

# **[Fast Food Billing System]**

Project submitted to the  
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**CSE305L Software Engineering Lab**

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# Table of Contents

Abstract	2
1. Introduction	3
2. Literature review	4
2.1 Advantages of a Fast-Food Billing System Web Software	4
2.2 Disadvantages of a Fast-Food Billing System Web Software	5
2.3 Survey	6
3. System Requirements	7
3.1 Software Requirements	7
3.2 Hardware Requirements	8
4. Proposed scheme	9
4.1 Algorithm	11
4.2 Flowchart	12
4.3 DFD Diagrams	14
4.4 ER Diagram	17
4.5 Use Case Diagram	18
4.6 Class Diagram	20
4.7 Sequence Diagram	21
4.8 Activity Diagram	22
5. Results/Screenshots	23
6. Conclusion	28
7. Future Work	29
References	30

## **Abstract**

The Fast-Food Billing System is a web application that provides a centralized platform for managing various aspects of a restaurant's operations. It encompasses features such as menu management, inventory control, order management, staff scheduling, and financial reporting.

With the Fast-Food Billing System, restaurant owners and managers can easily update and customize their menus, including item descriptions, prices, and availability. This ensures accurate and up-to-date information for both staff and customers. The system also includes inventory management functionality, enabling real-time tracking of ingredient stocks, automatic reordering, and generating alerts for low inventory levels.

Efficient order management is a crucial aspect of any restaurant. The Fast-Food Billing System allows staff to take orders directly from customers, either at the table or through online ordering platforms. The system optimizes the order flow by transmitting orders to the kitchen or bar, reducing errors, and improving order processing time.

Effective staff scheduling is essential for managing labor costs and ensuring adequate coverage during peak hours. It provides a scheduling module that enables managers to create and assign shifts, considering employee availability and skill sets. This helps optimize labor utilization and streamline communication among staff members.

The financial reporting component of the software provides real-time insights into the restaurant's financial performance. It generates reports on sales, expenses, and profitability, allowing owners and managers to make informed decisions regarding pricing, cost control, and revenue maximization.

Overall, the web-based Fast Food Billing System offers a comprehensive solution for streamlining operations, enhancing customer service, and optimizing profitability in the restaurant industry. By leveraging the power of technology, this software empowers restaurant owners and managers to efficiently manage their establishments and stay ahead in a highly competitive market.

## Introduction

Our fast-food billing system web application is designed to revolutionize the way you order and pay for your favorite fast-food items. With seamless integration of technology and culinary delights, we aim to provide a hassle-free and efficient experience for both customers and restaurant owners.

In this fast-paced era, time is of the essence, and our web application ensures you spend more time savoring delicious meals and less time waiting in long queues. Whether you're craving a juicy burger, crispy fries, or a refreshing beverage, our user-friendly interface allows you to effortlessly browse through a wide range of menu options, customize your order, and conveniently complete the payment process.

For restaurant owners, our fast-food billing system web application streamlines operations, optimizing the order management process and improving overall efficiency. It provides real-time insights into sales, inventory, and customer preferences, allowing for better decision-making and enhanced customer satisfaction. By automating billing and payment processes, our application frees up valuable time for restaurant staff, enabling them to focus on providing exceptional service and maintaining a pleasant dining environment.

With our fast-food billing system web application, we strive to bridge the gap between technology and culinary experiences, making fast food ordering and payment a breeze for both customers and restaurant owners. Join us on this digital journey as we redefine the fast-food industry, one seamless transaction at a time.

## Literature Review

### Advantages of a Fast-Food Billing System Web Software:

**Efficiency:** A fast food billing system web software automates the billing process, reducing manual errors and increasing efficiency. It allows quick and accurate order processing, reducing wait times for customers.

**Centralized Data:** The software provides a centralized database for storing and managing customer information, orders, and financial data. This enables easy access to relevant information and facilitates data analysis for decision-making.

**Menu Customization:** Fast food billing systems allow easy menu customization, enabling restaurants to update and modify menu items, prices, and availability in real-time. This flexibility helps in adapting to changing customer preferences and seasonal offerings.

**Integration with other Systems:** A web-based billing system can integrate with other systems like inventory management, online ordering platforms, and loyalty programs. This integration streamlines operations, minimizes data duplication, and provides a seamless experience for customers and staff.

**Reporting and Analysis:** Fast food billing systems generate reports on sales, revenue, and customer trends. These reports help in analyzing performance, identifying popular menu items, and making informed decisions regarding pricing and promotions.

## **Disadvantages of a Fast-Food Billing System Web Software:**

**Initial Setup and Training:** Implementing a fast-food billing system web software requires initial setup, including hardware installation and software configuration. Additionally, staff training may be necessary to ensure smooth adoption and utilization of the system.

**Technical Issues:** Like any software, fast food billing systems may encounter technical issues such as software bugs, system downtime, or connectivity problems. These issues can disrupt operations and require prompt technical support to resolve.

**Cost:** Implementing a web-based billing system involves costs related to software licensing, hardware infrastructure, and ongoing maintenance. For small or budget-constrained fast-food establishments, these costs may be a significant consideration.

**Dependency on Internet Connection:** Web-based systems rely on a stable internet connection. If the internet connection is slow or experiences downtime, it can hinder the billing process and disrupt operations.

**Security Risks:** Web-based software systems are susceptible to security threats such as data breaches and unauthorized access. It is crucial to implement robust security measures to protect customer and financial data from potential vulnerabilities.

It is important for fast food establishments to carefully assess their specific needs and consider these advantages and disadvantages while deciding on the implementation of a fast-food billing system web software.

## Survey

A literature survey for a fast-food billing system web software involves reviewing existing research, studies, articles, and publications related to similar systems. Here is a brief literature survey on the topic:

"Design and Development of Web-Based Billing System for Fast Food Restaurants" by Muhammad Hafiz Uddin Ismail et al. (2016): This research paper presents the design and development of a web-based billing system specifically tailored for fast food restaurants. It focuses on features such as order management, payment processing, and generating receipts.

"An Integrated Web-Based Billing System for Fast Food Chains" by Mohammed Q. Ahmed et al. (2017): This study proposes an integrated web-based billing system designed for fast food chains. It discusses features like menu management, order processing, payment handling, and loyalty programs.

"Web-Based Point of Sale System for Fast Food Restaurants" by Shao-Cheng Tseng et al. (2018): This research paper introduces a web-based point of sale system specifically designed for fast food restaurants. It covers features such as order management, inventory control, payment processing, and customer analytics.

"Design and Implementation of a Web-Based Fast Food Billing System with Mobile Ordering" by Arvind Bhardwaj et al. (2019): This study focuses on the design and implementation of a web-based fast food billing system that incorporates mobile ordering. It discusses features such as online ordering, order management, payment processing, and delivery tracking.

"Web-Based Billing and Inventory Management System for Fast Food Restaurants" by Vipul A. Desai et al. (2020): This research paper presents a web-based billing and inventory management system specifically tailored for fast food restaurants. It covers features such as order processing, inventory control, billing, and generating financial reports.

"An Online Billing System for Fast Food Chains" by Amrutha B. et al. (2021): This study proposes an online billing system for fast food chains that operates through a web-based interface. It discusses features such as menu management, order processing, payment handling, and loyalty programs.

These studies provide insights into the design, implementation, and functionality of web-based billing systems for fast food establishments. They cover various aspects such as order management, payment processing, inventory control, and reporting, offering a comprehensive understanding of the topic.

## System Requirements

Software and hardware requirements for a fast-food billing system can vary depending on the specific software solution chosen and the scale of the restaurant's operations. However, here are some common requirements:

### Software Requirements

**Operating System:** The billing software may be compatible with popular operating systems such as Windows, macOS, or Linux.

**Web Browser:** Most fast-food billing systems are web-based, requiring a compatible web browser like Google Chrome, Mozilla Firefox, or Safari.

**Database Management System:** The software may require a specific database management system (DBMS) such as MySQL, PostgreSQL, or Microsoft SQL Server to store and retrieve data.

**Programming Frameworks:** Depending on the software, it may require specific programming frameworks like Java, .NET, or PHP for development and execution.



## Hardware Requirements

**Computer:** A computer or a server is needed to host the billing software. The specifications will depend on the software's requirements, but typically, a computer with a decent processor, sufficient RAM, and ample storage space is necessary.

**Network Infrastructure:** A stable and reliable network infrastructure, including routers, switches, and cabling, is required to connect the billing system to other devices like POS terminals, printers, and kitchen display systems.

**POS Terminals:** Point-of-sale (POS) terminals are used to input orders, process payments, and print receipts. These terminals can be standalone devices or integrated with the billing system software.

**Peripherals:** The fast-food billing system may require peripherals such as receipt printers, barcode scanners, and cash drawers to complete the billing process efficiently.

**Internet Connection:** A fast and reliable internet connection is essential for web-based billing systems to ensure smooth communication with the server and online payment processing.

It is crucial to consult with the software provider or development team to determine the specific software and hardware requirements for the chosen fast food billing system. They can provide detailed guidelines and recommendations based on the specific solution being implemented.

## **Proposed Scheme**

### **User Authentication:**

Implement a user authentication system to allow employees to log in with unique credentials.

Different user roles can be defined, such as cashiers, managers, and administrators, with varying levels of access and privileges.

### **Menu Management:**

Create a menu management module where administrators can add, edit, and delete menu items.

Each menu item should have a name, description, price, and category (e.g., burgers, pizzas, beverages).

Optional features like images and nutritional information can be included.

### **Ordering Process:**

Design an intuitive interface for cashiers to take orders.

Enable the selection of menu items from the available categories.

Allow customization options for each item (e.g., toppings, size, sides).

Provide an order summary for review and modifications.

Implement features like order splitting, order notes, and special instructions.

### **Billing and Payment:**

Calculate the total amount for the order, including taxes and additional charges.

Offer various payment methods (cash, credit/debit card, mobile wallets).

Integration with payment gateways or POS (Point of Sale) systems may be required.

## **Reporting and Analytics:**

Develop a reporting module to generate sales reports, including daily, weekly, monthly summaries.

Track popular menu items and customer preferences.

Analyze data to identify trends, optimize inventory, and make informed business decisions.

## **Administration and Management:**

Create an administrative panel to manage system settings, user roles, and permissions.

Enable inventory management and alerts for low-stock items.

Implement employee management features like scheduling, attendance tracking, and performance monitoring.

## **Integration and Scalability:**

Design the system to be scalable and accommodate multiple branches or locations.

Allow integration with other systems like accounting software or online delivery platforms.

## **Security and Data Privacy:**

Implement security measures to protect user data and prevent unauthorized access.

Comply with relevant data protection regulations, such as GDPR or CCPA.

Remember, this is a high-level overview, and the actual implementation may require more detailed planning and development.

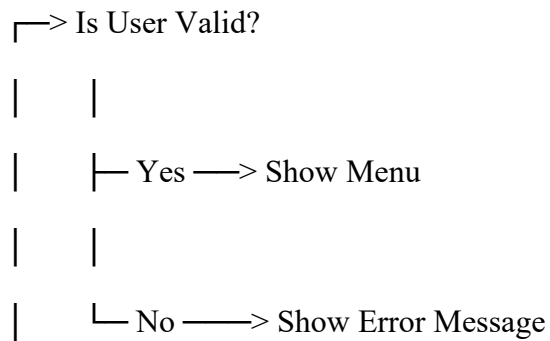
## Algorithm

1. Start the program.
2. Authenticate the user by validating their credentials.
  - If the user is valid, proceed to step 3.
  - If the user is not valid, display an error message and end the program.
3. Show the menu to the user.
4. Prompt the user to select menu items and add them to the order.
  - If the user wants to add more items, repeat step 4.
  - If the user doesn't want to add more items, proceed to step 5.
5. Review the order and allow modifications if necessary.
  - If the order is modified, repeat step 5.
  - If the order is not modified, proceed to step 6.
6. Generate the bill by calculating the total amount.
7. Prompt the user to select a payment method.
8. Process the payment based on the selected method.
9. Generate the receipt for the transaction.
11. End the program.

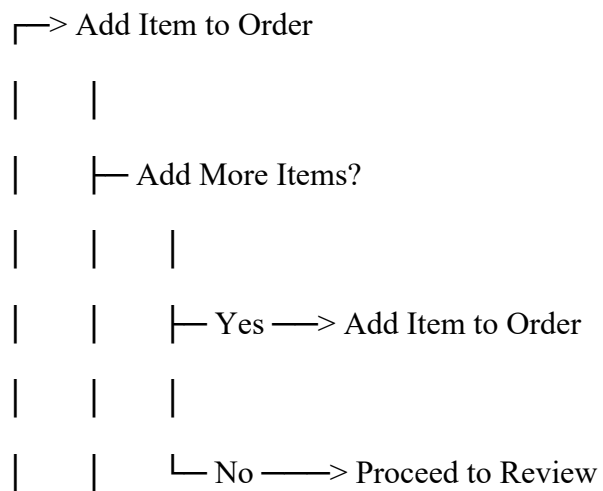
## Flowchart

### Start

#### Authenticate User



#### Select Menu Items



## Review Order

└─> Modify Order

|   |

|   └─ Order Modified?

|   |   |

|   |   └─ Yes ──> Modify Order

|   |   |

|   |   └─ No ───> Proceed to Billing

## Generate Bill

└─> Calculate Total

|   |

|   └─ Select Payment Method

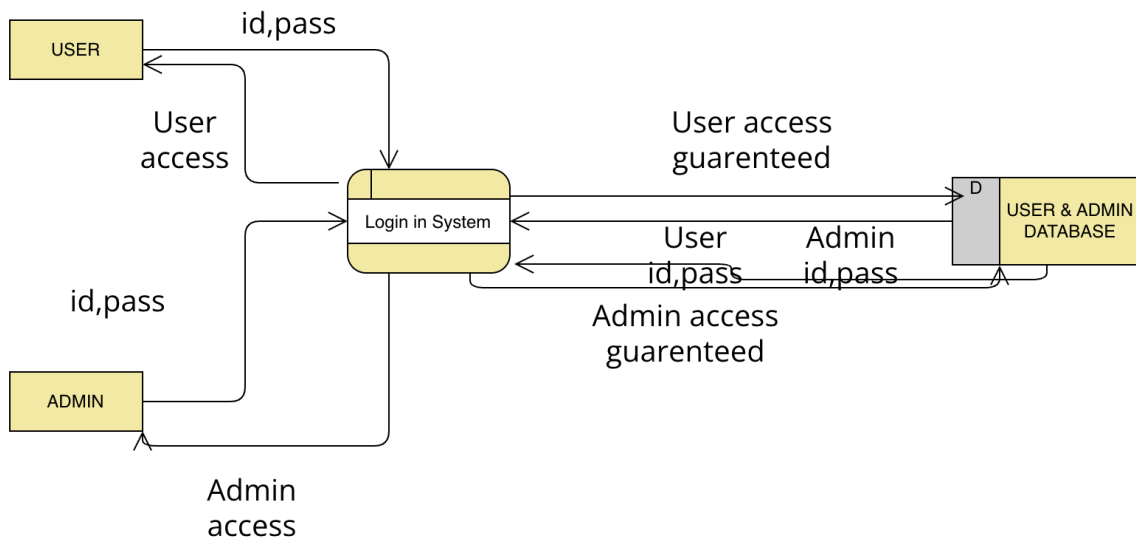
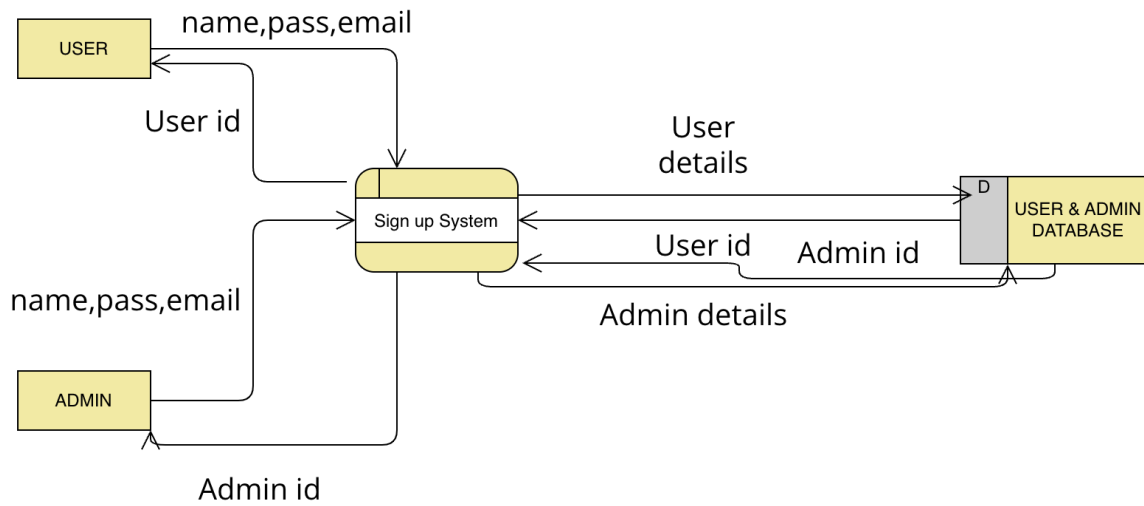
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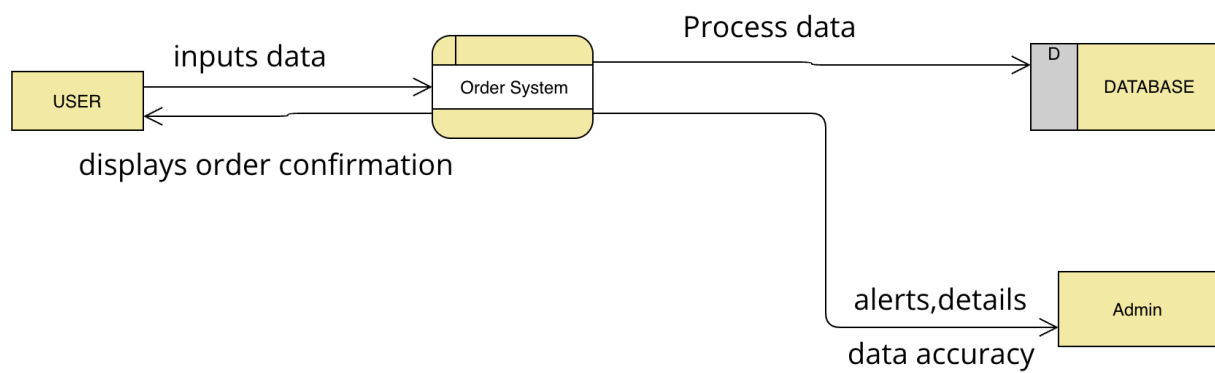
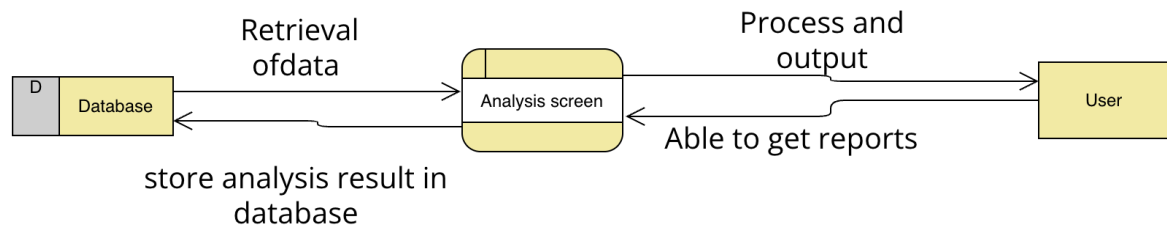
|   └─ Process Payment

**End**

# DFD Diagrams

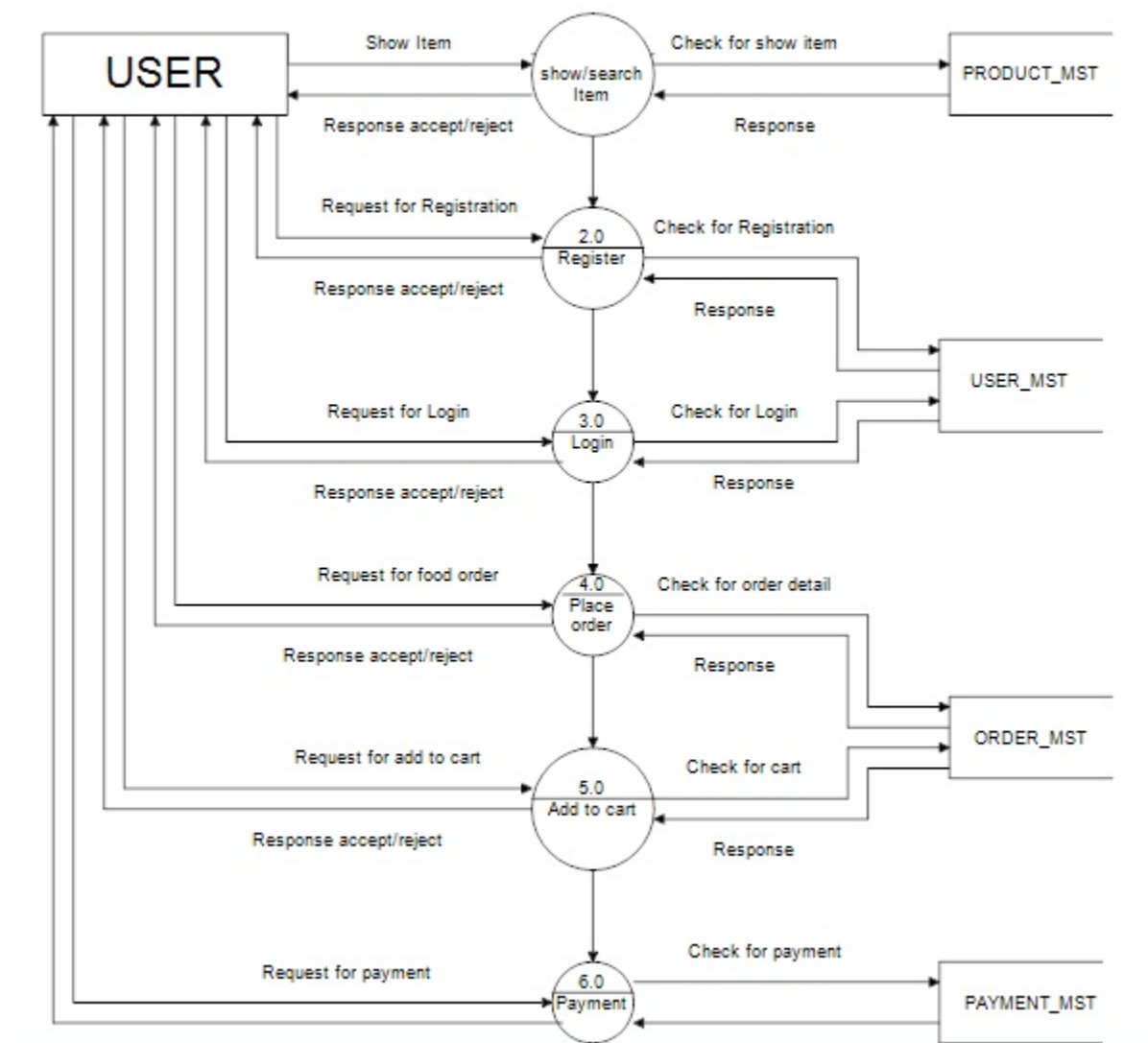
## Level 0



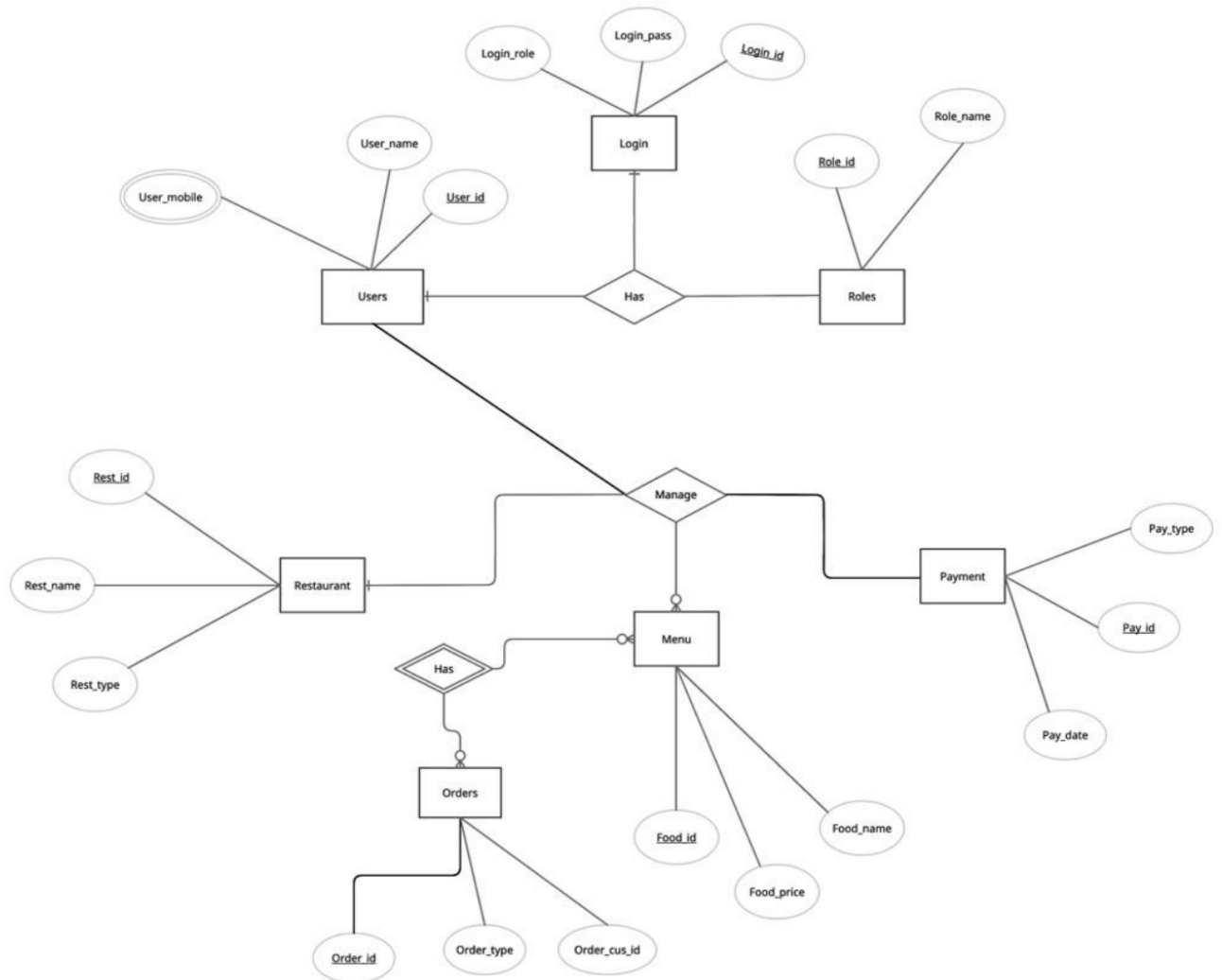




## Level 1

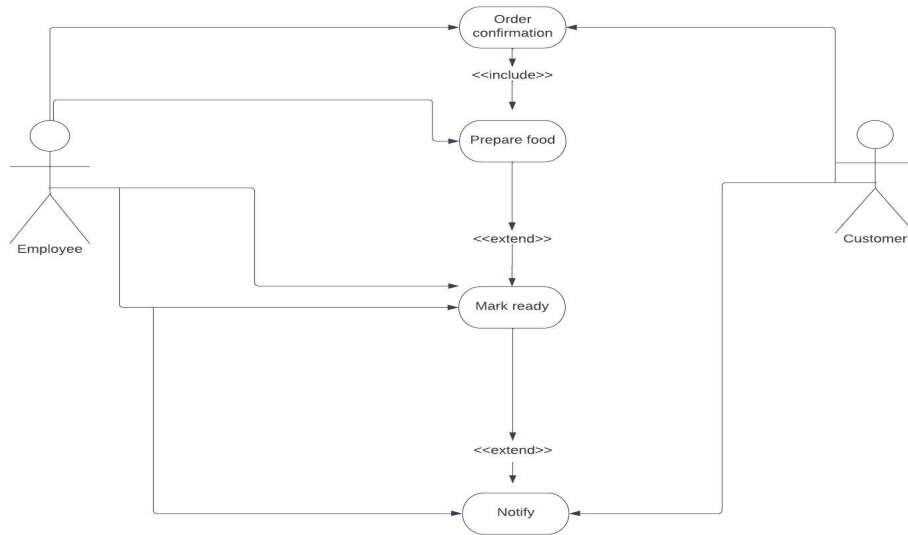


## ER Diagram

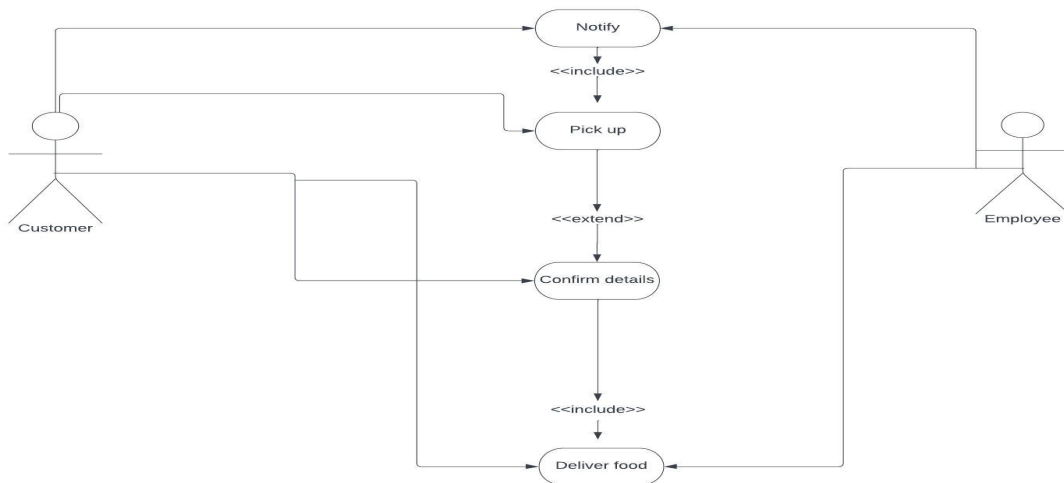


## Use Case Diagram

### Kitchen



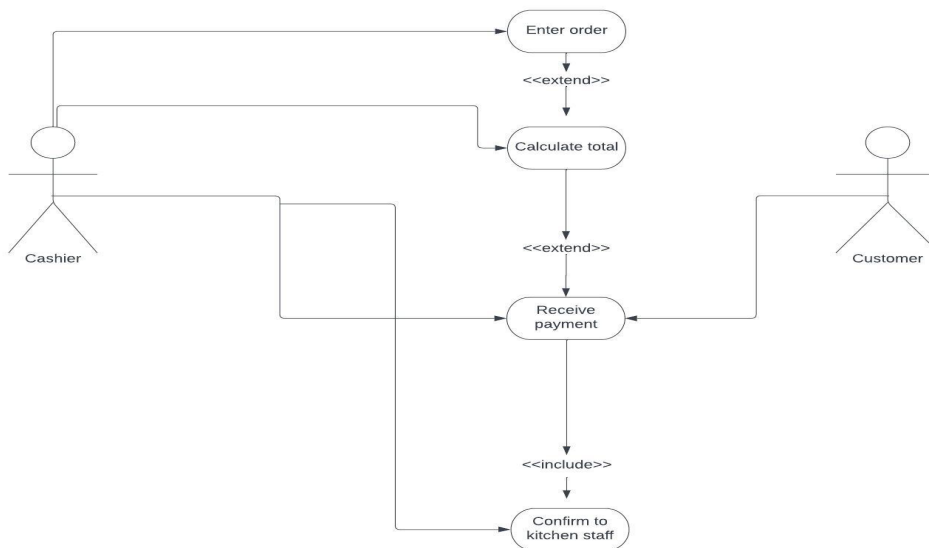
### Order Pickup



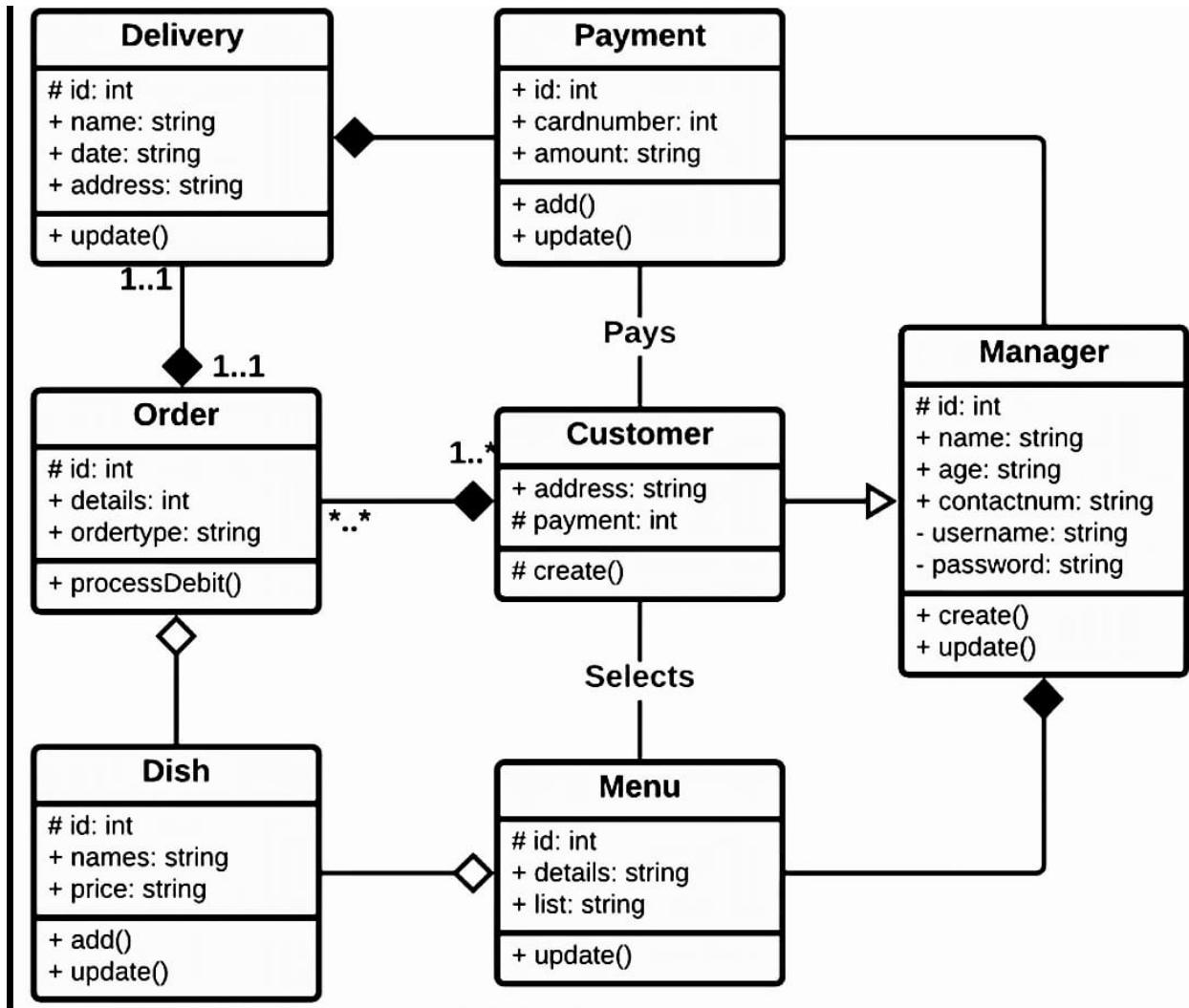
## Place Order



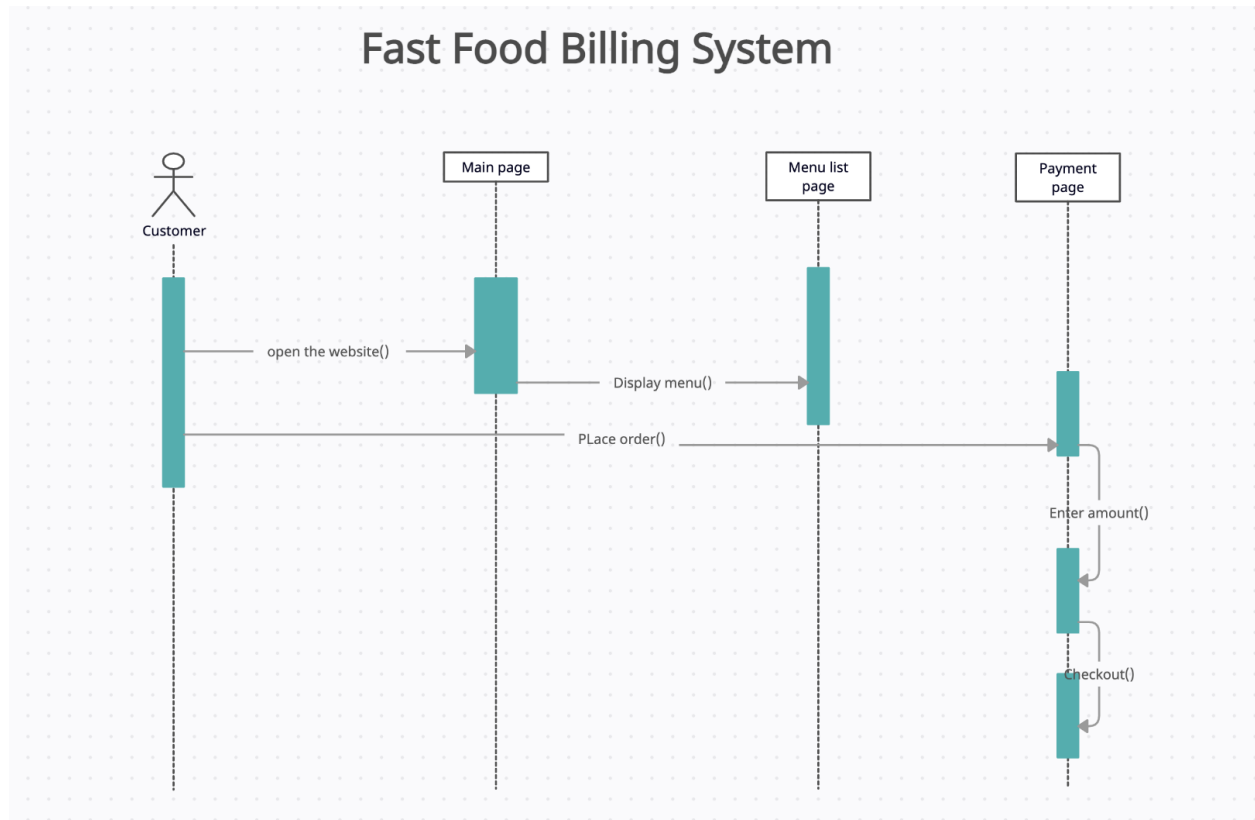
## Order Processing



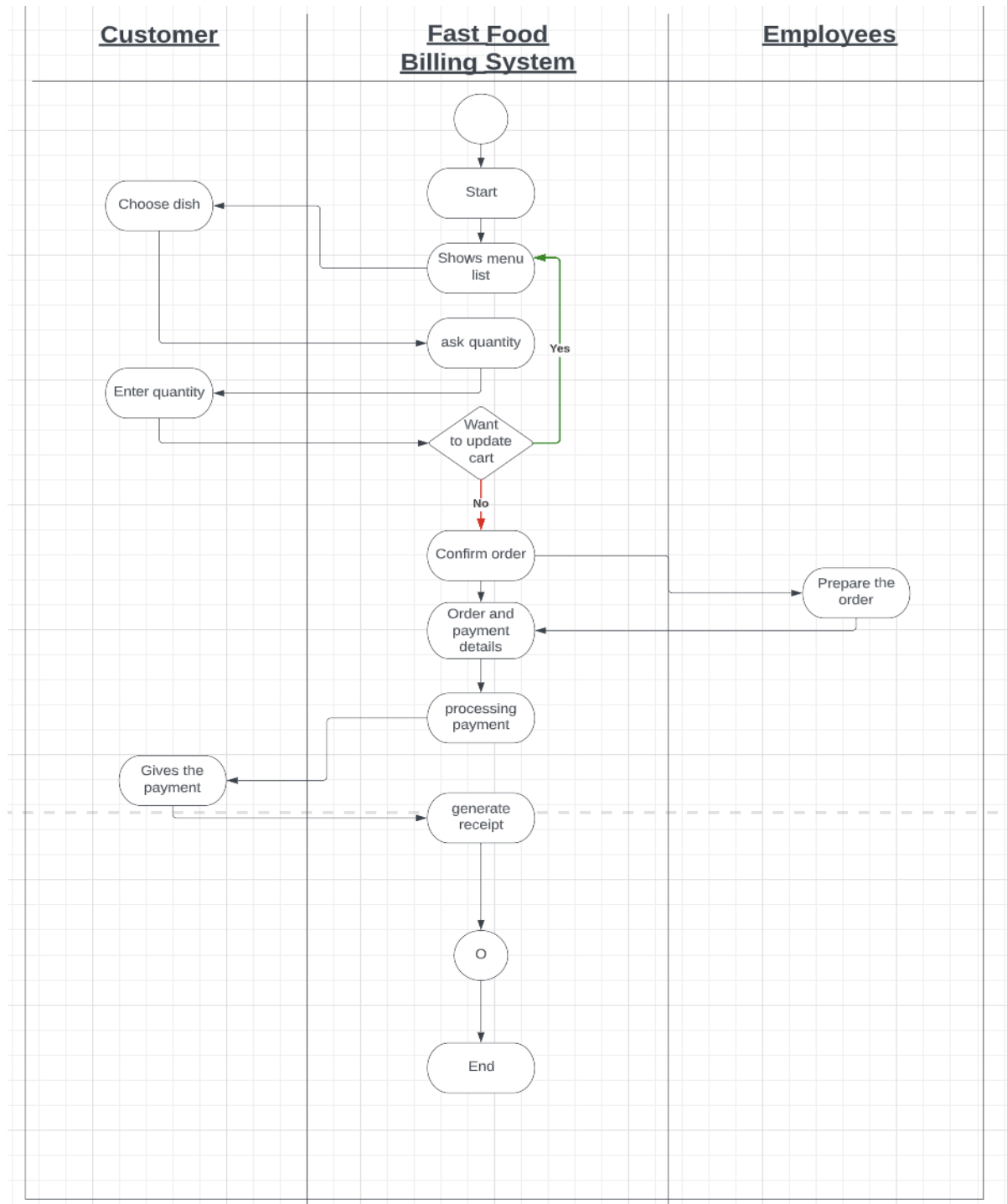
## Class Diagram



## Sequence Diagram

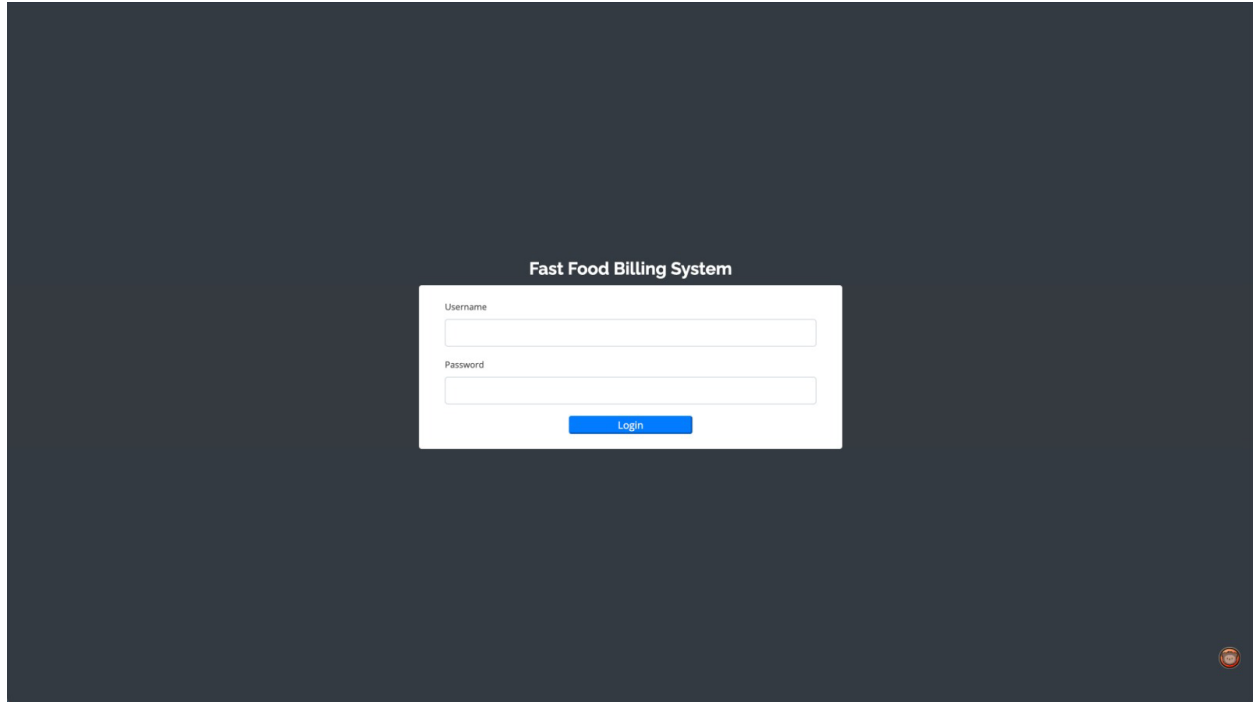


# Activity Diagram



## Results/Screenshots

### Login Page



The screenshot shows the login page of the 'Fast Food Billing System'. It features a dark blue background with a white login form in the center. The form has two input fields for 'Username' and 'Password', and a blue 'Login' button below them. The system title 'Fast Food Billing System' is displayed above the form. A small circular logo is visible in the bottom right corner of the page.

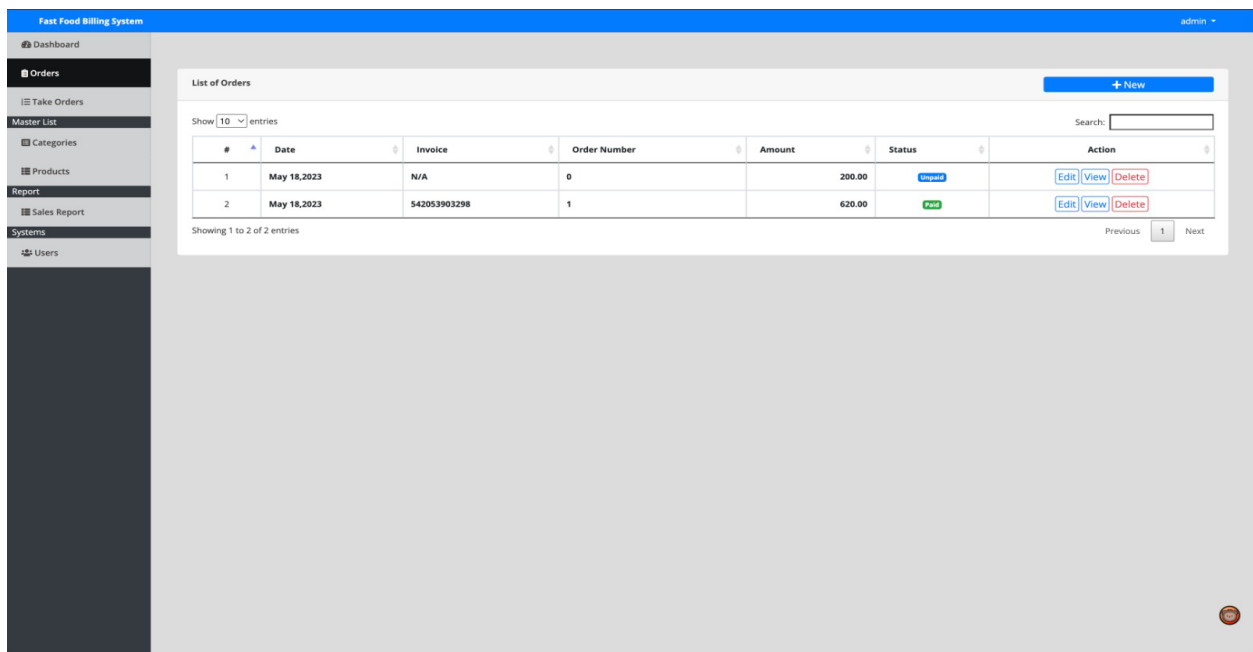
**Fast Food Billing System**

Username

Password

Login

### Received Orders Page



The screenshot displays the 'Received Orders Page' of the 'Fast Food Billing System'. It includes a sidebar with navigation links: Dashboard, Orders (selected), Take Orders, Master List, Categories, Products, Report, Sales Report, Systems, and Users. The main content area shows a 'List of Orders' table with columns for #, Date, Invoice, Order Number, Amount, Status, and Action. There are two orders listed. A '+ New' button is at the top right, and a search bar is on the right. Pagination shows 'Showing 1 to 2 of 2 entries'.

**Fast Food Billing System** admin

**Orders**

Take Orders

Master List

Categories

Products

Report

Sales Report

Systems

Users

**List of Orders** + New

Show 10 entries Search:

#	Date	Invoice	Order Number	Amount	Status	Action
1	May 18, 2023	N/A	0	200.00	unpaid	<a href="#">Edit</a> <a href="#">View</a> <a href="#">Delete</a>
2	May 18, 2023	542053903298	1	620.00	paid	<a href="#">Edit</a> <a href="#">View</a> <a href="#">Delete</a>

Showing 1 to 2 of 2 entries Previous 1 Next



# Users Page

Fast Food Billing System

admin

+ New user

Dashboard

Orders

Take Orders

Master List

Categories

Products

Report

Sales Report

Systems

Users

User List

Show 10 entries

Search:

#	Name	Username	Type	Action
1	Admin	admin	Admin	Action
2	Customer	Sai	Staff	Action
3	Pavan	pavan	Staff	Action

Showing 1 to 3 of 3 entries

Previous1Next

# Sales Report Page

Fast Food Billing System

admin

Dashboard

Orders

Take Orders

Master List

Categories

Products

Report

Sales Report

Systems

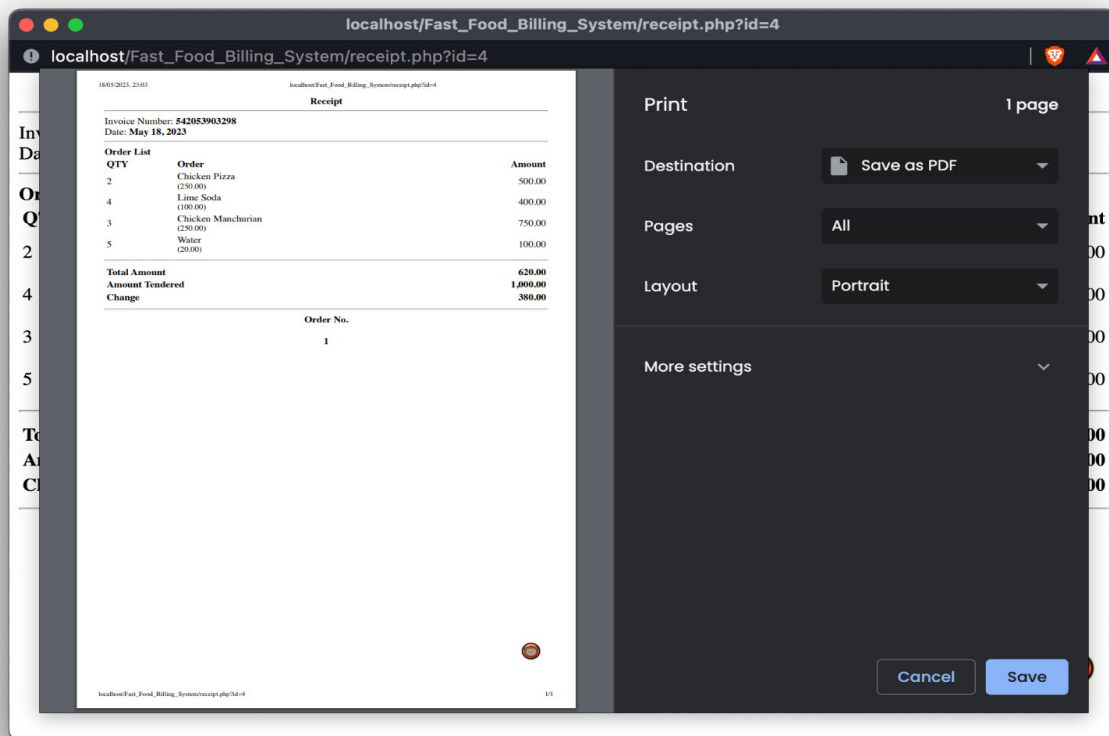
Users

Month May 2023

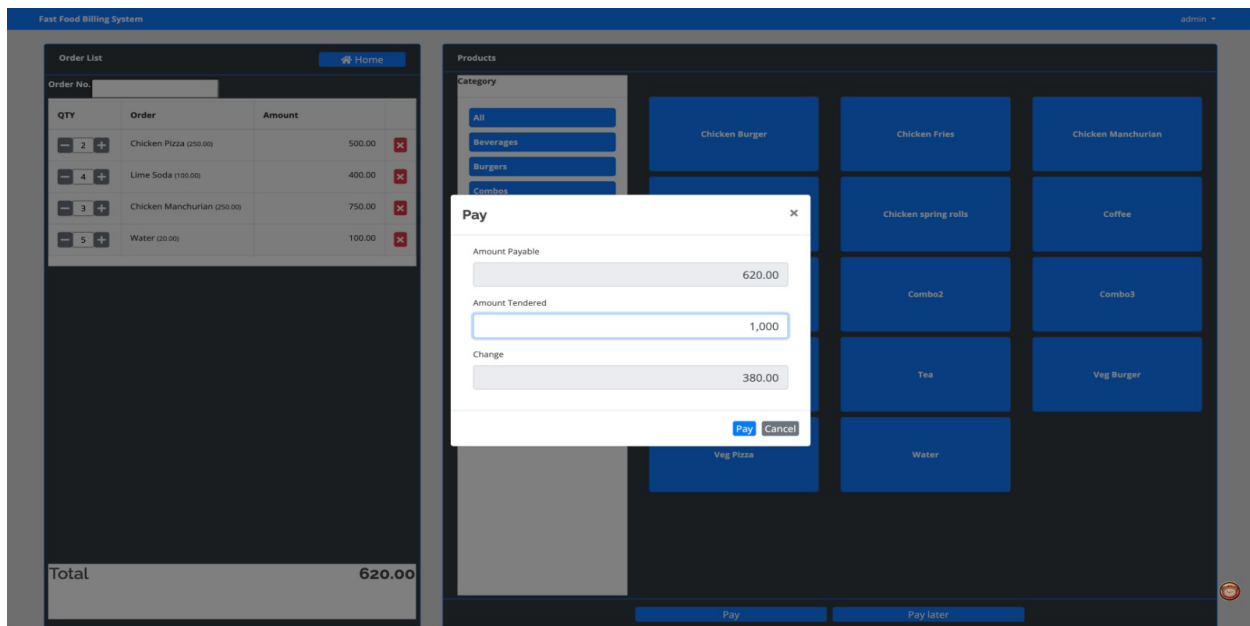
#	Date	Invoice	Order Number	Amount
1	May 18, 2023	542053903298	1	620.00
Total				620.00

Print

## Order Billing Page



## Payment Page



## Cart Page

Fast Food Billing Systemadmin

Order ListHome

Order No.

QTY	Order	Amount	
<input type="text" value="2"/> <input type="button" value="+"/>	Chicken Pizza (250.00)	500.00	<input type="button" value="x"/>
<input type="text" value="4"/> <input type="button" value="+"/>	Lime Soda (100.00)	400.00	<input type="button" value="x"/>
<input type="text" value="3"/> <input type="button" value="+"/>	Chicken Manchurian (250.00)	750.00	<input type="button" value="x"/>
<input type="text" value="5"/> <input type="button" value="+"/>	Water (20.00)	100.00	<input type="button" value="x"/>

Total620.00

Products

Category

All

Beverages

Burgers

Combos

Pizzas

Starters

Chicken Burger

Chicken Fries

Chicken Manchurian

Chicken Pizza

Chicken spring rolls

Coffee

Combo1

Combo2

Combo3

Lime Soda

Tea

Veg Burger

Veg Pizza

Water

Pay

Pay later

## Products Page

Fast Food Billing Systemadmin

Dashboard

Orders

Take Orders

Master List

Categories

Products

Report

Sales Report

Systems

Users

Product Form

Category

Please select here

Name

Description

Price

Available

Save

Cancel

Product List

Show 10 entries

Search:

#	Category	Product Info.	Action
1	Beverages	Name: Coffee Price: 50.00 Status: Available Description: Coffee is a beverage brewed from the roasted and ground seeds of the tropical evergreen coffee plant.	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	Beverages	Name: Tea Price: 30.00 Status: Available Description: The tea leaves are boiled along with additions and then boiled again after the addition of milk and sugar.	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Beverages	Name: Water Price: 20.00 Status: Available Description: Water	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	Beverages	Name: Lime Soda Price: 100.00 Status: Available Description: There may be no better drink for beating the heat than a Lime soda.	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	Burgers	Name: Veg Burger Price: 150.00 Status: Available Description: veg burger resplendent with a deep-fried vegetable cutlet, topped with coleslaw, tomato ketchup and crispy vegetables	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
6	Burgers	Name: Chicken Burger Price: 200.00 Status: Available Description: Crispy seasoned chicken breast, topped with mandatory melted cheese, piled onto soft rolls with onion, avocado, lettuce, tomato and garlic mayo.	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
7	Pizzas	Name: Chicken Pizza Price: 250.00 Status: Available Description: Chicken Pizza	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
8	Pizzas	Name: Veg Pizza Price: 200.00 Status: Available Description: Veg Pizza	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
9	Starters	Name: Chicken spring rolls Price: 300.00 Status: Available	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

# Categories Page

Fast Food Billing System

admin

Dashboard

Orders

Take Orders

Master List

Categories

Products

Report

Sales Report

Systems

Users

Category Form

Name

Description

Save

Cancel

Category List

Show 10 entries

Search:

#	Category Info.	Action
1	Name: Beverages Description: Beverages	<div>Edit</div> <div>Delete</div>
2	Name: Burgers Description: Burgers	<div>Edit</div> <div>Delete</div>
3	Name: Pizzas Description: Pizzas	<div>Edit</div> <div>Delete</div>
4	Name: Combos Description: Combos	<div>Edit</div> <div>Delete</div>
5	Name: Starters Description: Starters	<div>Edit</div> <div>Delete</div>

Showing 1 to 5 of 5 entries

Previous

1

Next

## **Conclusion**

In conclusion, a fast-food billing system is an essential component of any fast-food establishment to streamline the ordering and payment processes. By implementing a web-based software solution, you can achieve efficient and accurate billing operations. The system allows users to authenticate, select menu items, review, and modify orders, generate bills, process payments, and generate receipts.

With such a system in place, you can enhance the overall customer experience by reducing waiting times, minimizing errors in order processing, and improving the accuracy of billing. Additionally, the system can provide valuable insights into sales trends, popular menu items, and customer preferences, enabling you to make data-driven decisions to optimize inventory management and improve business performance.

Overall, a well-designed and efficiently implemented fast food billing system can contribute to the success of your fast-food business by improving operational efficiency, enhancing customer satisfaction, and facilitating effective management of financial transactions.

## **Future work**

### **Enhanced Reporting and Analytics**

Expand the reporting module to provide more comprehensive and detailed insights into sales, inventory management, customer behavior, and profitability. Incorporate visualizations and data dashboards to make it easier for managers and administrators to analyze and make informed decisions.

### **Integration with Third-Party Platforms**

Integrate with popular third-party platforms such as accounting software, CRM systems, or inventory management systems to streamline data flow and improve overall efficiency.

### **Advanced Menu Customization**

Enhance the menu management module to allow for more advanced customization options, such as building custom combos, creating special offers or discounts, and managing seasonal or limited-time menu items.

### **Online Table Reservation**

Introduce a table reservation system within the web software to enable customers to book tables in advance. This can improve the overall dining experience and help manage customer flow during peak hours.

### **Mobile-Friendly Interface**

Optimize the web software for mobile devices, ensuring a responsive and user-friendly experience for customers who prefer to order from their smartphones or tablets.

## References

1. [http://www.emenuworld.com/emenu/features\\_22](http://www.emenuworld.com/emenu/features_22)
2. <http://www.deploid.com/tablet/ipad/>
3. <http://aptito.com/Why-Aptito>
4. <https://www.menupad.com/features>
5. <http://www.waitersrace.com/tablets-and-e-menu-debates-around-the-restaurants-tables>
6. <http://www.touchbistro.com/features>.
7. <http://www.acsu.buffalo.edu/~suchismi/iRec.pdf>
8. [http://en.wikipedia.org/wiki/Jaccard\\_index](http://en.wikipedia.org/wiki/Jaccard_index)
9. <http://androidcommunity.com/toshiba-10-1-inch-android-tablet-gets-fully-detailed-20110318>