payment gateways for better convenience and security.

3. DIAGRAMS

3.1 Entity Relationship Diagram:

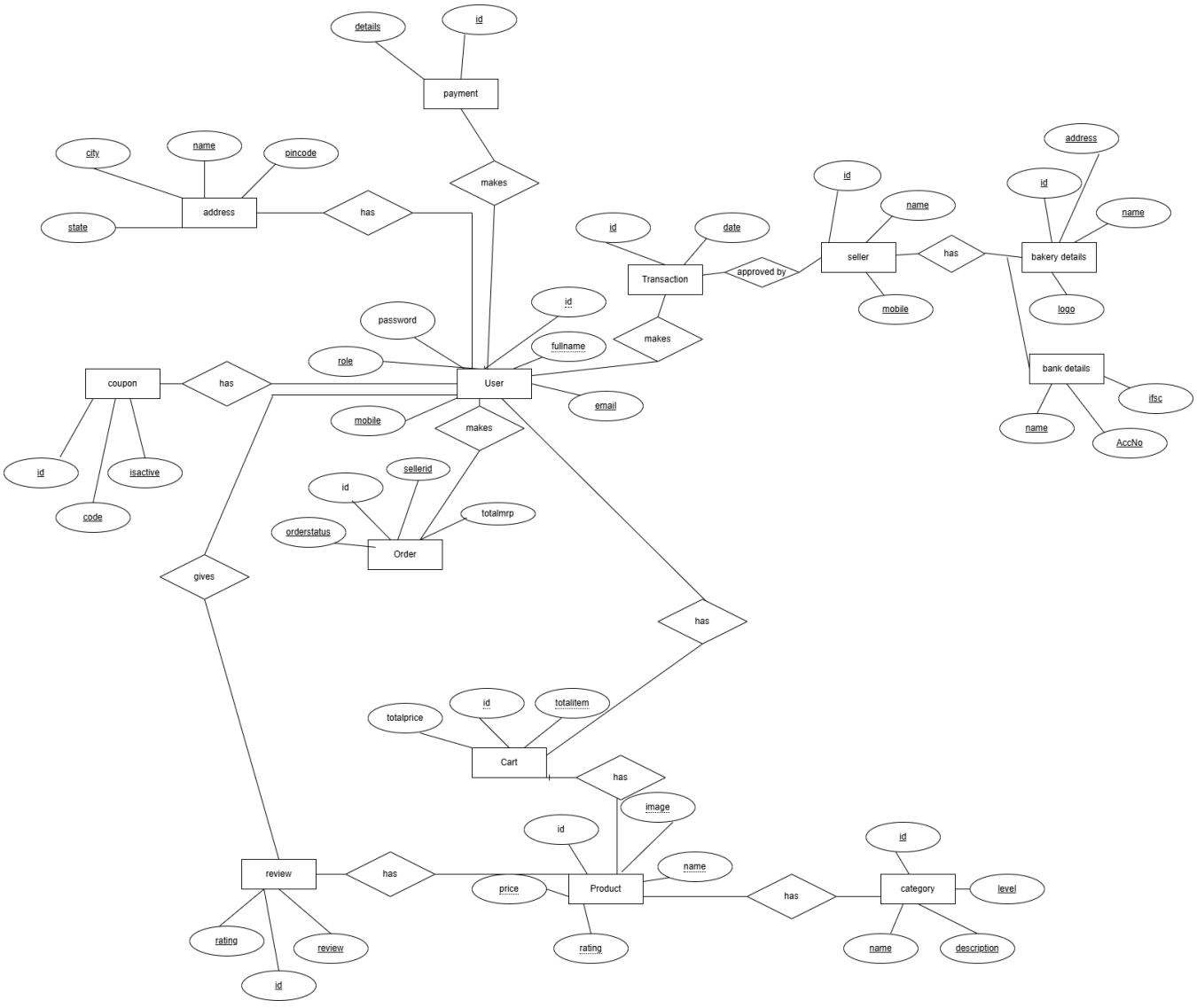


Fig. ER Diagram for Bake Buddy

3.2 Use Case Diagram:

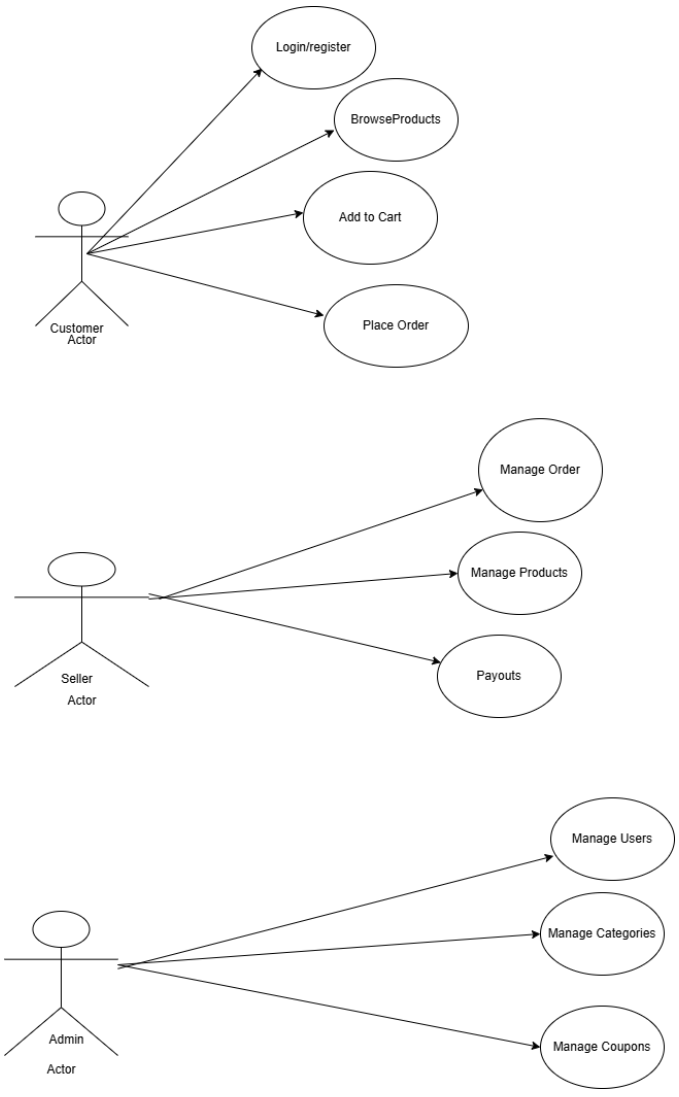
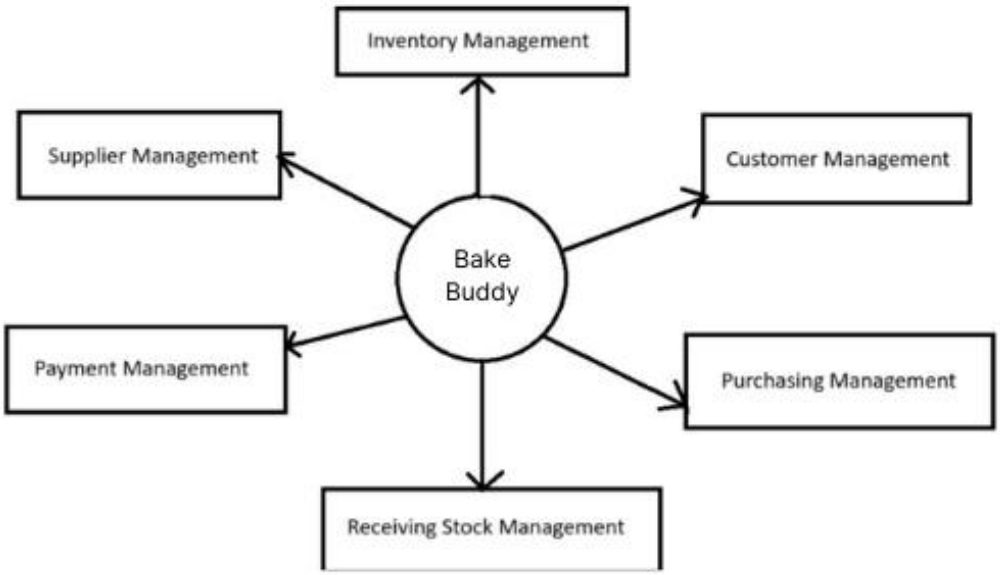


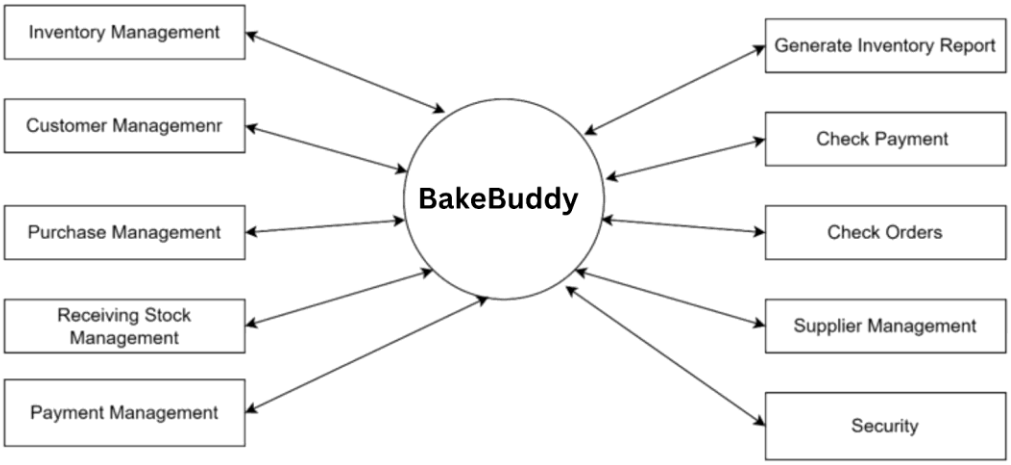
Fig. Use Case Diagram for Bake Buddy

3.3 Data Flow Diagram:

DFD Level 0:

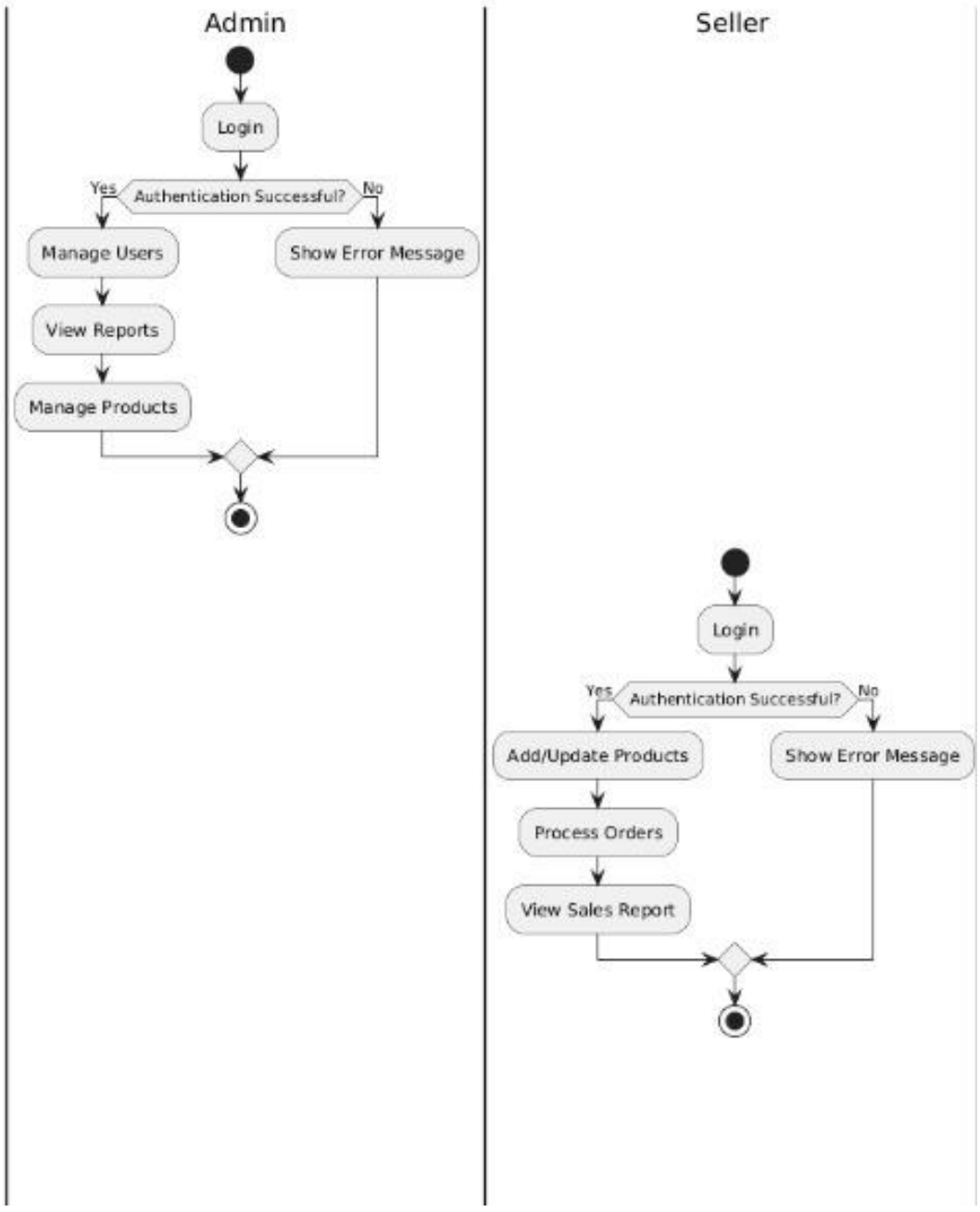


DFD level 1 :

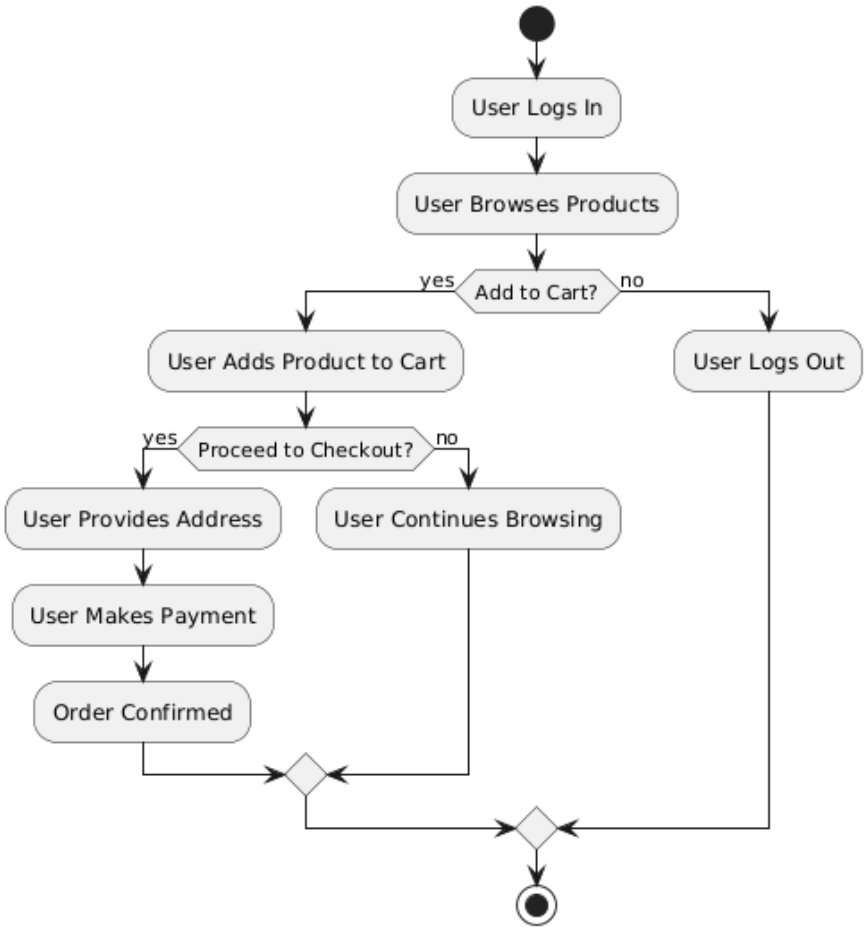


3.4 Activity Diagram :

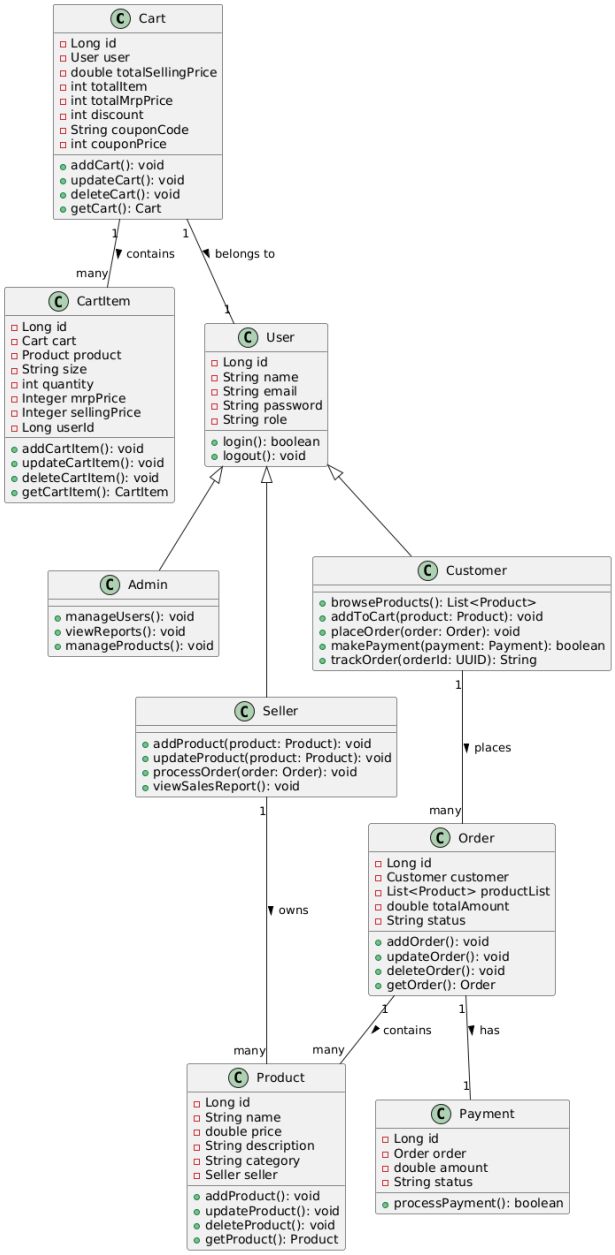
Admin Activity Diagram:



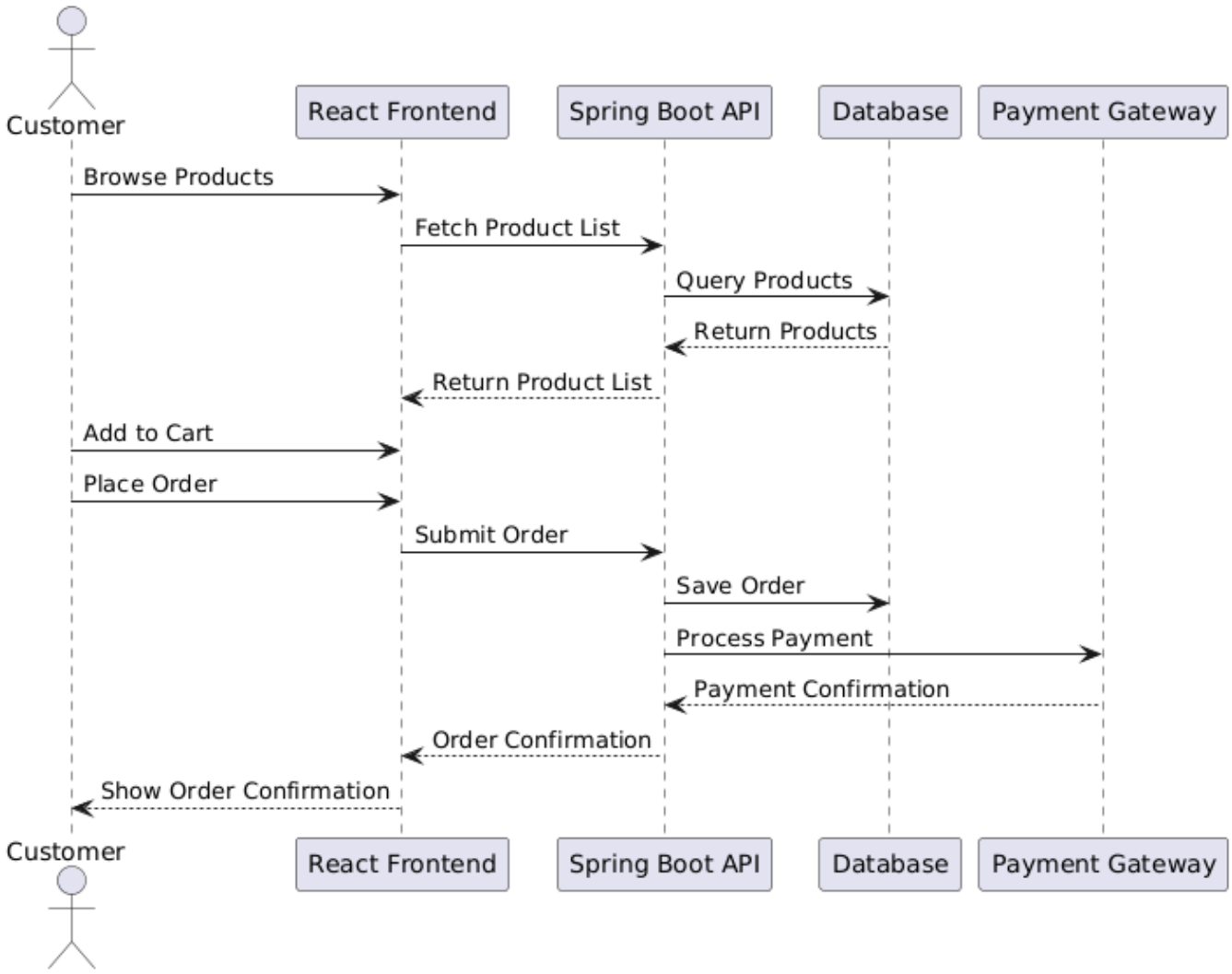
Customer Activity Diagram:



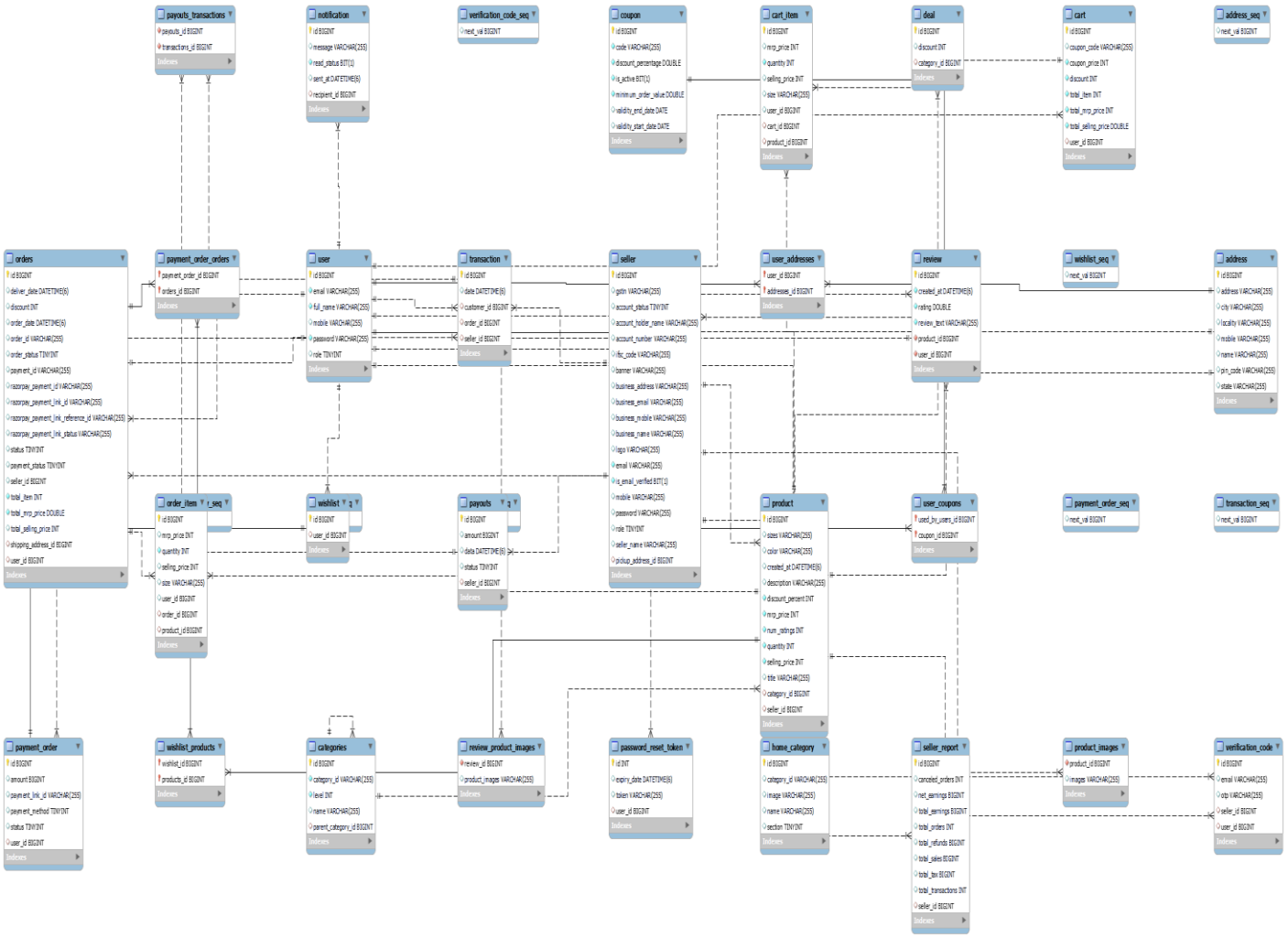
3.5 Class Diagram:



3.6 Sequence Diagram:



4.DATABASE DESIGN



The following table structures depict the database design.

```
mysql> use bake_buddy;
Database changed
mysql> show tables;
+-----------------------+
| Tables_in_bake_buddy  |
+-----------------------+
| address               |
| address_seq           |
| cart                  |
| cart_item             |
| categories            |
| categories_seq        |
| coupon                |
| deal                  |
| deal_seq              |
| home_category         |
| home_category_seq     |
| notification          |
| order_item            |
| orders                |
| password_reset_token  |
| payment_order         |
| payment_order_orders  |
| payment_order_seq     |
| payouts               |
| payouts_transactions  |
| product               |
| product_images        |
| product_seq           |
| review                |
| review_product_images |
| seller                |
| seller_report         |
| transaction           |
| transaction_seq       |
| user                  |
| user_addresses        |
| user_coupons          |
| verification_code     |
| verification_code_seq |
```

```
mysql> desc user;
+-----------+--------------+------+-----+---------+----------------+
| Field     | Type         | Null | Key | Default | Extra          |
+-----------+--------------+------+-----+---------+----------------+
| id        | bigint       | NO   | PRI | NULL    | auto_increment |
| email     | varchar(255) | NO   |     | NULL    |                |
| full_name | varchar(255) | NO   |     | NULL    |                |
| mobile    | varchar(255) | YES  |     | NULL    |                |
| password  | varchar(255) | NO   |     | NULL    |                |
| role      | tinyint      | YES  |     | NULL    |                |
+-----------+--------------+------+-----+---------+----------------+
6 rows in set (0.03 sec)
```

Table 1: user

```
mysql> desc seller;
+---------------------+--------------+------+-----+---------+----------------+
| Field               | Type         | Null | Key | Default | Extra          |
+---------------------+--------------+------+-----+---------+----------------+
| id                  | bigint       | NO   | PRI | NULL    | auto_increment |
| gstin               | varchar(255) | YES  |     | NULL    |                |
| account_status      | tinyint      | YES  |     | NULL    |                |
| account_holder_name | varchar(255) | YES  |     | NULL    |                |
| account_number      | varchar(255) | YES  |     | NULL    |                |
| ifsc_code           | varchar(255) | YES  |     | NULL    |                |
| banner              | varchar(255) | YES  |     | NULL    |                |
| business_address    | varchar(255) | YES  |     | NULL    |                |
| business_email      | varchar(255) | YES  |     | NULL    |                |
| business_mobile     | varchar(255) | YES  |     | NULL    |                |
| business_name       | varchar(255) | YES  |     | NULL    |                |
| logo                | varchar(255) | YES  |     | NULL    |                |
| email               | varchar(255) | NO   | UNI | NULL    |                |
| is_email_verified   | bit(1)       | NO   |     | NULL    |                |
| mobile              | varchar(255) | YES  |     | NULL    |                |
| password            | varchar(255) | YES  |     | NULL    |                |
| role                | tinyint      | YES  |     | NULL    |                |
| seller_name         | varchar(255) | YES  |     | NULL    |                |
| pickup_address_id   | bigint       | YES  | UNI | NULL    |                |
+---------------------+--------------+------+-----+---------+----------------+
19 rows in set (0.01 sec)
```

Table 2: seller

```
mysql> desc cart;
+--------------------+-------------+------+-----+---------+----------------+
| Field              | Type        | Null | Key | Default | Extra          |
+--------------------+-------------+------+-----+---------+----------------+
| id                 | bigint      | NO   | PRI | NULL    | auto_increment |
| coupon_code        | varchar(255)| YES  |     | NULL    |                |
| coupon_price       | int         | NO   |     | NULL    |                |
| discount           | int         | NO   |     | NULL    |                |
| total_item         | int         | NO   |     | NULL    |                |
| total_mrp_price    | int         | NO   |     | NULL    |                |
| total_selling_price| double      | NO   |     | NULL    |                |
| user_id            | bigint      | YES  | UNI | NULL    |                |
+--------------------+-------------+------+-----+---------+----------------+
8 rows in set (0.01 sec)
```

Table 3: cart

```
mysql> desc transaction;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| id          | bigint      | NO   | PRI | NULL    |       |
| date        | datetime(6) | YES  |     | NULL    |       |
| customer_id | bigint      | YES  | MUL | NULL    |       |
| order_id    | bigint      | YES  | UNI | NULL    |       |
| seller_id   | bigint      | YES  | MUL | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

Table 4: transaction

```
mysql> desc categories;
+--------------------+--------------+------+-----+---------+-------+
| Field              | Type         | Null | Key | Default | Extra |
+--------------------+--------------+------+-----+---------+-------+
| id                 | bigint       | NO   | PRI | NULL    |       |
| category_id        | varchar(255) | NO   | UNI | NULL    |       |
| level              | int          | NO   |     | NULL    |       |
| name               | varchar(255) | YES  |     | NULL    |       |
| parent_category_id | bigint       | YES  | MUL | NULL    |       |
+--------------------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

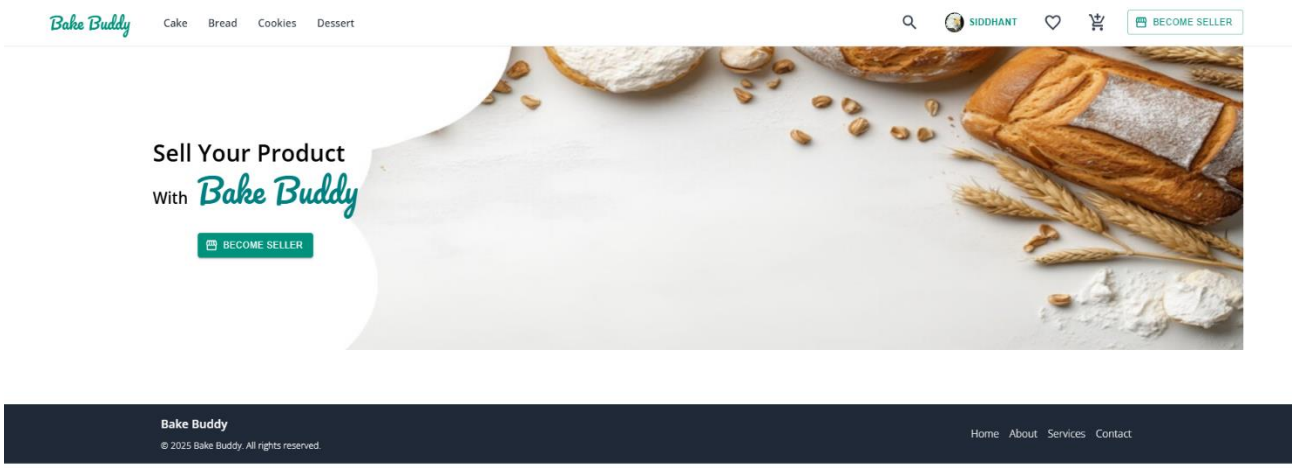
Table 5: categories

```
mysql> desc product;
+------------------+--------------+------+-----+---------+-------+
| Field            | Type         | Null | Key | Default | Extra |
+------------------+--------------+------+-----+---------+-------+
| id               | bigint       | NO   | PRI | NULL    |       |
| sizes            | varchar(255) | YES  |     | NULL    |       |
| color            | varchar(255) | YES  |     | NULL    |       |
| created_at       | datetime(6)  | YES  |     | NULL    |       |
| description      | varchar(255) | YES  |     | NULL    |       |
| discount_percent | int          | NO   |     | NULL    |       |
| mrp_price        | int          | NO   |     | NULL    |       |
| num_ratings      | int          | NO   |     | NULL    |       |
| quantity         | int          | NO   |     | NULL    |       |
| selling_price    | int          | NO   |     | NULL    |       |
| title            | varchar(255) | YES  |     | NULL    |       |
| category_id      | bigint       | YES  | MUL | NULL    |       |
| seller_id        | bigint       | YES  | MUL | NULL    |       |
+------------------+--------------+------+-----+---------+-------+
13 rows in set (0.01 sec)
```

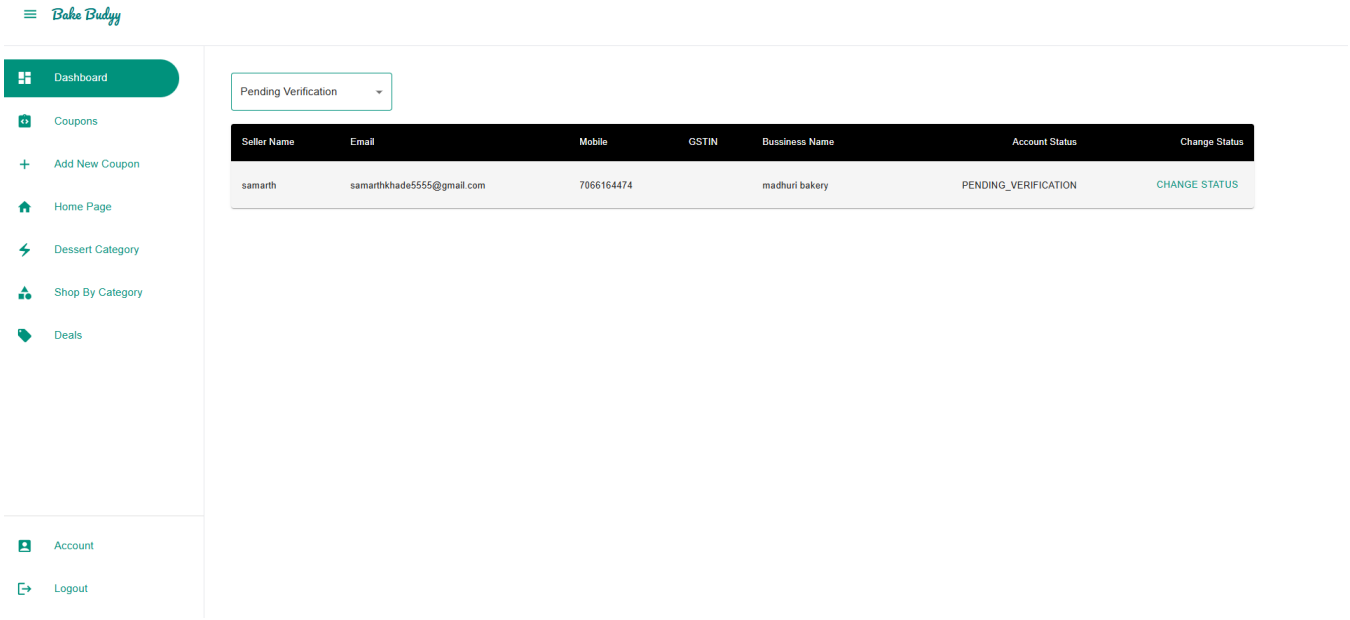
Table 6: product

5.SNAPSHOTS

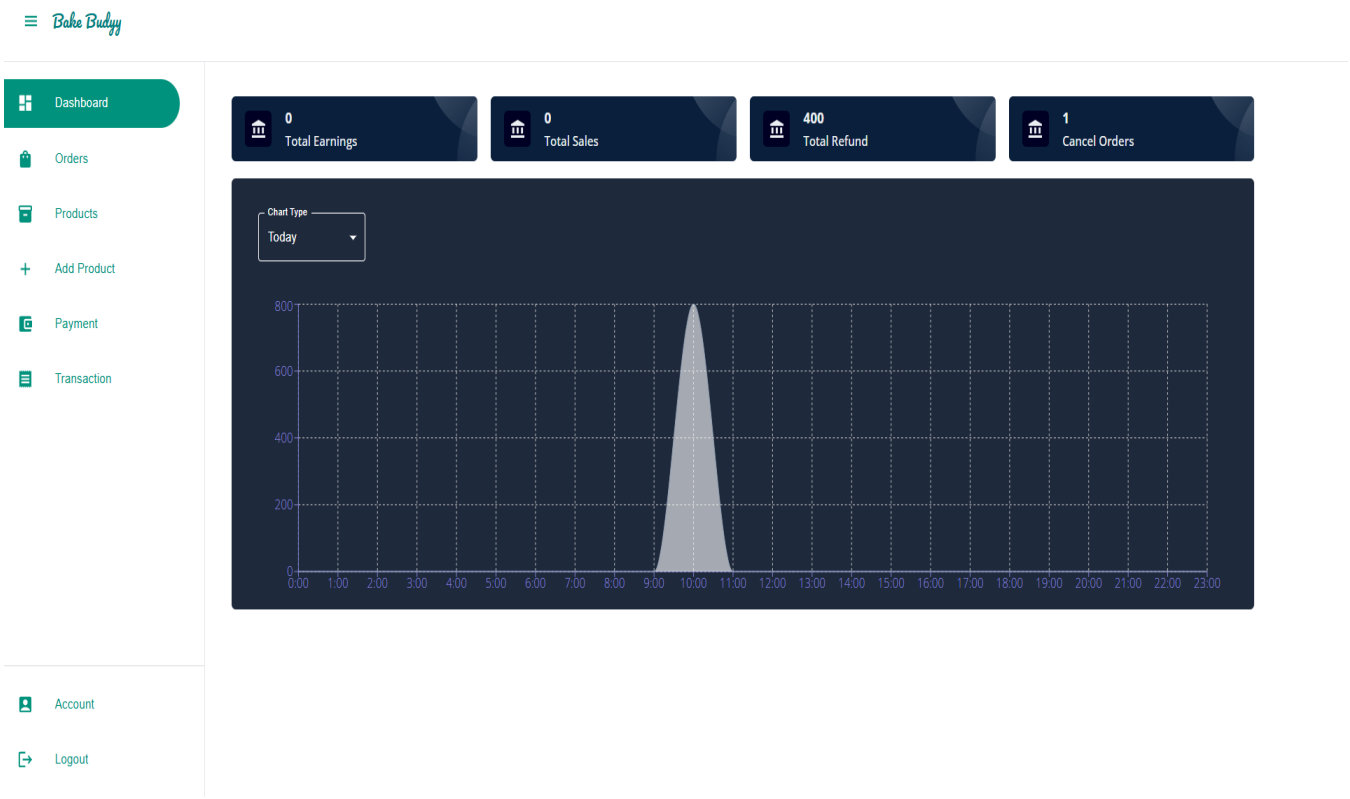
Home Page:



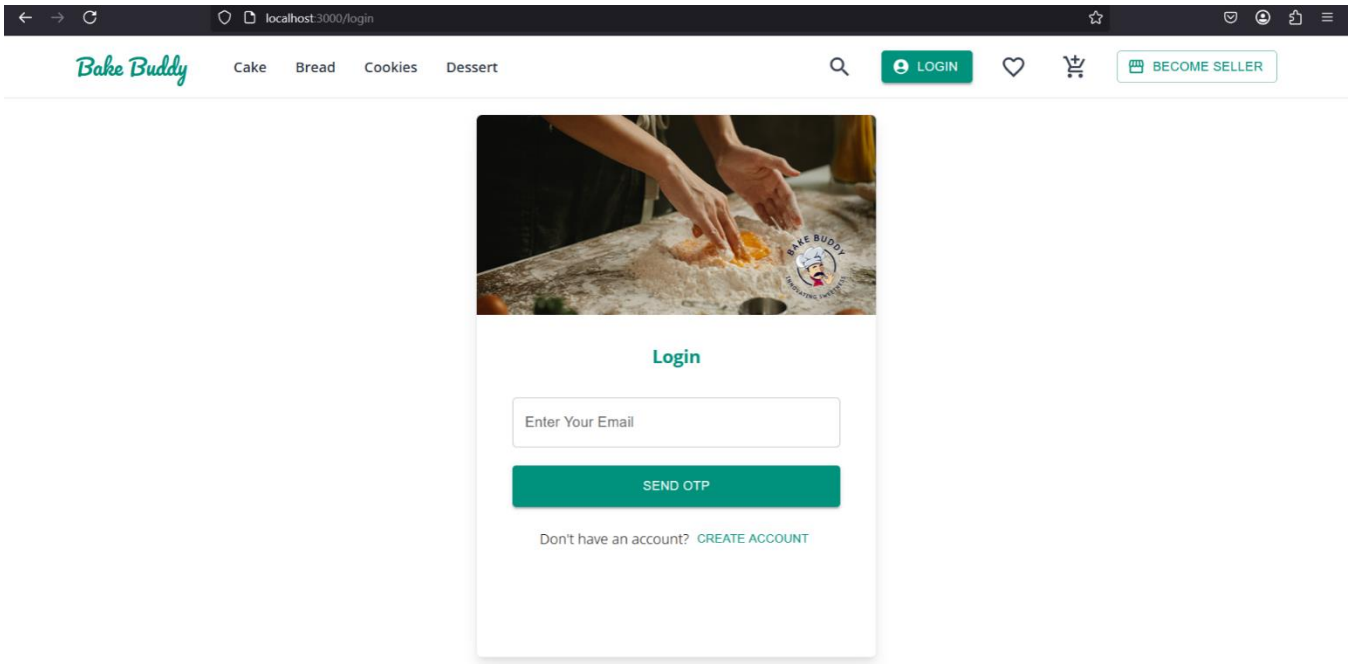
Admin Dashboard:



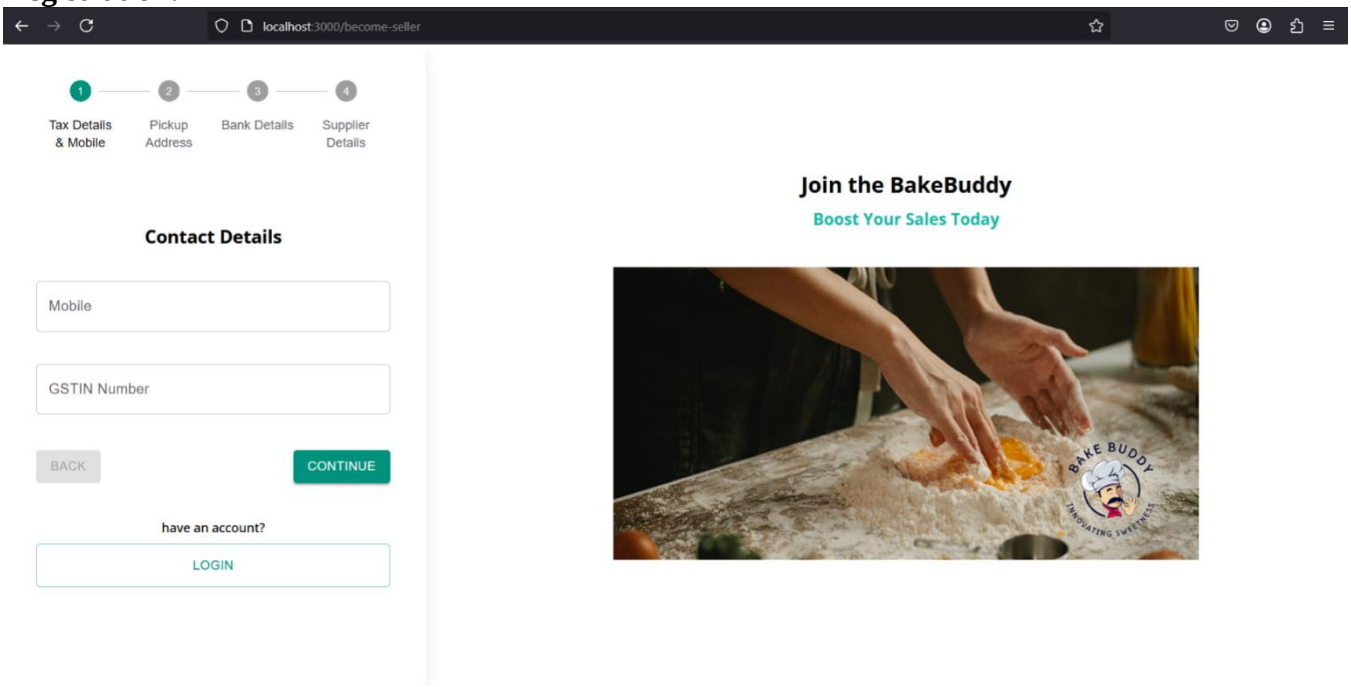
Seller Dashboard:



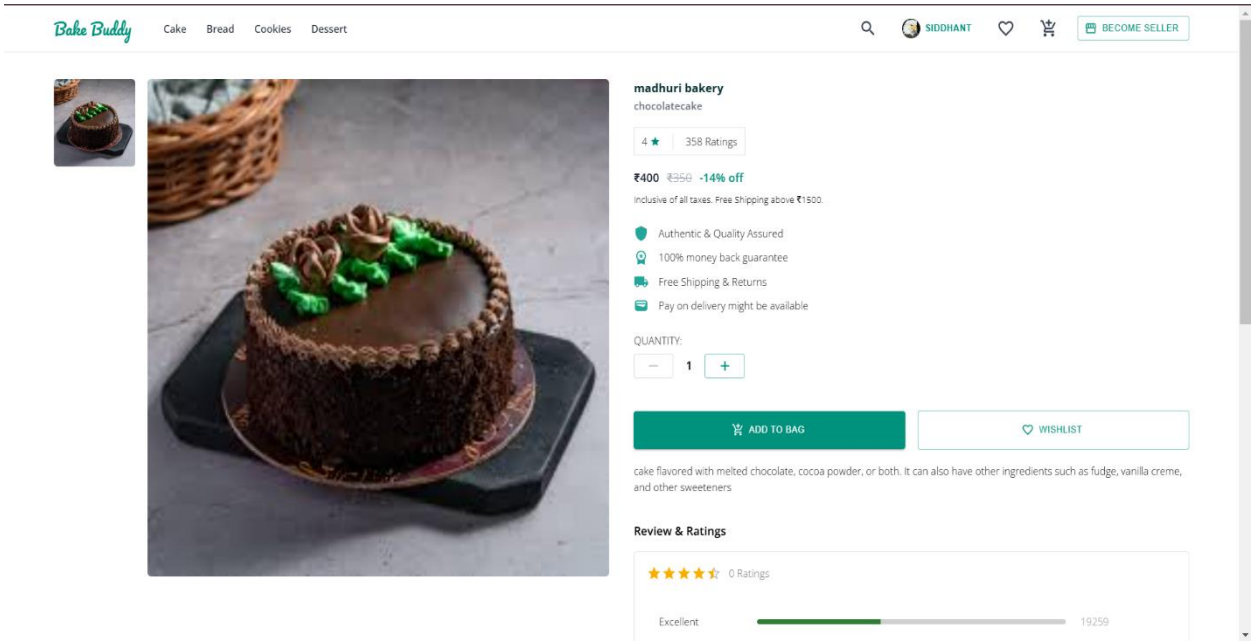
Login:



Registration:



Products Details:



6.CONCLUSION

BakeBuddy simplifies bakery management with an efficient and secure platform. By integrating inventory control, order tracking, and secure payments, it ensures seamless business operations. The system's robust architecture supports scalability, security, and ease of use, making it a valuable tool for modern bakery businesses.

Its blend of modern technologies, robust security, and user-centric design positions it as a valuable tool for businesses seeking to enhance their e-commerce capabilities. The project's architecture and features provide a strong foundation for ongoing development, making it adaptable to future technological advancements and market trends.

7.REFERENCES

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