

FOODYS

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Bachelor of Technology

in

COMPUTER SCIENCE

by

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TABLE OF CONTENTS

S. NO.	CONTENTS	PAGE NO.
1.	Introduction	3
1.1	Overview	3
1.2	Purpose	3
2.	Literature Survey	3
2.1	Existing Problem	3
2.2	Proposed Solution	5
3.	Theoretical Analysis	5
3.1	Block Diagram	5
3.2	Hardware / Software designing	7
4.	Experimental Investigations	8
5.	Flowchart	9
6.	Result	9
7.	Advantages and Disadvantages	15
8.	Applications	16
9.	Conclusion	18
10.	Future Scope	18
11.	Bibliography	18
	<i>APPENDIX</i>	19

1. INTRODUCTION

1.1 OVERVIEW

The Foodys project is an e-commerce platform aimed at connecting customers, drivers, and local restaurants. The project focuses on providing a hassle-free online food delivery experience, catering to the convenience of people in the area. By leveraging technologies like Java Spring Boot, React.js, and MongoDB, the project aims to streamline order management, enhance user experience, and expand the customer base.

The frontend of the platform will be developed using React.js, ensuring a user-friendly and intuitive interface for customers to browse and place orders. The backend, powered by Java Spring Boot, will handle order management, authentication, and communication between different stakeholders. To ensure smooth and efficient data management, the project will utilize MongoDB, a NoSQL database. This will enable quick retrieval and storage of data related to customers, drivers, and restaurants.

1.2 PURPOSE

The food delivery industry has experienced significant growth due to the emergence of online platforms and aggregators. Creating a food ordering system project reflects the current industry trends and demonstrates familiarity with the technologies and concepts relevant to this sector. It provides a practical learning experience that aligns with the demands of the industry.

Foodys is an e-commerce platform that primarily operates online, connecting customers, drivers, and the restaurant network. It serves as a hassle-free online food delivery platform. The aim of this project is to focus on local stores and cater to the convenience of people in the area. The project seeks to collaborate with a wide range of local restaurants and shops, expanding the reach and customer base.

Efficient delivery services are a key aspect of this project, as it offers a convenient alternative to traditional street-based food purchases. Streamlined order management ensures smooth operations, while an enhanced user experience improves customer satisfaction.

To summarize, the food ordering system project aligns with industry trends and demonstrates your expertise in the field. It offers practical learning opportunities, focuses on local stores, provides efficient delivery services, streamlines order management, enhances the user experience, and aims to reach a larger customer base.

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

The mentioned research papers provide insights into the current issues faced by food delivery apps, encompassing difficulties in operations, technological hurdles, user satisfaction worries, delivery logistics, and market rivalry. By comprehending these problems, companies and developers can prioritize the implementation of solutions to tackle these challenges and improve the efficiency and effectiveness of food delivery apps.

1."Exploring the Challenges of Food Delivery Platforms: A Systematic Literature Review" by Sarah Kumari, Alok Kumar, et al. (2021):

- This systematic literature review examines the challenges faced by food delivery platforms.
- It identifies and categorizes the challenges into various dimensions such as operational, technological, regulatory, and social challenges.
- The paper provides insights into the existing problems in food delivery applications and offers recommendations for addressing these challenges.

2."A Mobile-Based Food Ordering System Using Android Platform" by Aye Su Mon, et al. (2020):

- This research paper proposes a mobile-based food ordering system using the Android platform.
- It discusses the design and development of the mobile application, including features like menu browsing, order placement, and payment processing.
- The paper also addresses issues related to security and data privacy in the context of food ordering applications.

3."Food Delivery Mobile Applications: Critical Factors Affecting User Satisfaction and Continuance Intention" by Tania Mushtaq, Ahmed Imran Hunjra, et al. (2021):

- This research paper investigates critical factors that impact user satisfaction and continuance intention in food delivery mobile applications.
- It identifies problems such as poor user interface, slow performance, inaccurate order tracking, and delivery issues.
- The paper emphasizes the importance of resolving these problems to retain and satisfy users.

4."Development and Evaluation of a Real-Time Food Ordering System" by O.O. Afolayan, et al. (2020):

- This study focuses on the development and evaluation of a real-time food ordering system.
- It describes the system architecture and highlights the use of technologies like Node.js, MongoDB, and AngularJS for building the application.
- The paper evaluates the system's performance in terms of response time, scalability, and user satisfaction.

5."Challenges and Opportunities for Food Delivery Platforms: A Review" by Muhammad Bilal, Fang Zhao, et al. (2020):

- This review paper discusses challenges and opportunities for food delivery platforms.
- It identifies problems such as inefficient delivery networks, food quality control, customer service issues, and market competition.

- The paper suggests strategies to address these challenges and leverage opportunities in the food delivery industry.
6. "Design and Implementation of an Online Food Ordering System" by Sudipto Ghosh, et al. (2020):
- This paper presents the design and implementation of an online food ordering system.
 - It discusses the architectural components, such as the customer mobile application, restaurant web application, and backend server, and how they interact to facilitate the ordering process.
 - The paper also highlights the use of technologies like PHP, MySQL, and JavaScript to build the system.
7. "A Systematic Review of Food Delivery Mobile Apps: Functionality, Usability, and Design" by Alicia Katija Ljubcic, Anton Kos, et al. (2020):
- This systematic review examines various food delivery mobile apps available in the market.
 - It focuses on analyzing the functionality, usability, and design aspects of these apps and provides insights into the common features, strengths, and weaknesses of existing food delivery systems.
8. "An Efficient Food Ordering and Delivery System using Hybrid Mobile Application" by G. Ramesh, et al. (2020):
- This research work presents an efficient food ordering and delivery system built using a hybrid mobile application approach.
 - It discusses the use of technologies like React Native and Firebase to develop the mobile application.
 - The paper highlights the features of the system, including real-time order tracking, delivery management, and customer feedback.

2.2 PROPOSED SOLUTION

Our project includes an application developed using Java Spring Boot, React.js and MongoDB. Operational Challenges are met utilizing Spring Boot's robust backend framework to develop an efficient order management system, handling order placement, tracking, and modifications. Utilized MongoDB to store and retrieve order data efficiently. Use MongoDB's scalable features and flexible schema to support a variety of food options and effectively manage large amounts of data.

React.js is used to build a user-friendly and responsive frontend that overcomes technical limitations by delivering an agile and understandable user interface for menu browsing, customizing orders, and processing payments. Improve the user experience and application performance by utilizing React.js' virtual DOM and component-based architecture. To enhance application performance by making use of Spring Boot's support for caching mechanisms and optimisation strategies. Enhance customer experiences and simplify the ordering process by implementing personalized features in React.js, such as saved order

history. Deploy the application using Docker Images and Kubernetes to provide a robust and efficient deployment solution, enabling the app to be easily managed, scaled, and updated in a reliable and reproducible manner.

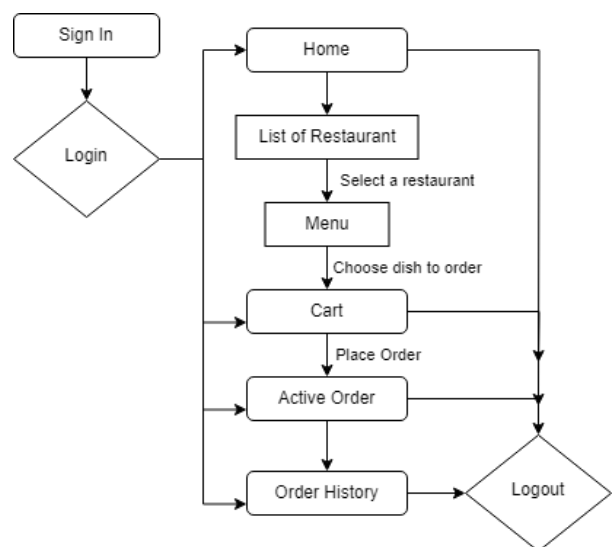
3. THEORETICAL ANALYSIS

3.1 BLOCK DIAGRAM

This Foodys App consists of three different types of login: Driver, Restaurant, and Customer. Each type of user has access to specific features and sections within the app.

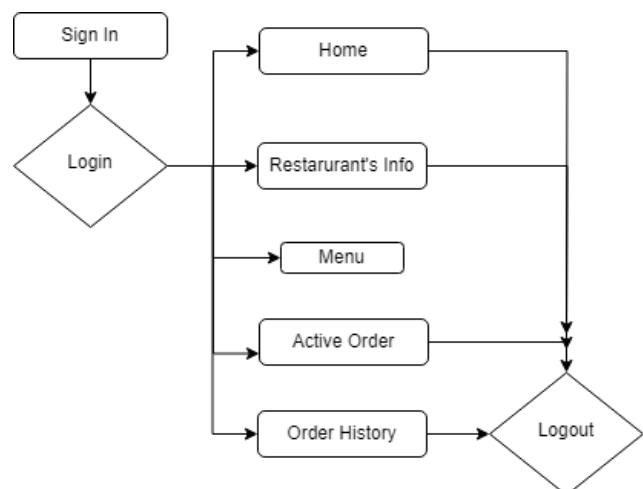
Customer:

- **Homepage:** Customers are presented with a list of restaurants available for ordering. This page typically includes search and filtering options to help customers find their preferred cuisine or specific restaurants.
- **Restaurant Info Page:** When a customer selects a restaurant, they are taken to a dedicated page displaying information about the restaurant, such as its menu, opening hours, ratings, and reviews.
- **Menu Page:** This page provides the menu of the selected restaurant, including various food items, categories, descriptions, prices, and any available customization options.
- **Cart:** Customers can add food items to their cart from the menu page. This section displays the selected items, allows quantity adjustments, and provides a total price calculation.
- **Active Orders:** Customers can track the status of their current orders in this section. They can see the estimated delivery time and any updates from the driver.
- **Order History:** This section presents a record of all past orders made by the customer, including order details, restaurant information, and order status.



Restaurant:

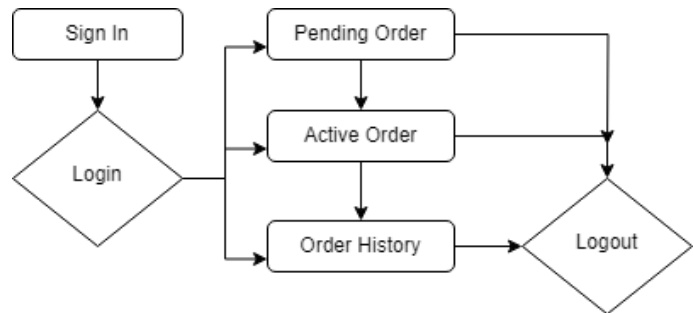
- **Restaurant Info Page:** After logging in, restaurant owners or staff members can access a page containing information about their own restaurant, such as contact details, operating hours, and location.



- **Menu Page:** This section allows restaurant owners to manage their menu. They can add, edit, or remove food items, update prices, and set availability.
- **Active Orders:** This page displays the orders that are currently being prepared and are awaiting pickup or delivery. Restaurant staff can view order details and update the order status as necessary.
- **Order History:** Restaurants can access a history of all past orders received, including customer details, order information, and delivery status.

Driver:

- **Pending Orders:** This section displays a list of orders that are waiting to be assigned to drivers. Drivers can view details such as the customer's location and order information.
- **Active Orders:** This section shows the orders that have been assigned to the driver and are currently in progress. Drivers can access customer information, navigate to the delivery location, and update order status.
- **Order History:** Here, drivers can view a chronological list of their past completed orders, including order details, customer information, and delivery history.



3.2 HARDWARE / SOFTWARE DESIGNING

Hardware Requirements:

- **Processor:** Intel Core i5 or higher
- **RAM:** 8 GB or higher
- **Storage:** 256 GB SSD or higher
- **Internet Connection:** Broadband or high-speed internet for development and testing purposes
- **Display:** Minimum 1280x800 resolution

Software Requirements:

- **Operating System:** Windows, macOS, or Linux
- **Integrated Development Environment (IDE):**
 - For Spring Boot: IntelliJ IDEA, Eclipse, or Spring Tool Suite
 - For React: Visual Studio Code, WebStorm, or Atom
- **Java Development Kit (JDK):** JDK 11 or higher
- **Node.js:** Latest stable version
- **Package Manager:**
 - For Spring Boot: Maven or Gradle

- For React: npm (Node Package Manager) or yarn
- Spring Boot: Framework for developing the backend application
- React: JavaScript library for building user interfaces
- MongoDB: NoSQL database for storing application data
- Postman: API testing tool for testing RESTful APIs during development
- Git: Version control system for code management and collaboration
- Web Browser: Chrome, Firefox, or any modern web browser for testing the frontend application
- Docker Desktop for building docker images
- Kubernetes - Command Line interface(kubectl) to apply the manifest files and deploy the application.

4. EXPERIMENTAL INVESTIGATIONS

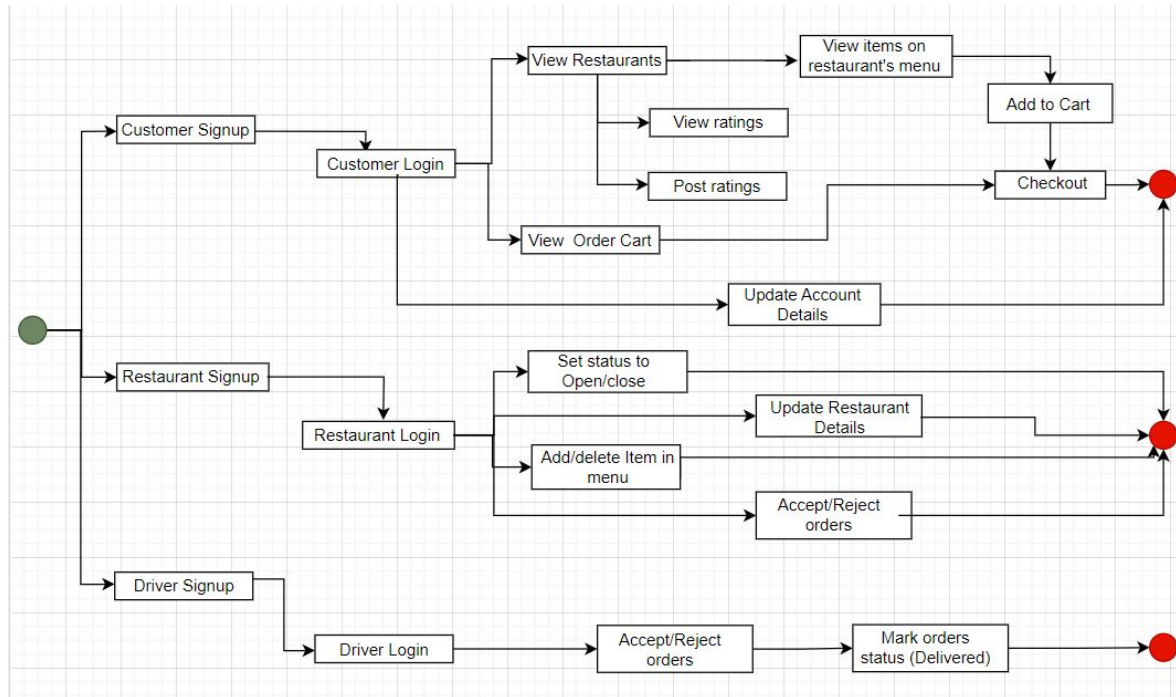
Our Experimental Setup includes Intel Core i5 Server, Windows OS and Google Chrome Browser.

The online food delivery system was deployed on a local server. Network conditions were emulated to simulate real-world scenarios with varied connection speeds.

Usability testing was done to gather user feedback on the system's interface, navigation, and overall user experience. Users found the system intuitive and easy to navigate. Feedback highlighted the need for clearer notifications and more prominent call-to-action buttons.

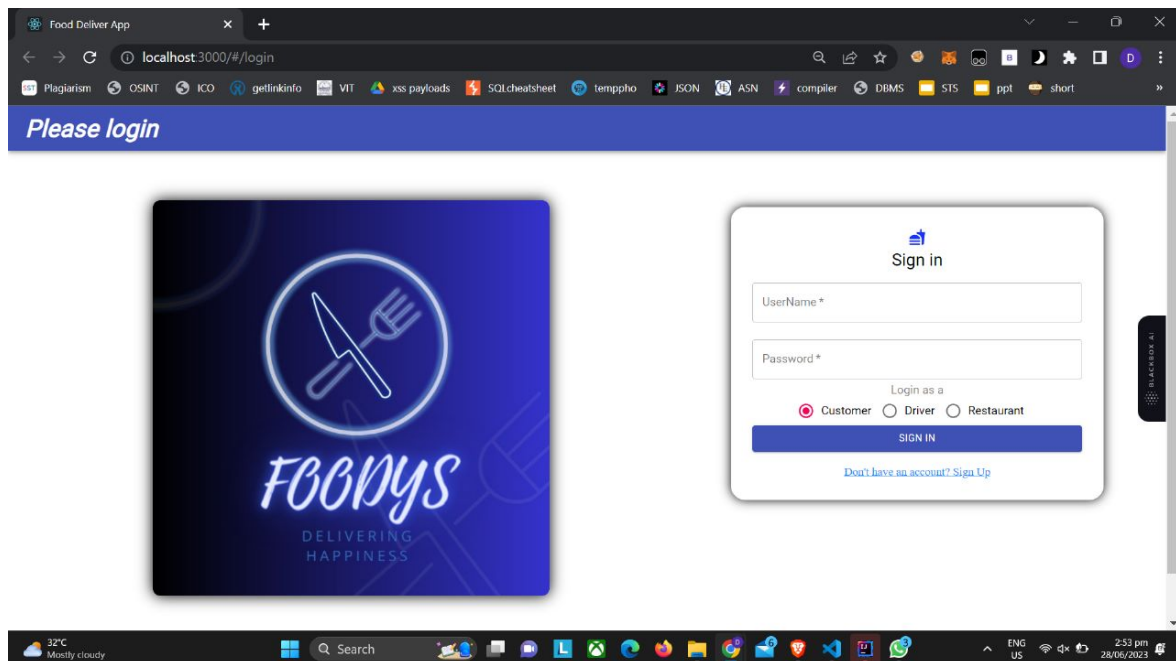
Manual code review revealed potential security enhancements, such as input validation and secure API endpoints.

5. FLOWCHART



6. RESULT

Login Page



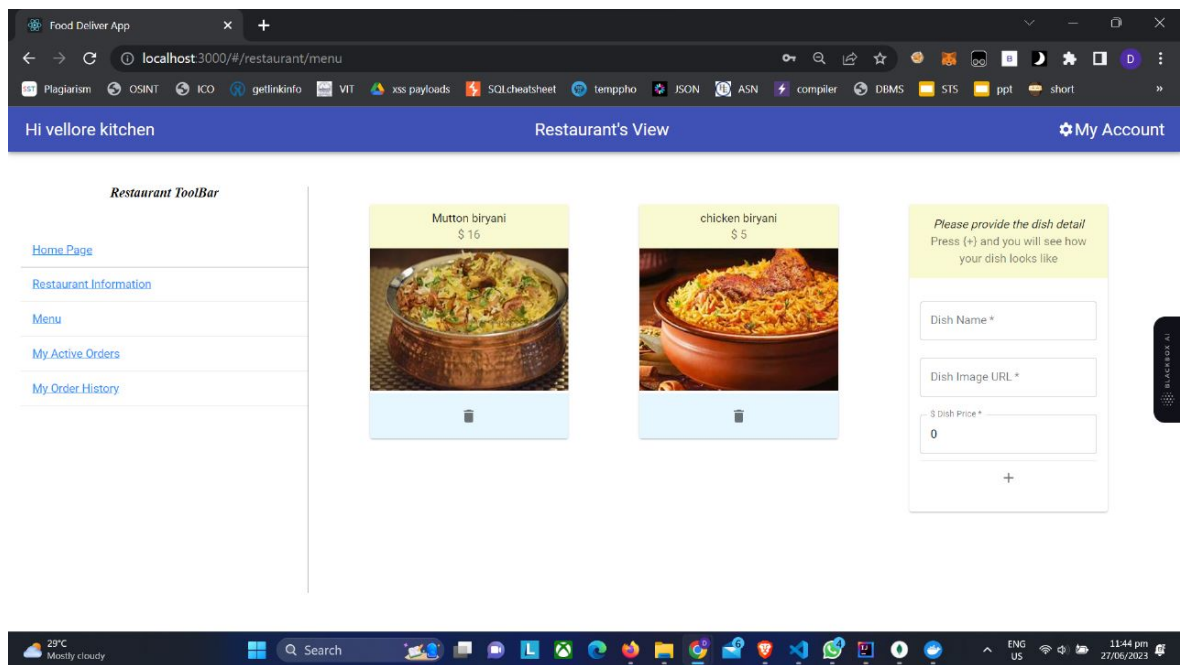
Sign Up Page

The screenshot shows a web browser window with the URL `localhost:3000/#/register`. The page has a blue header with the text "Please login". Below the header is a white card titled "Sign up" with a blue icon of a person. The card contains several input fields: "UserName *", "Password *", "Re-enter your password *", "Phone Number *", "Address *", and "City *". The browser's taskbar at the bottom shows the system clock as 9:34 pm on 27/06/2023.

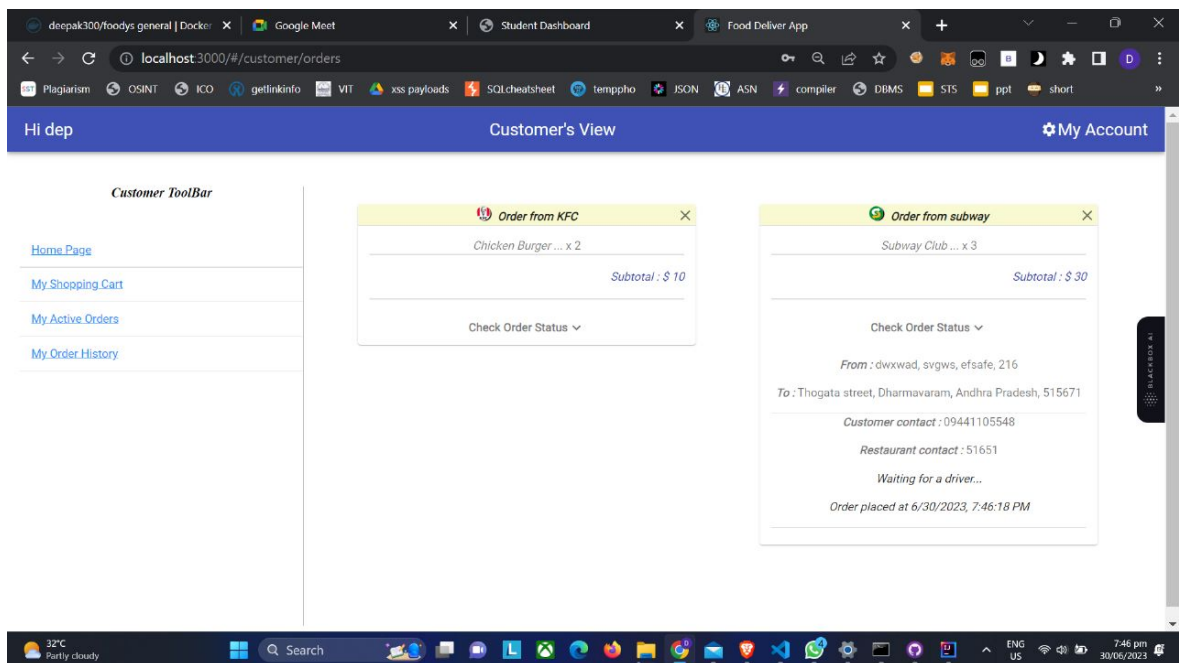
Customer Home Page

The screenshot shows a web browser window with the URL `localhost:3000/#/customer/home`. The page has a blue header with the text "Hi dep" on the left, "Customer's View" in the center, and "My Account" on the right. Below the header is a white card titled "Customer ToolBar" with a list of links: "Home Page", "My Shopping Cart", "My Active Orders", and "My Order History". To the right of the tool bar is a search bar with the placeholder text "Search Restaurant or Food". Below the search bar are two restaurant cards. The first card is for KFC, featuring a red and white logo and the text "We serve best fast food!". The second card is for Domino's Pizza, featuring a red and blue logo and the text "We serve pizza and salad". The browser's taskbar at the bottom shows the system clock as 9:52 pm on 27/06/2023.

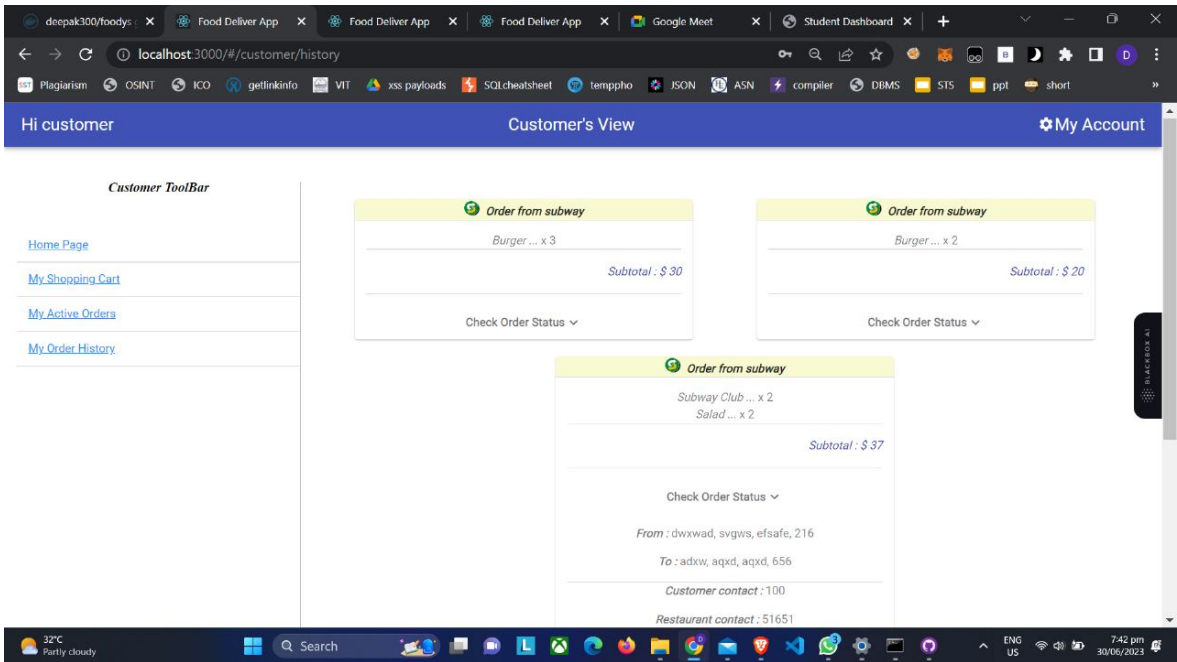
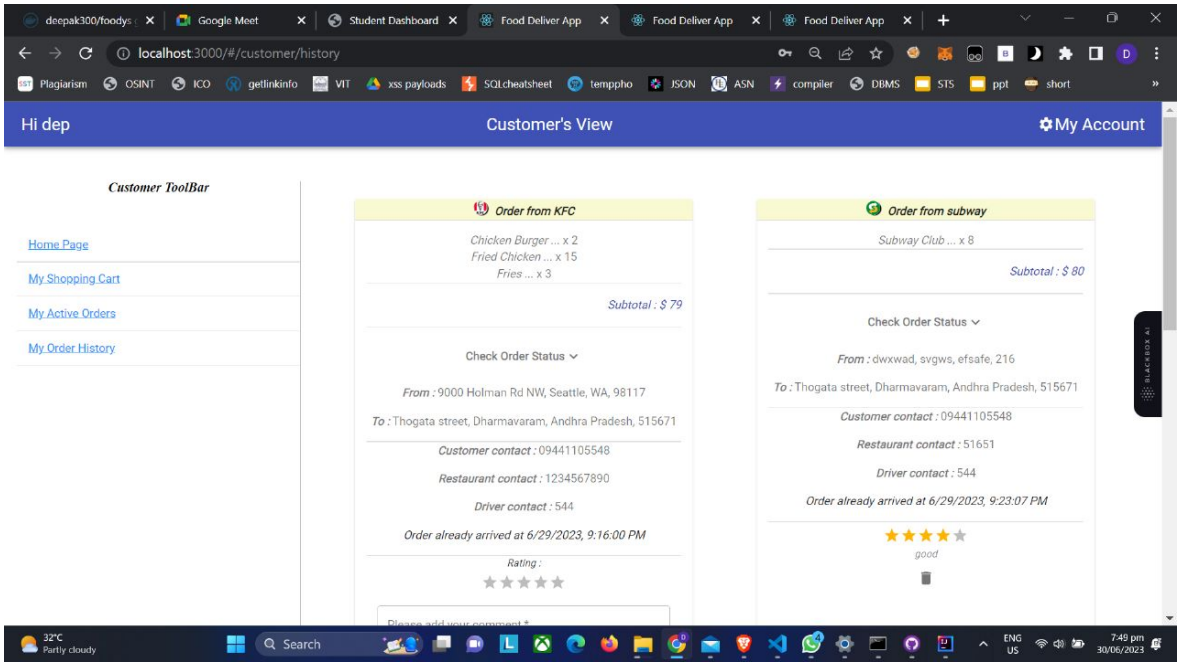
Menu of a Restaurant



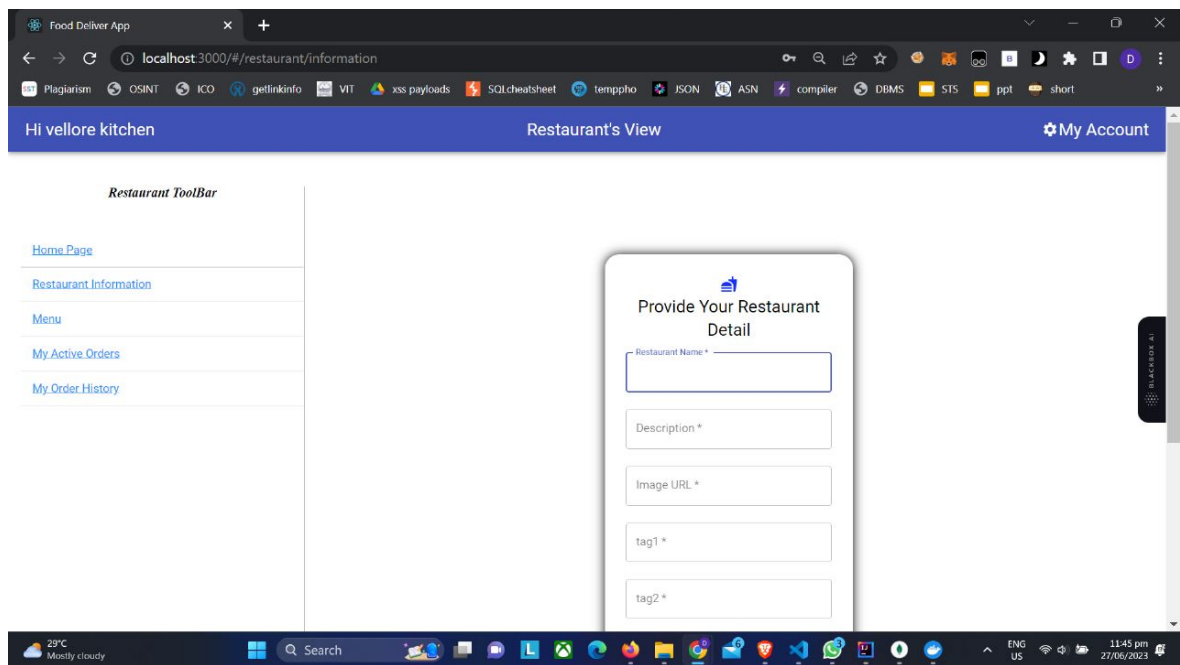
Customers Cart page



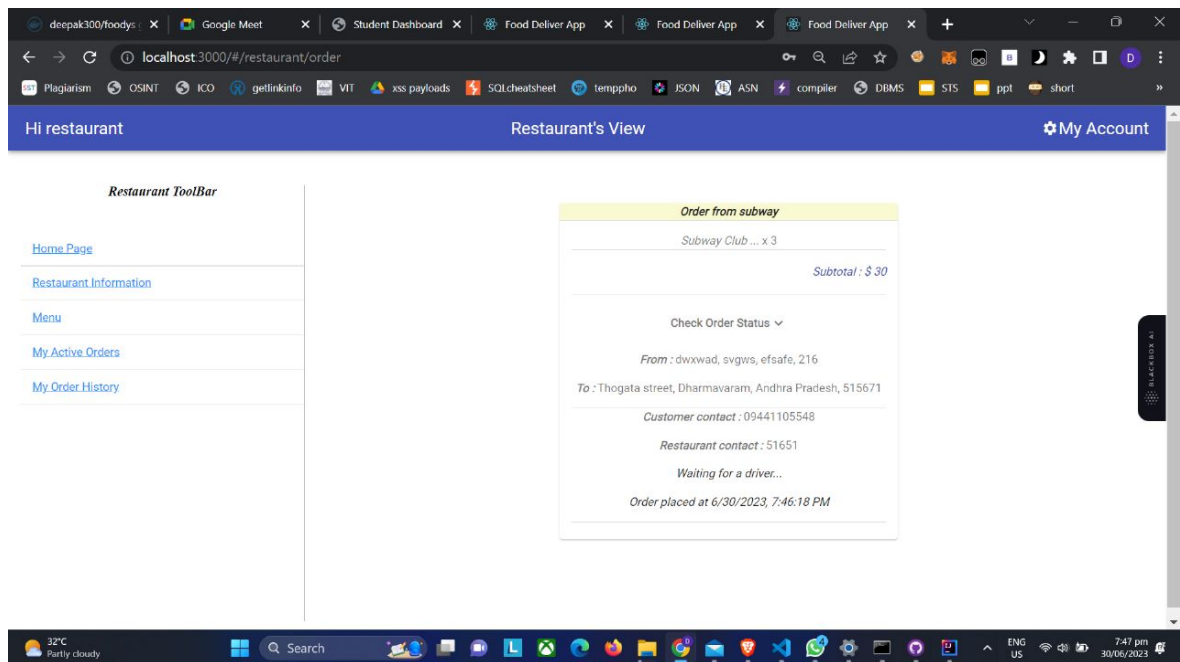
Customer History



Restaurants Info Page



Restaurants Order



Restaurant History

The screenshot shows a web browser window with the URL `localhost:3000/#/restaurant/history`. The page displays two order history cards. The left card, titled "Order from subway", shows a subtotal of \$80 and a list of items: "Subway Club ... x 2" and "Salad ... x 2", with a subtotal of \$37. The right card, also titled "Order from subway", shows a subtotal of \$20 and a list of items: "Subway Club ... x 3", with a subtotal of \$30. Both cards have a "Check Order Status" dropdown menu. The bottom of the page shows a Windows taskbar with the date and time as 7:48 pm on 30/06/2023.

Driver Home

The screenshot shows a web browser window with the URL `localhost:3000/#/driver/home`. The page displays a "Driver's View" header with a "My Account" link. On the left, there is a "Driver ToolBar" with links to "All Pending Orders", "My Active Order", and "My Order History". The main content area shows two order cards. The left card, titled "Order from KFC", shows a subtotal of \$10 and a list of items: "Chicken Burger ... x 2". The right card, titled "Order from subway", shows a subtotal of \$30 and a list of items: "Subway Club ... x 3". Both cards have an "ACCEPT THIS ORDER" button and a "Check Order Status" dropdown menu. The bottom of the page shows a Windows taskbar with the date and time as 7:48 pm on 30/06/2023.

Driver Active Order

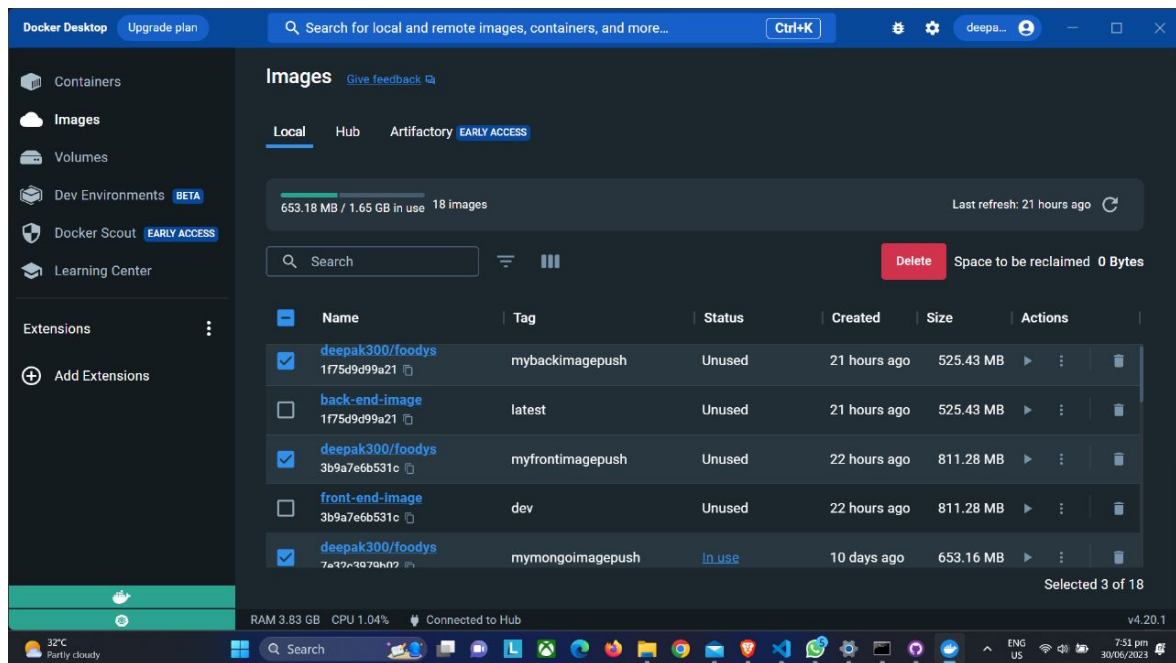
The screenshot shows a web browser window with multiple tabs. The active tab is 'Food Deliver App' showing a 'Driver's View' page. The page has a blue header with 'Hi driver' and 'My Account'. A sidebar on the left contains 'Driver ToolBar' with links to 'All Pending Orders', 'My Active Order', and 'My Order History'. The main content area displays an 'Order from subway' card. The card shows 'Subway Club ... x 3', a 'Subtotal : \$ 30', and a 'FINISH THE ORDER' button. Below this, there is a 'Check Order Status' section with details: 'From : dwxwad, svgrs, efsafe, 216', 'To : Thogata street, Dharmavaram, Andhra Pradesh, 515671', 'Customer contact : 09441105548', 'Restaurant contact : 51651', 'Driver contact : 544', and 'In delivery...'. The browser's address bar shows 'localhost:3000/#/driver/order'. The Windows taskbar at the bottom shows the date as 30/06/2023 and time as 7:48 pm.

MongoDB Database

The screenshot shows the MongoDB Compass interface for a database named 'internship'. The left sidebar shows the database structure with collections: 'customer', 'driver', 'order', 'restaurant', and 'searchEngine'. The main area displays a table of collections with the following data:

Collection Name	Storage size	Documents	Avg. document size	Indexes	Total index size
customer	20.48 kB	3	283.00 B	1	36.86 kB
driver	20.48 kB	2	277.00 B	1	36.86 kB
order	61.92 kB	12	8.50 kB	1	36.86 kB
restaurant	143.36 kB	4	31.43 kB	1	36.86 kB
searchEngine	20.48 kB	1	9.29 kB	1	36.86 kB

Docker Images in Docker Desktop



7. ADVANTAGES AND DISADVANTAGES

Advantages of Food Ordering Applications:

1. Convenience: Food ordering apps offer the convenience of ordering food anytime and anywhere, eliminating the need to physically visit a restaurant.
2. Extensive Choices: These apps provide access to a diverse range of restaurants and cuisines, allowing users to explore different options and discover new dining experiences.
3. Easy Ordering: Users can easily navigate menus, customize orders, and make payments through a user-friendly interface.
4. Time Savings: Ordering food through an app saves time as users can quickly browse menus, select items, and place orders without waiting in queues or making phone calls.

Disadvantages of Food Ordering Applications:

1. Technological Dependence: Food ordering apps rely on stable internet connections and functional mobile devices, which can be limiting in areas with poor connectivity or technical issues.
2. Potential Technical Glitches: Like any technology-based platform, apps may experience technical glitches, such as crashes or payment processing issues, which can disrupt the ordering process.
3. Delivery Delays or Issues: Occasionally, delivery delays or issues like traffic congestion or incorrect address information can result in late or incorrect deliveries.
4. Lack of Personal Interaction: Ordering food through an app eliminates the personal interaction and ambiance of dining at a restaurant, which some individuals may prefer.
5. Limited Customization: While apps offer customization options, they may have restrictions compared to placing orders directly at a restaurant, where specific preferences can be communicated more freely.

6. Additional Costs: Some apps may include extra fees or surcharges for delivery, service charges, or minimum order requirements, increasing the overall cost of food delivery.

8. APPLICATIONS

An online food delivery system has several applications and benefits. Here are some key applications of an online food delivery system:

- **Customer Ordering:** Customers can use the online food delivery system to browse menus, select dishes from their favorite restaurants, customize orders, and place food orders from the comfort of their homes or offices. They can specify delivery addresses, choose payment methods, and track the status of their orders in real-time.
- **Restaurant Management:** Online food delivery systems provide a platform for restaurants to manage their delivery operations efficiently. Restaurants can receive and process online orders, update menu items and prices, track inventory, manage customer reviews and ratings, and monitor delivery logistics. It helps streamline the restaurant's operations and enhances their reach to a broader customer base.
- **Delivery Tracking:** Online food delivery systems often include delivery tracking features that allow customers to monitor the progress of their orders. They can track the location of the delivery driver in real-time, receive notifications about order status updates, and estimate the expected delivery time. This feature provides transparency and keeps customers informed.
- **Reviews and Ratings:** Online food delivery systems often include a review and rating system where customers can provide feedback and rate their dining experience. These reviews and ratings help other customers make informed decisions when choosing restaurants and dishes. It also provides valuable feedback to restaurants for quality improvement.
- **Discounts and Promotions:** Online food delivery systems offer the opportunity for restaurants to provide exclusive discounts, promotional offers, and loyalty programs to attract customers. These features can incentivize customers to order from specific restaurants and increase customer retention.
- **Analytics and Insights:** Online food delivery systems collect data on customer behavior, order history, preferences, and other metrics. Restaurants can analyze this data to gain insights into customer preferences, popular dishes, peak ordering times, and other valuable information. It enables restaurants to make data-driven decisions, optimize their operations, and tailor their offerings to meet customer demands.

Overall, an online food delivery system provides convenience to customers, streamlines restaurant operations, enhances delivery logistics, and offers valuable insights for both customers and restaurants. It revolutionizes the way food is ordered and delivered, making the process efficient, transparent, and enjoyable for all parties involved.

9. CONCLUSION

In conclusion, the Foodys project aims to revolutionize the food delivery industry by developing a web-based platform that connects customers, delivery drivers, and local restaurants. Overall, the simplicity, productivity, and scalability offered by Spring Boot make it an excellent choice for building the backend of an application. Spring Boot provides a streamlined development experience by offering auto-configuration, which eliminates the need for manual configuration and reduces boilerplate code. The component-based architecture, virtual DOM implementation, and extensive ecosystem of libraries make React.js a preferred choice for frontend development. Deploying the Foodys app using Docker images and Kubernetes brings benefits such as consistent deployment across environments, containerization for isolation and portability, scalability and resilience through orchestration, and streamlined CI/CD practices. Foodys aims to create a seamless and enjoyable food ordering experience for all stakeholders involved.

10. FUTURE SCOPE

Mobile App Optimization: Optimize the application for different mobile platforms, such as iOS and Android, to reach a wider user base. Ensure the app is responsive, performs well, and offers a seamless experience on various devices and screen sizes.

Integration with Third-Party Services: Explore integrating the app with popular third-party services to enhance its functionality. For example, integrating with payment gateways, real-time tracking services, social media platforms, or popular food delivery APIs to expand the app's capabilities and provide additional value to users.

Personalization and Recommendations: Implement personalized features such as user preferences, order history, and recommendations based on past orders or user behavior. This can enhance user engagement and help users discover new restaurants or dishes tailored to their preferences.

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APPENDIX

Github Link-

<https://github.com/smartinternz02/SPSGP-523387-Food-Ordering-System.git>

Video Link -

https://drive.google.com/file/d/1r2qnNB2eQqLiAj0hTukHWm-2_cYC4Xqb/view?usp=drive_link