Pokhara University Affiliate

LA GRANDEE INTERNATIONAL COLLEGE

Simalchaur-6, Pokhara

Midterm Report

on

Food Aggregator Application

Submitted to

LA GRANDEE International College

Bachelor of Computer Application (BCA) Program

In partial fulfilment of the requirements for the degree of BCA affiliate to

Pokhara University

Submitted By:

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Date:18/06/2023

ABSTRACT

This project aims to develop a user-friendly web and mobile application that serves as a centralized platform for ordering food from multiple restaurants and vendors. The application will offer features such as restaurant search, menu browsing, secure transactions, and food ordering. Through an intuitive interface, customers can easily select their desired items and place orders effortlessly.

The application will allow vendors to manage their profiles, update menus, and efficiently handle order fulfillment. Integration with popular payment gateways will ensure secure transactions.

The project will utilize modern web and mobile development technologies like React and React Native for frontend web and mobile development and NodeJS and PostgreSQL for backend and database to ensure scalability and performance. Rigorous testing will be conducted to ensure reliability, usability, and security. User reviews and feedback will be actively gathered to continuously improve the platform and enhance customer satisfaction.

The successful completion of this project will provide a convenient solution for food enthusiasts, offering a diverse range of culinary options, streamlined ordering processes, and efficient delivery services. It will also enable restaurants and vendors to expand their customer base and optimize their operations.

Keywords: web application, mobile application, food ordering, delivery platform, user-friendly interface, restaurant search, secure transactions, testing, customer satisfaction.

Declaration for

"Food Aggregator Application"

Student's Declaration

We hereby declare that we are the only authors of this work and that no sources other than the listed here have been used in this work.

_____

Shiva Kumar Gurung

Class Roll No:

Program, Semester

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Nabin Poudel

Class Roll No:

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Uddhav Baral

Class Roll No:

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Date:____ / ____ / _____

Supervisor's Declaration

I hereby recommend that this project entitled "**Food Aggregator Application**" is done under my supervision by **Shiva Kumar Gurung, Nabin Poudel and Uddhav Baral** during their 8th Semester in partial fulfillment of the requirements for the degree of **Bachelors in Computer Application** under **Pokhara University** is completed to my satisfaction and be processed for final evaluation.

_____

Name of the Supervisor

Date:____ / ____ / _____

Letter of Approval

We certify that we have examined this report entitled "**Food Aggregator Application**", and are satisfied with the project proposal. In our opinion it is satisfactory in the scope and qualify as project in partial fulfillment of the requirements for the degree of **Program Name** under **Pokhara University.**

_____   _____   _____

__Sunil Sapkota   _____   Ramesh Chalise

Supervisor   **Examiner**   **Program Coordinator**

Date:____ / ____

/_____

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1. Introduction

The food industry has experienced a remarkable shift in recent years as more and more consumers embrace the convenience of online food ordering and delivery services. This changing consumer behavior has created a demand for platforms that connect customers with multiple restaurants and vendors in an efficient and user-friendly manner. In response to this market need, this project aims to develop a comprehensive web and mobile application that serves as a centralized platform for multi-restaurant food ordering and delivery.

The primary objective of this project is to create a user-friendly and intuitive platform that simplifies the process of ordering food from a wide range of restaurants and vendors. Leveraging modern web and mobile technologies, including React for web frontend development and React Native for mobile frontend development, our goal is to provide customers with a seamless and enjoyable ordering experience across various devices.

The backend infrastructure of the platform will be built using Node.js, a highly scalable and efficient server-side framework. By utilizing Node.js, we can effectively handle complex tasks such as order management, user authentication, vendor profile management, and seamless integration with secure payment gateways. Additionally, we will employ PostgreSQL, a robust and reliable database management system, to securely store essential information related to users, menus, orders, and transactions.

The platform will offer a range of features designed to enhance the overall user experience. Customers will be able to explore restaurants based on location, cuisine, ratings, and reviews. Once a restaurant is selected, customers can easily view menus, customize their orders, and securely complete transactions. Real-time order tracking will provide transparency and convenience, allowing users to monitor the progress of their orders and estimated delivery times.

By developing a platform that optimizes the food ordering and delivery process, this project aims to benefit both customers and restaurants/vendors alike. Customers will gain access to a diverse array of food options, a convenient ordering experience, and efficient delivery services. Meanwhile, restaurants and vendors will have the opportunity to expand their customer base, optimize their operations, and improve overall efficiency.

Throughout the development process, we will employ rigorous testing methodologies to ensure the reliability, security, and usability of the platform. Regular feedback from users and vendors will be gathered and incorporated into iterative improvements, enabling us to continuously enhance the platform's performance and adapt to the evolving needs of our users.

In conclusion, this project proposes the development of a comprehensive web and mobile application for a multi-restaurant food ordering and delivery platform. By leveraging technologies such as React, React Native, Node.js, and PostgreSQL, our aim is to create a user-friendly and efficient solution that connects customers with a diverse range of restaurants and vendors. Successful implementation of this project will contribute to the growth of the online food industry, provide convenience to customers, and empower restaurants and vendors to expand their reach and optimize their operations.

2. Problem Statement

The food industry has witnessed a rapid increase in the demand for online food ordering and delivery services. However, the existing platforms in the market often lack a seamless and user-friendly experience, making the process of ordering food from multiple restaurants and vendors cumbersome and time-consuming. Customers face challenges such as navigating through numerous individual websites or apps, dealing with inconsistent user interfaces, and encountering limited payment options. Furthermore, restaurants and vendors struggle to efficiently manage orders, track deliveries, and expand their customer base due to fragmented systems and lack of integration.

These challenges highlight the need for a comprehensive multi-restaurant food ordering and delivery platform that streamlines the entire process. The platform should offer a user-friendly interface that allows customers to effortlessly explore a wide range of dining options, place orders, and track deliveries in real-time. Restaurants and vendors require a centralized solution that simplifies order management, streamlines operations, and provides effective communication channels with customers and delivery personnel.

The lack of an efficient and user-centric platform not only hinders the growth of the online food industry but also creates frustration and inconvenience for both customers and restaurants/vendors. Addressing these issues requires the development of a robust web and mobile application that seamlessly connects customers with multiple restaurants and vendors, optimizing the ordering and delivery experience for all parties involved.

Therefore, the primary problem this project aims to solve is the absence of a comprehensive and user-friendly platform that streamlines the process of ordering food from multiple restaurants and vendors, providing a convenient and efficient experience for customers while enabling restaurants and vendors to enhance their operations and customer reach.

3. Objectives

The objectives of this project are as follows:

- Develop a user-friendly web and mobile application for multi-restaurant food ordering and delivery.
- Optimize the user experience through intuitive interfaces and seamless navigation.
- Implement efficient order management and vendor support systems.
- Offer a wide selection of quality restaurants and vendors.

4. Background Study

The food industry has undergone a significant transformation in recent years with the emergence of food aggregator platforms. These platforms revolutionize the way people order food by providing a convenient and seamless experience for customers, along with a broader selection of restaurants and cuisines. Notably, in Nepal, platforms such as Foodmandu, Bhoj, Hungry Panda, Foodmario, and Tootle Food have gained popularity in connecting customers with a variety of restaurants and vendors.

Similarly, on an international level, popular food aggregator websites include Uber Eats, DoorDash, Grubhub, Just Eat, and Zomato. These platforms have achieved global recognition by offering users the ability to explore numerous restaurants, place orders, and track deliveries through their respective websites (Kapoor & Dwivedi, 2021; Uber Technologies, Inc., 2021; DoorDash, Inc., 2021; Just Eat Takeaway.com, 2021; Grubhub Holdings Inc., 2021; Zomato Media Pvt Ltd., 2021).

Despite the success of these platforms, challenges and limitations exist within the industry. These include limited restaurant selection in certain geographic areas, delivery delays, inaccurate order fulfillment, poor customer support, and lack of transparent pricing structures, which have been reported by users (Cao et al., 2020; Ma et al., 2020). Addressing these challenges is essential to enhance the overall user experience and ensure customer satisfaction.

To overcome these limitations and provide an improved food aggregator platform, the proposed project aims to develop a comprehensive web and mobile application. This platform will utilize React for frontend web development, React Native for mobile frontend, and Node.js with PostgreSQL for backend and database management.

The objective of this project is to create a user-friendly and efficient platform that addresses the limitations of existing food aggregator platforms. By partnering with a diverse range of restaurants and vendors, the platform will offer a wide selection of dining options to customers. Key features such as real-time order tracking, efficient delivery management, and transparent pricing structures will be integrated to provide a seamless and satisfactory user experience.

Through this project, customers in Nepal will have access to an expanded range of restaurants, reliable delivery services, and transparent pricing. Additionally, restaurants

and vendors will benefit from increased visibility and improved order management systems, leading to enhanced business opportunities.

By conducting a comprehensive background study of existing food aggregator platforms, their limitations, and customer expectations, this project aims to develop a robust and user-friendly food ordering and delivery platform that meets the evolving needs of customers in Nepal and aligns with international industry standards.

5. Methodology

In this project, we will adopt the Agile methodology for the development of our food aggregator web application and mobile application. Agile is a flexible and iterative approach to software development that promotes adaptive planning, evolutionary development, early delivery, and continuous improvement. It enables us to respond to changes, gather feedback, and deliver high-quality software in a collaborative and efficient manner.

The Agile methodology aligns well with the dynamic nature of our project, allowing us to address evolving requirements and incorporate user feedback throughout the development process. By breaking down the project into smaller, manageable iterations called sprints, we can focus on delivering working increments of the product at regular intervals.

Key Features of Agile Methodology that makes it useful are:

i. Iterative Development:

The iterative development approach of Agile is well-suited for our project as it allows us to break down the development process into smaller iterations called sprints. Each sprint focuses on delivering a working increment of the product. This enables us to continuously refine and improve our web and mobile applications based on user feedback and changing requirements. By regularly releasing functional components, we can gather valuable insights, make adjustments, and ensure that the final product aligns with the expectations of both stakeholders and end-users.

ii. Collaboration and Communication:

Agile methodology promotes frequent collaboration and communication among team members, stakeholders, and end-users. This aspect is crucial for our food aggregator project, where multiple stakeholders are involved, such as restaurant owners, delivery personnel, and customers. By having regular meetings, such as daily stand-ups and sprint reviews, we can ensure effective communication, transparency, and alignment of goals. Collaborative decision-making and

continuous feedback from stakeholders and end-users throughout the development process will help us build a product that meets their needs and expectations.

iii. Flexibility and Adaptability:

The flexible nature of Agile allows us to respond to changes and priorities effectively. In the food aggregator industry, market trends and user preferences can evolve rapidly. By embracing Agile, we can easily adapt to new insights or requirements that emerge during the project. The backlog refinement and iteration planning processes enable us to incorporate these changes into our development roadmap. This flexibility ensures that our web and mobile applications stay relevant and competitive in the dynamic food delivery market.

iv. Testing and Quality Assurance:

Quality is crucial for our food aggregator application, as users expect reliable and seamless experiences. Agile methodology emphasizes the importance of quality throughout the development process. By conducting regular testing, including unit testing, integration testing, and user acceptance testing, we can ensure that our applications function as intended and meet the specified requirements. This iterative testing approach helps us identify and address issues early, resulting in a higher-quality end product. Continuous quality assurance practices enable us to provide a robust and user-friendly experience to our customers.

v. Continuous Improvement:

Agile methodology promotes a culture of continuous improvement. After each sprint, we will conduct retrospective meetings to reflect on the progress made, gather feedback from the team and stakeholders, and identify areas for improvement. This allows us to optimize our development process, address any challenges or bottlenecks, and enhance collaboration and productivity. The continuous improvement aspect of Agile ensures that our project team becomes more efficient over time, resulting in better outcomes and increased customer satisfaction.

By leveraging the features of the Agile methodology, we can effectively manage the complexities of our food aggregator project, respond to changing requirements, deliver high-quality software, and achieve success in the competitive food delivery market.

figure 1: Agile Methodology

6. Requirement Analysis

Functional Requirements:

• User Registration and Authentication: The system should allow users to create accounts and authenticate themselves to access the food delivery service.

• Menu Browsing and Selection: Users should be able to browse through available menus, view food items, and select the desired items for delivery.

• Order Placement: Users should be able to place an order by selecting the desired food items, specifying delivery details, and confirming the order.

• Order Tracking: Users should be able to track the status of their orders, including real-time updates on the preparation, packaging, and delivery process.

• Payment Processing: The system should facilitate secure payment options, allowing users to pay online or choose cash on delivery.

• Restaurant Management: The system should provide a user-friendly interface for restaurants to manage their menus, update item availability, and track incoming orders.

• Delivery Management: The system should have features to assign delivery personnel, track their locations, and optimize routes for efficient deliveries.

• Ratings and Reviews: Users should have the ability to rate and review restaurants and delivery services, providing feedback to help improve the overall system.

Non-Functional Requirements:

• Performance: The system should be able to handle a large number of concurrent users, ensuring fast response times and minimal downtime.

• Security: The system should have robust security measures to protect user data, ensure secure payment transactions, and prevent unauthorized access.

- Usability: The user interface should be intuitive and easy to navigate, ensuring a seamless and enjoyable user experience for both customers and restaurant owners.

- Reliability: The system should be reliable and available at all times, minimizing service disruptions and ensuring timely delivery of orders.

- Scalability: The system should be designed to handle increasing user demands and accommodate the addition of new restaurants and delivery personnel.

- Compatibility: The system should be compatible with various devices and platforms, including web browsers, mobile apps, and different operating systems.

- Localization: The system should support multiple languages and currencies, catering to users in different regions or countries.

- Integration: The system should be able to integrate with other systems or services, such as payment gateways, customer support tools, or third-party delivery services, to enhance functionality and provide a seamless experience.
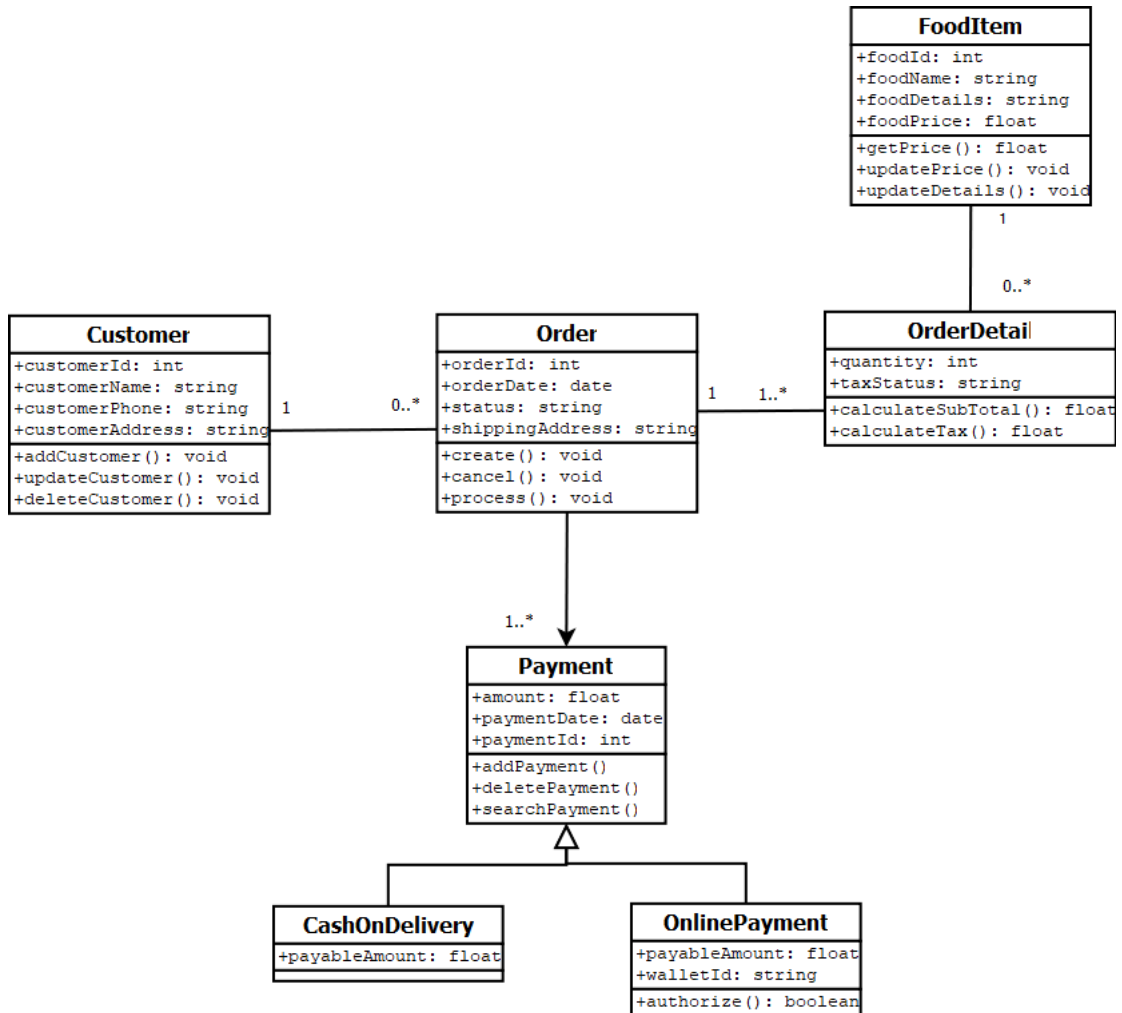
7. System Analysis and Design

7.1. UML Class Diagram
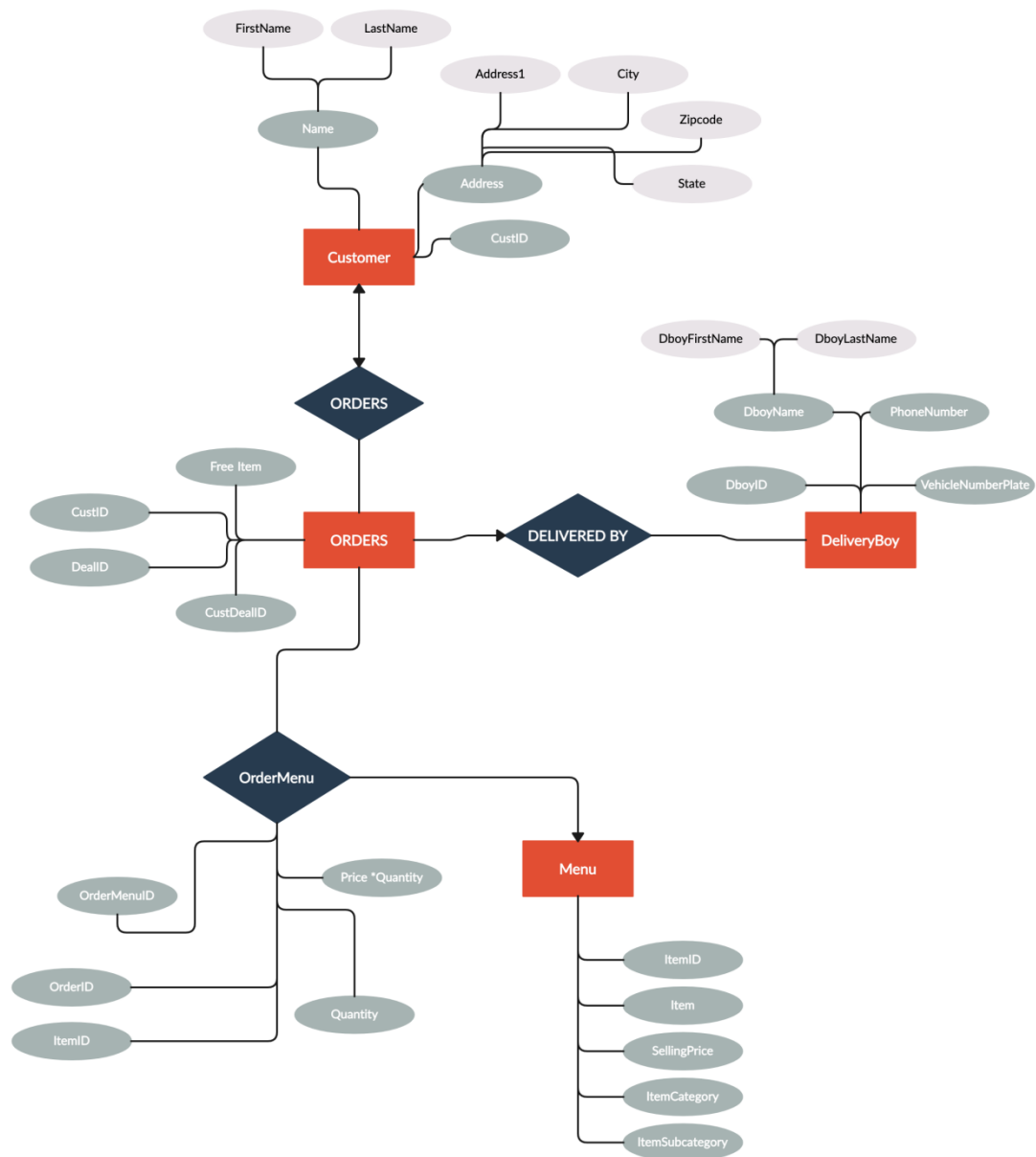

figure 2: UML Class Diagram

7.2. E-R DIAGRAM

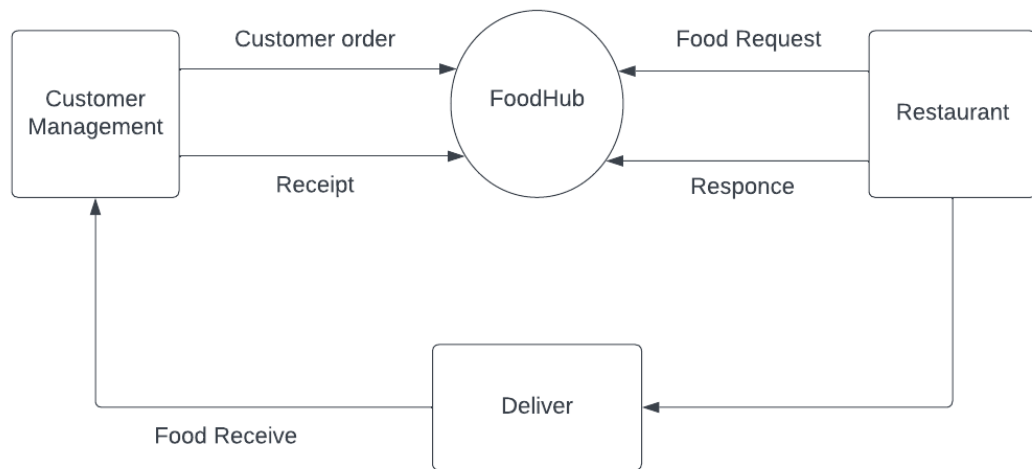**figure 3: E-R Diagram**

7.3. DFD

i. Zero Level DFD

figure 4: Zero Level DFD
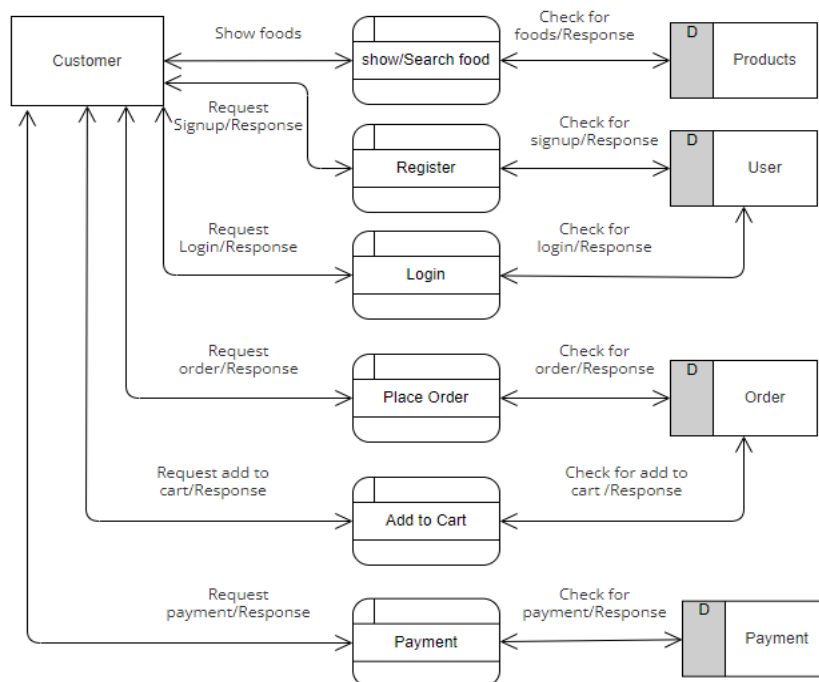
ii. First Level DFD

figure 5: First Level DFD
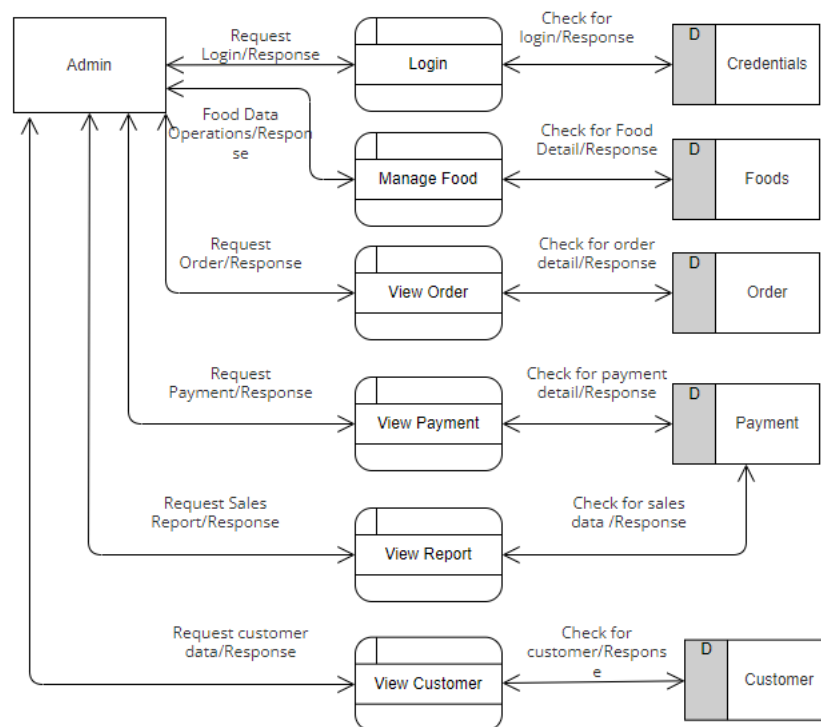
iii. Second Level DFD

figure 6: Second Level DFD
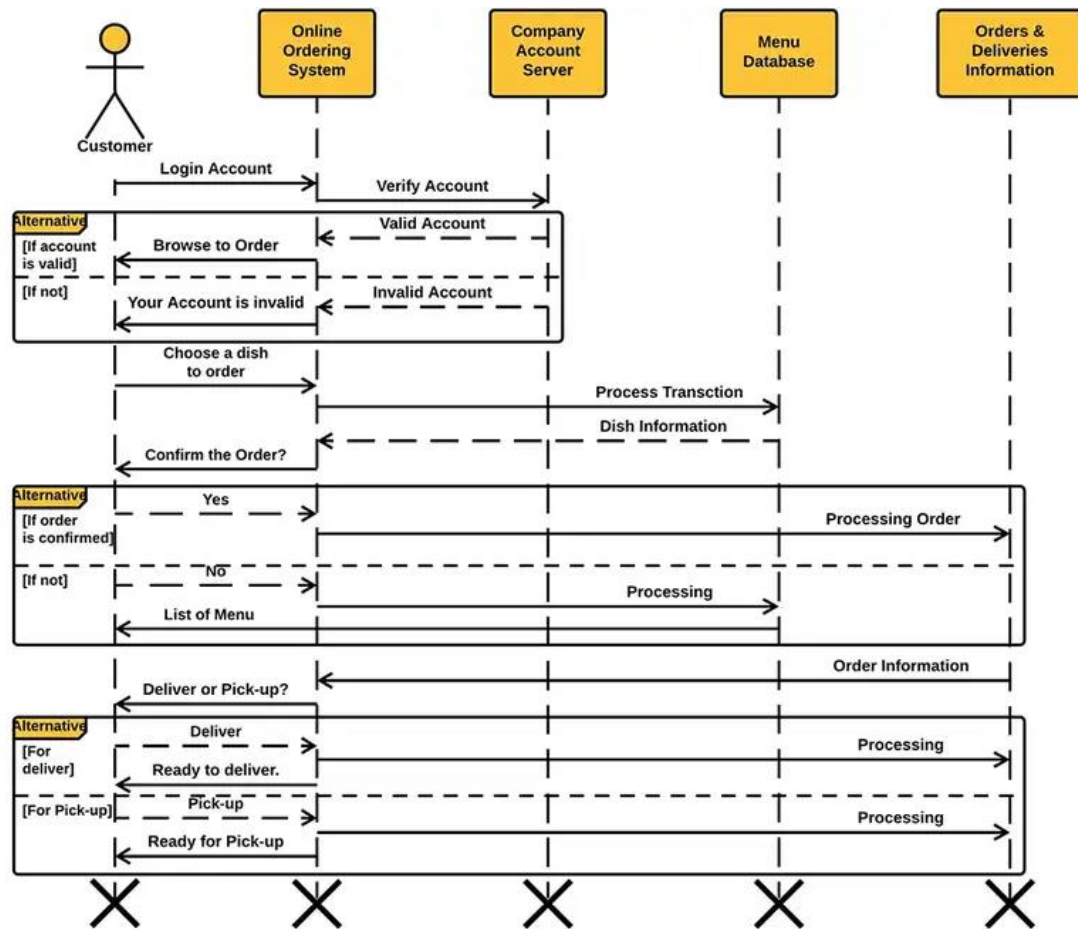
7.4. Activity Diagram

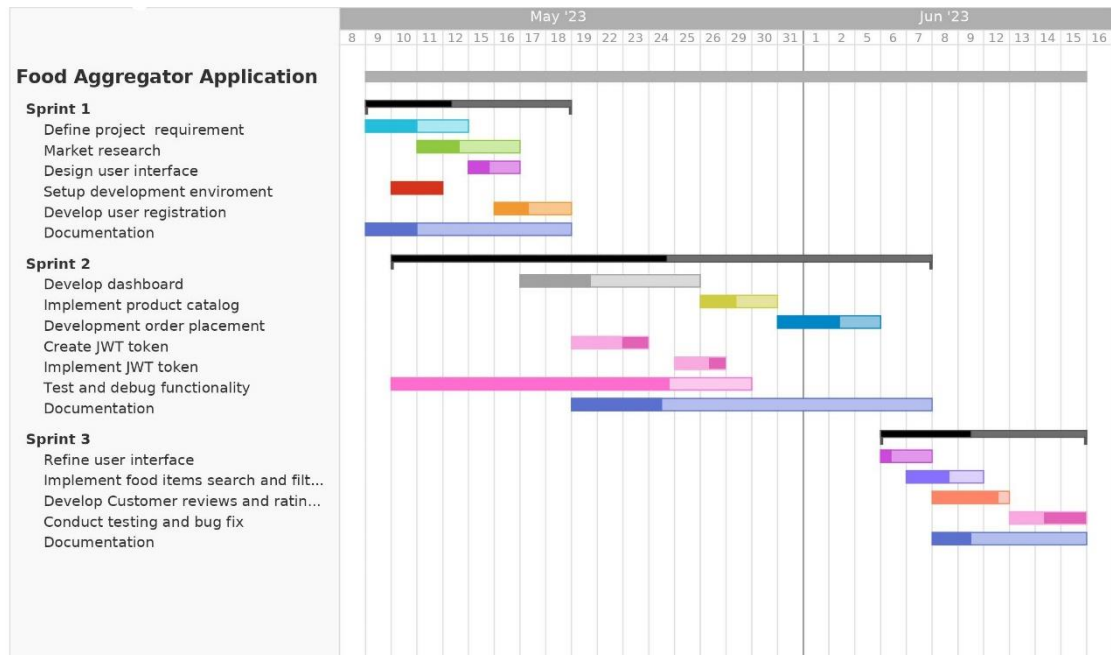figure 7: Activity Diagram

8. Gantt Chart

figure 8: Gantt Chart

9. Completed Tasks

i. WEB APPLICATION

- Sign up and Login page,

- JWT authentication of Login and Sign up.

- Landing page

- Selection of food

- Add to Cart

- Billing

- Admin Dashboard layout and routing.

- CRUD operation of food

ii. MOBILE APPLICATION

- Implemented the Sign up and Login screens.
- Home screen with grid of food items

iii. Admin Dashboard

- Signup, Login pages
- Side Navbar
- Page components and routing

10. Incomplete Task

- Integration of backend with frontend using APIs for mobile, web and dashboard
- Integration of payment gateway
- Food Ordering via Mobile App
- Vendor and Customer operations on dashboard

11. Deliverables

The deliverables of Food Aggregator Application are:

i. Web Application Deliverables:

- User-friendly and responsive web application interface.
- Registration and login functionality for users, including customers, restaurants, and delivery personnel.
- Search and browse functionality for users to find restaurants and food items.
- Ordering and payment system, allowing users to place and pay for food orders.
- User profile management, including order history and preferences.
- Integration with external APIs for features like maps and location services.
- Admin dashboard for managing restaurants, and user accounts.

ii. Mobile Application Deliverables:

- Cross-platform mobile application compatible with iOS and Android devices.
- User-friendly interface and intuitive navigation.
- Registration and login functionality for users.
- Restaurant and food item search and browsing features.
- Order placement and payment functionality.
- Push notifications for order updates and promotions.
- Integration with external APIs for location services and payment gateways.
- User profile management and order history.

iii. Backend Deliverables:

- Backend infrastructure using Node.js and Express for handling requests and business logic.
- APIs for communication between the web and mobile applications and the database.
- Database design and implementation using PostgreSQL for storing user data, restaurant details, and orders.
- Integration with third-party APIs for services like payment processing and geolocation.
- Security measures, such as encryption and authentication, to protect user data.

- Documentation for API endpoints, database structure, and deployment instructions.

iv. Project Documentation:

- Project proposal outlining the goals, scope, and objectives of the project.
- Requirements specification document detailing the functional and non-functional requirements.
- Project plan and timeline, including milestones and tasks.
- Test plans and test cases for validating the functionality of the applications.
- User documentation providing instructions on how to use the web and mobile applications.
- Project summary report highlighting the achieved goals, challenges faced, and lessons learned.

12.   Conclusion

In conclusion, the development and implementation of the FoodHub food app have proven to be a highly valuable and successful project. FoodHub has revolutionized the way people interact with food by providing a convenient and efficient platform for ordering and delivering meals.

Throughout the project, we focused on creating a user-friendly and intuitive app that offers a wide variety of restaurant options, customization menus, and seamless ordering and payment processes. We integrated advanced features such as real-time order tracking, customer reviews, and recommendations based on user preferences, which have greatly enhanced the overall user experience.

FoodHub has not only benefited consumers but has also significantly impacted the food industry. By partnering with numerous restaurants and food establishments, FoodHub has helped small businesses thrive by expanding their customer base and increasing their visibility. The app has streamlined their operations, reducing the need for excessive manpower and improving order accuracy.

Furthermore, FoodHub has played a significant role in reducing food waste. Through the implementation of smart algorithms, the app predicts demand patterns, helping restaurants optimize their food preparation and reducing excess inventory. This sustainable approach has led to a reduction in food waste and has had a positive environmental impact.

The success of FoodHub can be attributed to the collective efforts of the development team, the collaboration with restaurant partners, and the support and feedback from our user community. We continuously strive to improve the app, incorporating new features and enhancements to meet the evolving needs and preferences of our users.

In summary, FoodHub has successfully transformed the way people access and enjoy food. Its user-friendly interface, wide range of restaurant choices, efficient order management, and positive impact on the food industry and environment make it a leading food app in the market. We are excited to continue the journey of innovation and growth with FoodHub, making it the go-to platform for food lovers everywhere.

13. References

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