Skyler's Systems

Disciple's Pizza Delivery System (DPDS)

System Specification

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Executive Summary

Disciple's Pizza has hired Skyler's Systems to develop a delivery system that will aid in improving workflow and providing a more convenient way of ordering pizza for their customers. Skyler's Systems has proposed a system to fulfill and meet Disciple's Pizza's desires and requirements. This system will utilize a database in the cloud to store personal information, like name, credit card information, and general preferences (e.g. favorite orders, recent orders, etc...). The system will also incorporate a backup server to replicate and store business files and data, as well as personal information. Hardware for this proposed system will utilize mobile devices and tablets and be used by the couriers and truck owners. This document will cover the system's structural model, class diagrams, architecture design, hardware and software requirements, security plan, and user interface design.

1: Introduction

1.1 Problem Statement

Disciple's Pizza has hired Skyler's Systems to develop a delivery system that will aid in improving workflow and providing a more convenient way of ordering pizza for their customers. Disciple's Pizza has acknowledged that the constant traveling of the food trucks can be an obstacle for providing customers their orders. To resolve this, Disciple's Pizza desires a method in maintaining the constant travel of the food trucks, while also providing customers their orders in a timely and efficient manner. The system, properly named Disciple's Pizza Delivery System (DPDS) consists of two applications, one for internal use and one for customer use, named "Disciples Companion" and "Disciples" respectively.

A number of stakeholders have been defined and will benefit from DPDS. Customers will receive a system that will provide them easier online ordering and fast delivery. The members of Disciple's Pizza will experience an increase of workflow, providing them an intuitive and robust environment. Skyler's System's Developers will experience their first project dealing with mobile applications, allowing them to apply their skills and knowledge to a new field of system development. Lastly, with Disciple's Pizza's future goal of impacting local churches, these churches will be supported indirectly by Disciple's Pizza. With these stakeholders and benefits in mind, Skyler's Systems looks to assist Disciple's Pizza in achieving their desires and goals, while also providing a solution that best fits their environment.

1.2 System Services

Functional requirements for Disciple's Pizza Delivery System (DPDS) include:

- **Creating an account:** Users will be able to create an account associated with DPDS to store his/her information (*Section 5.3, Use Case 3)*
- **Creating online order:** Customers will be able to utilize DPDS to submit an online order and choose his/her desired food items and have it compiled into a cart for checkout (*Section 5.3, Use Case 1)*
- **View entire online order:** Customers must be able to view his/her compiled cart of desired food items at the time of checkout (*Section 5.3, Use Case 1 and 2)*

- **Status Tracking:** DPDS must allow the customer to view the status of her/her order and provide an accurate time of delivery to the specified delivery location (*Section 5.3, Use Case 4 and 8)*
- **Checkout Items:** DPDS must allow the input of personal information (name, credit card information, delivery address, etc…) and have it stored in his/her account for future purchases. (*Section 5.3, Use Case 2)*
- **Order Handling:** Food truck owners must be able to view all ongoing and pending orders, change the status of the customer's online order, and create a new order in-person through the internal application (*Section 5.3, Use Case 7)*
- **Courier Support:** Couriers must be able to receive a generated list of delivery tasks and the most optimal delivery route from DPDS (*Section 5.3, Use Case 5)*
- **Menu Changing:** Food truck owners must be able to change the menu based on seasonal and specialty items (*Section 5.3, Use Case 9)*
- **Food Voucher Handling:** Owners should be able to handle food voucher information and provide them to customers you need one. (*Section 5.3, Use Case 2)*
- **Accessing Sales Statistics and Summary:** Owners could be able to view a report of the sales statistics and summary from a given day, week, or month of their choosing.

1.3 Nonfunctional Requirements and Design Constraints

The following nonfunctional requirements and constraints need to be acknowledged and considered to provide a quality system for Disciple's Pizza.

- Disciple's Pizza must consider the technical skill gap amongst all members and are encouraged to hold training sessions on the system and mobile devices in general
- Due to the ambiguity of the time schedule, Disciple's Pizza and Skyler's Systems must coordinate and organize a set time schedule to ensure both parties on in agreement.
- DPDS must be able to fully operate on the chosen operating system (iOS or Android)
- Courier delivery and navigation directions must be generated on a third-party navigation system (e.g. Apple Maps, Google Maps)
- DPDS must be able to provide customer's online orders and the most optimal delivery route within five seconds
- All personal information (name, credit card information, delivery addresses, etc…) will be limited and only relevant information will be viewable amongst all users of the system
- DPDS will be maintained quarterly (every 4-6 months) after the initial development stages
- DPDS will have an expected completion date by Summer 2020, unless a time schedule organized by Disciple's Pizza and Skyler's Systems suggests otherwise

For more information, refer to DPDS System Proposal 1.6 Constraints (Page 6-7) and 4.4 Nonfunctional Requirements (Page 19)

1.4 System Evolution

In version 1.0 of DPDS, the system will provide the necessary and basic functions needed to meet Disciple's Pizza's desires and requirements. This includes account creation, order handling, courier support, and online ordering. In version 2.0 of DPDS, functionalities such as sales statistics and reporting and full functionality of food voucher handling and will be implemented.

1.5 Document Outline

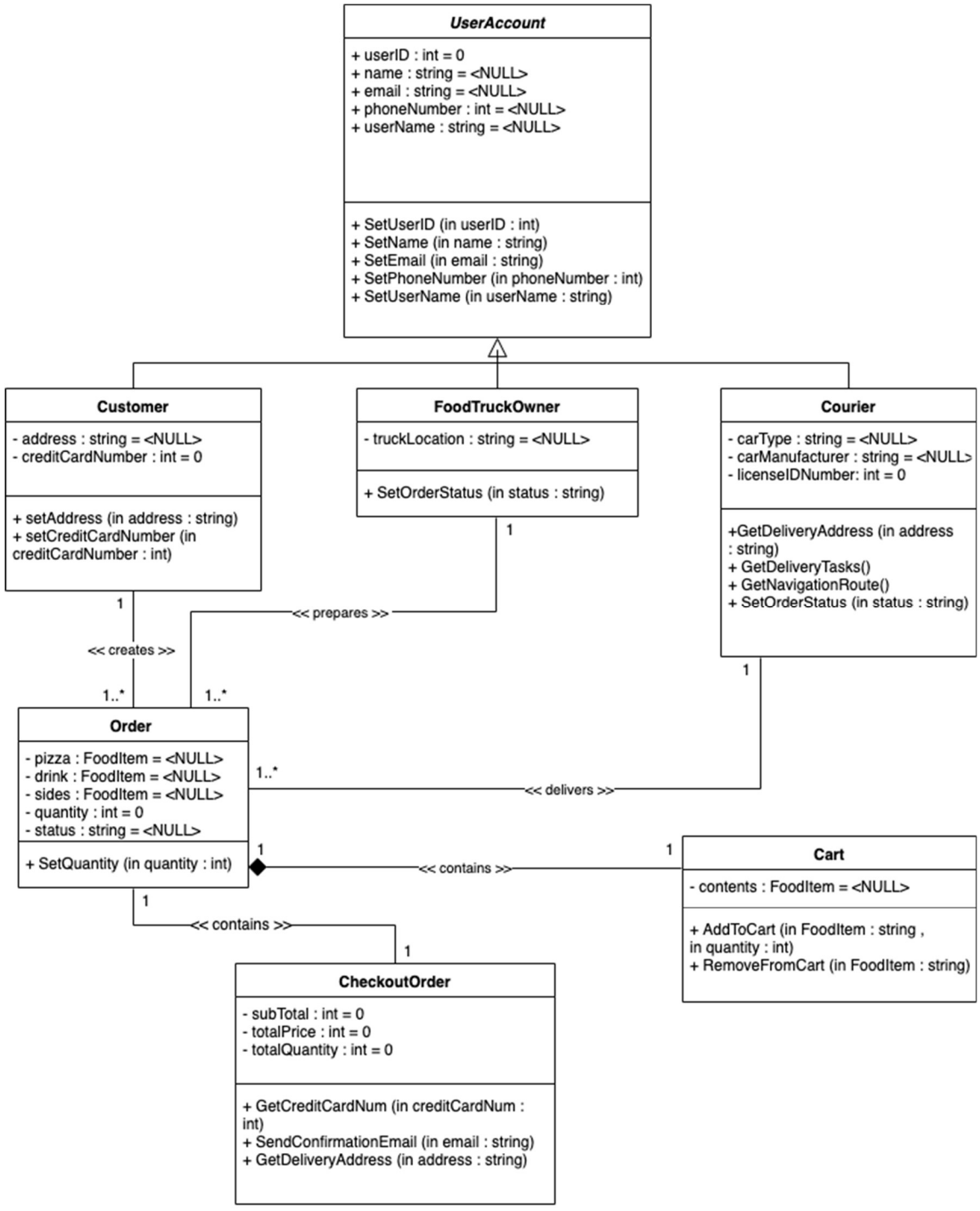
This document will address three main sections of the DPDS's system specifications. This includes the structural model, architecture design, and the user interface. The structural model consists the class diagrams for DPDS which also includes their respective attributes and operations. The architecture design consists of the implementation of hardware and software for the system to function properly. This will also cover the interactions between the hardware and software and how these interactions maintain full functionality of the system. Finally, the user interface section consists of diagrams and visual representations of how DPDS will look after initial development. Note that these diagrams and visuals are only rough estimates and are not accurate representations of the final product. This is just to give an idea of how the DPDS will look.

2.0 Structural Model

2.1 Introduction

This section covers the class diagram of DPDS and the associations and relationships between the classes. This will also list the attributes and operations of each class.

2.2 Class Diagram



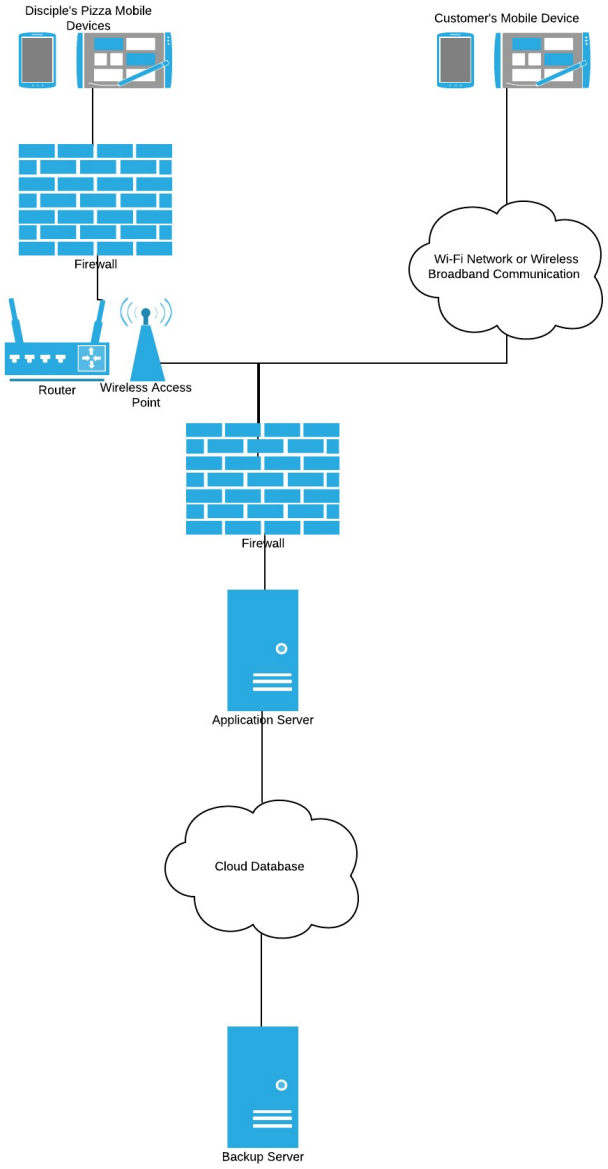
3.0 Architecture Design

3.1 Introduction

This section will present two diagrams, visually representing DPDS's system architecture as well as the system's hardware and software requirements. DPDS will utilize the mobile devices of the customer, food truck owners, and couriers. The customer's devices will be connected to any Wi-Fi network or wireless broadband communication (e.g. 4G LTE) to access the system. The food truck owner's and courier's devices will establish a wired or wireless connection through a router or WAP. Once the user has established a connection with the system, DPDS will fetch the user's account and information, if it has not already been cached. DPDS will first fetch the information stored in a cloud database. All information will be backed up and replicated to a physical server.

3.2 Infrastructure Model

3.2.1 Deployment Diagram 1 – Architecture Overview



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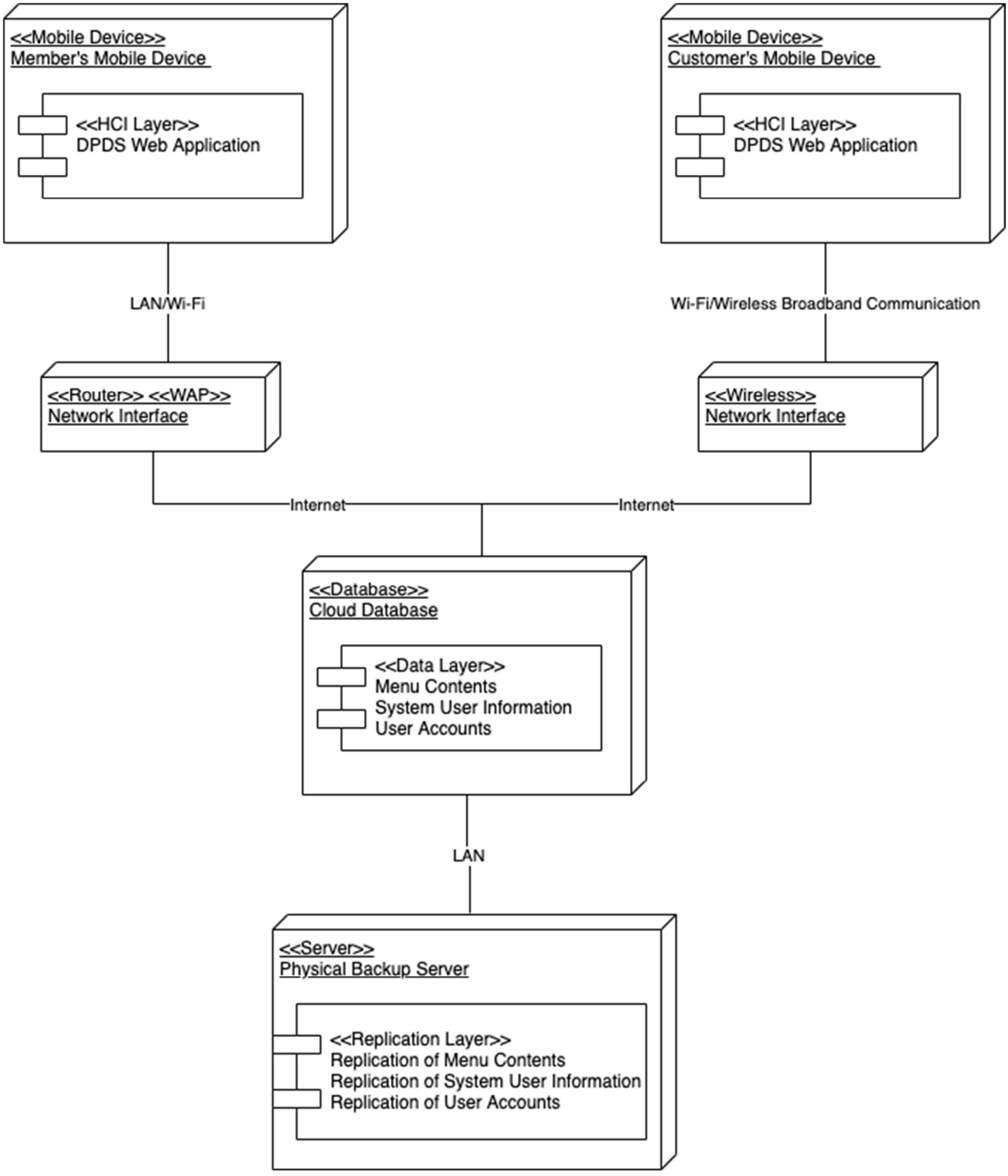
3.2.2 Deployment Diagram 2 – Nodes and Artifacts



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3.3 Hardware and Software Requirements

3.3.1 Required Hardware Components

- **Cloud Database:** This cloud database will house all data, specifically personal and user account information, as well as information that pertains to the business, like menu items, recipes, and sales statistics
- **Application Server:** This server will house DPDS. This will provide the necessary processing and storage to run the system and keep it functional.
- **Backup Server:** This server will serve as the backup server for all data. In the case that the data in the cloud is breached and exposed, the backup server will keep a replication of all data.
- **Business Tablets/Mobile Devices:** The food truck owners will be issued a tablet and the couriers will be issued a mobile device to utilize DPDS to its fullest potential.
- **Router and Wireless Access Points:** This will provide the members of Disciple's Pizza a secure and fast internet connection. This internet connection will be private and only accessible for the members of Disciple's Pizza.

3.3.2 Required Software Components

- **iOS (Apple):** For this system, it would be best to utilize Apple's operating system, iOS. This is due to the skill gap within Disciple's Pizza and is recommended based on its popularity, familiarity, and intuitiveness.
- **Webroot:** Anti-virus for the application and backup servers, as well as the business tablets and mobile devices

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3.4 Security Plan

Security Table Template

Threats / Assets/Components	Disruption, Destruction, Disaster					Unauthorized Access		
	Fire	Flood	Power loss	Circuit Failure	Virus	External Intruder	Internal Intruder	Eavesdrop
Servers	1, 2	1	4	1, 5	3, 6, 7, 8	8, 9, 10	9, 10	11
Mobile Devices	1, 2	1	-	-	3, 6, 7, 8	8, 9, 10	9, 10	11
Network Devices	1, 2	1	4	1, 5	3, 6, 7, 8	10	9, 10	-
People	1	1	-	-	-	-	-	-

Controls

1. Disaster recovery plan
2. Sprinkler system
3. Webroot Anti-Virus
4. Uninterruptable Power Supply (UPS) on all major network servers (Application and Backup)
5. Extra backbone fiber cable to support the preexisting cable within the application and backup server
6. Antivirus software present on the network
7. Extensive user training on viruses
8. Strong and secure passwords
9. Extensive user training on password security
10. Application layer firewall
11. Privacy Screens

4.0 User-Interface

4.1 User-Interface Requirements and Constraints

This section contains the system's GUI's that will be viewed by the users and generated for the system. Below, there is a window navigation diagram to assist in understanding how each section of the UI will operate and function. Below the window navigation diagram are visual representations of how each section of the UI will look. Keep in mind that this is a rough draft of DPDS's interface and does not represent the system's UI fully. This is to provide an idea of the look and feel of the system's UI.

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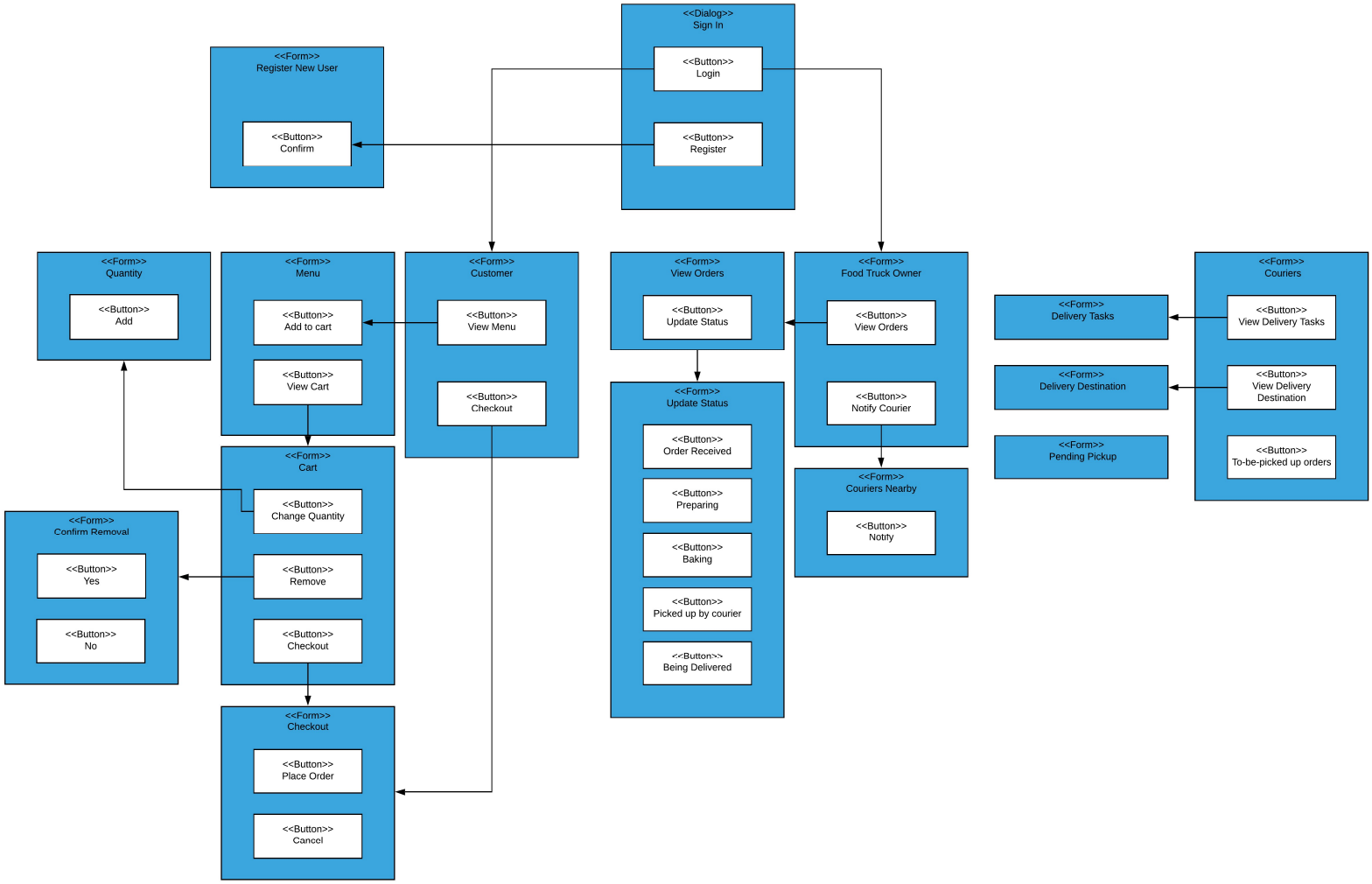
4.2 Window Navigation Diagram



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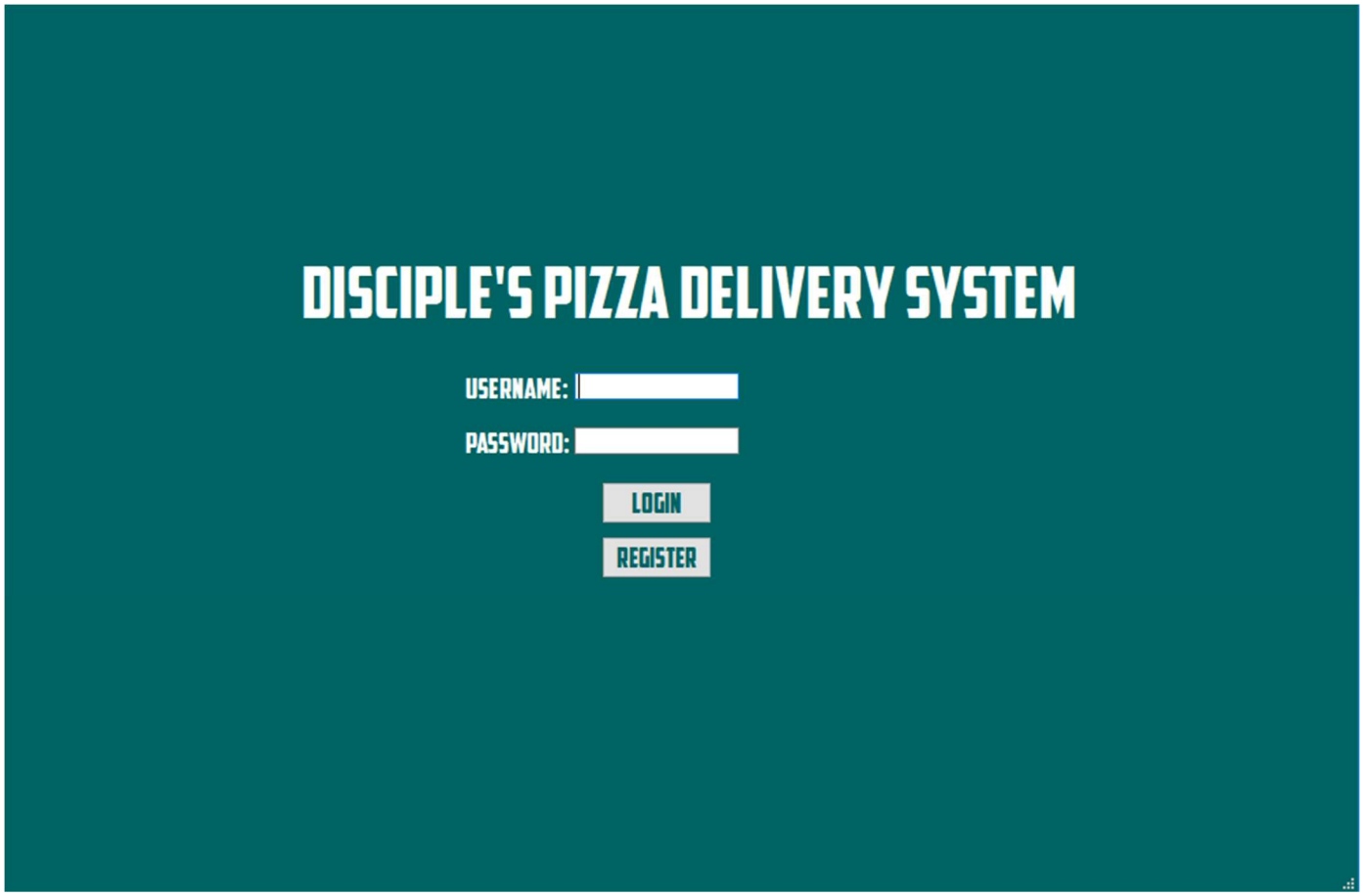
4.3 Forms: Screen / User-Interaction Designs

Sign in page:



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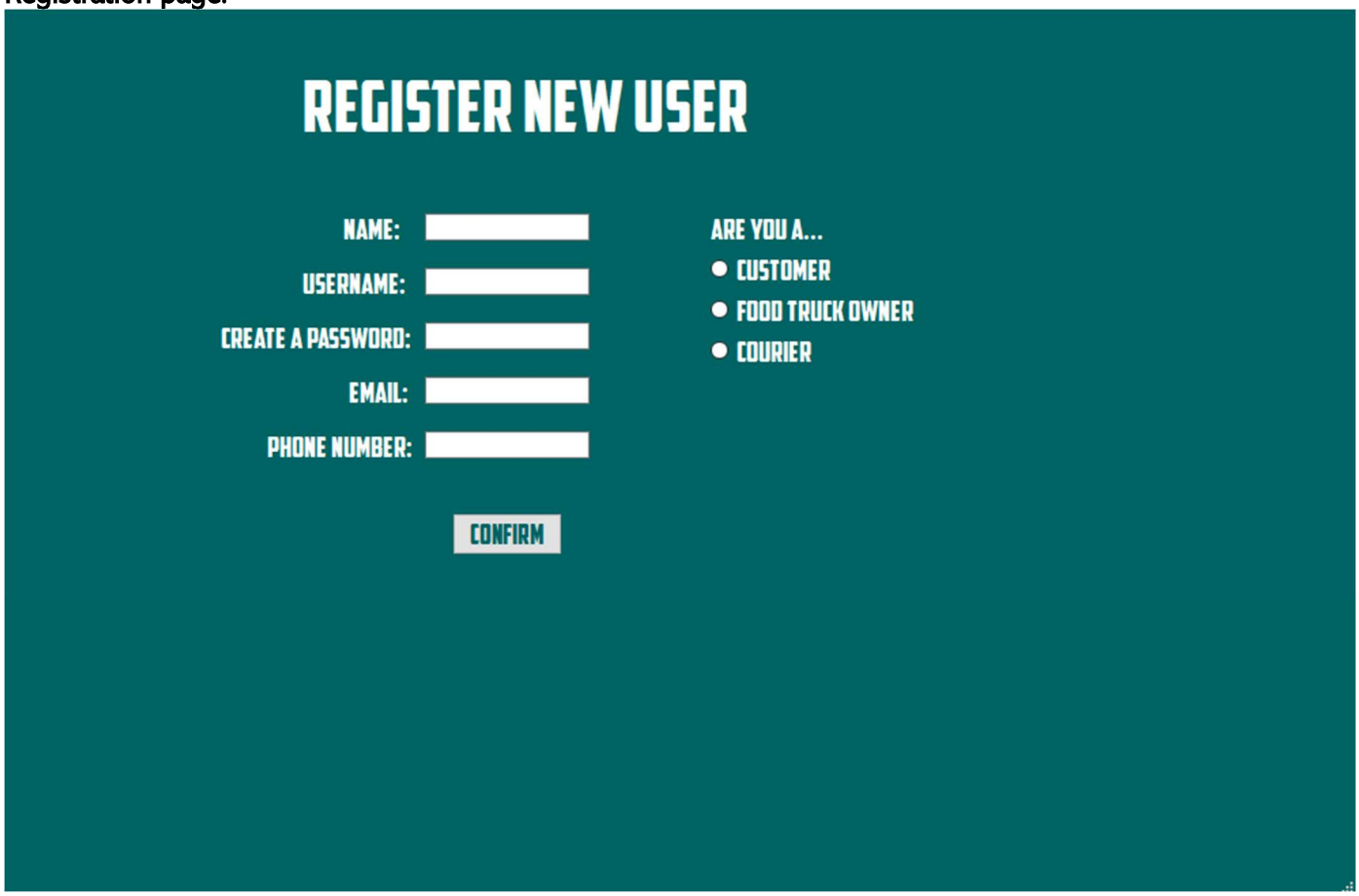
Registration page:



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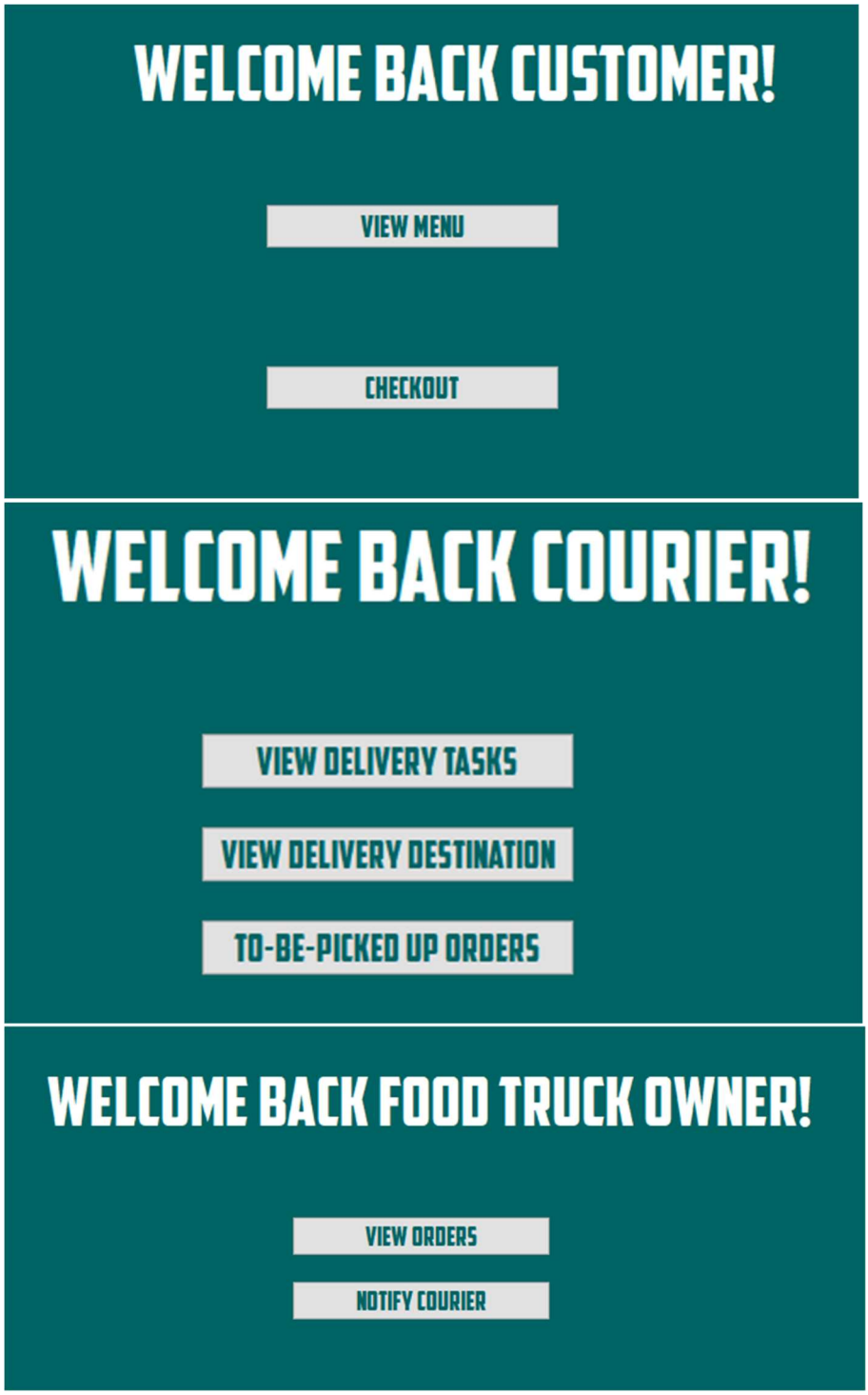
Registration page (for customer, courier, and food truck owner):



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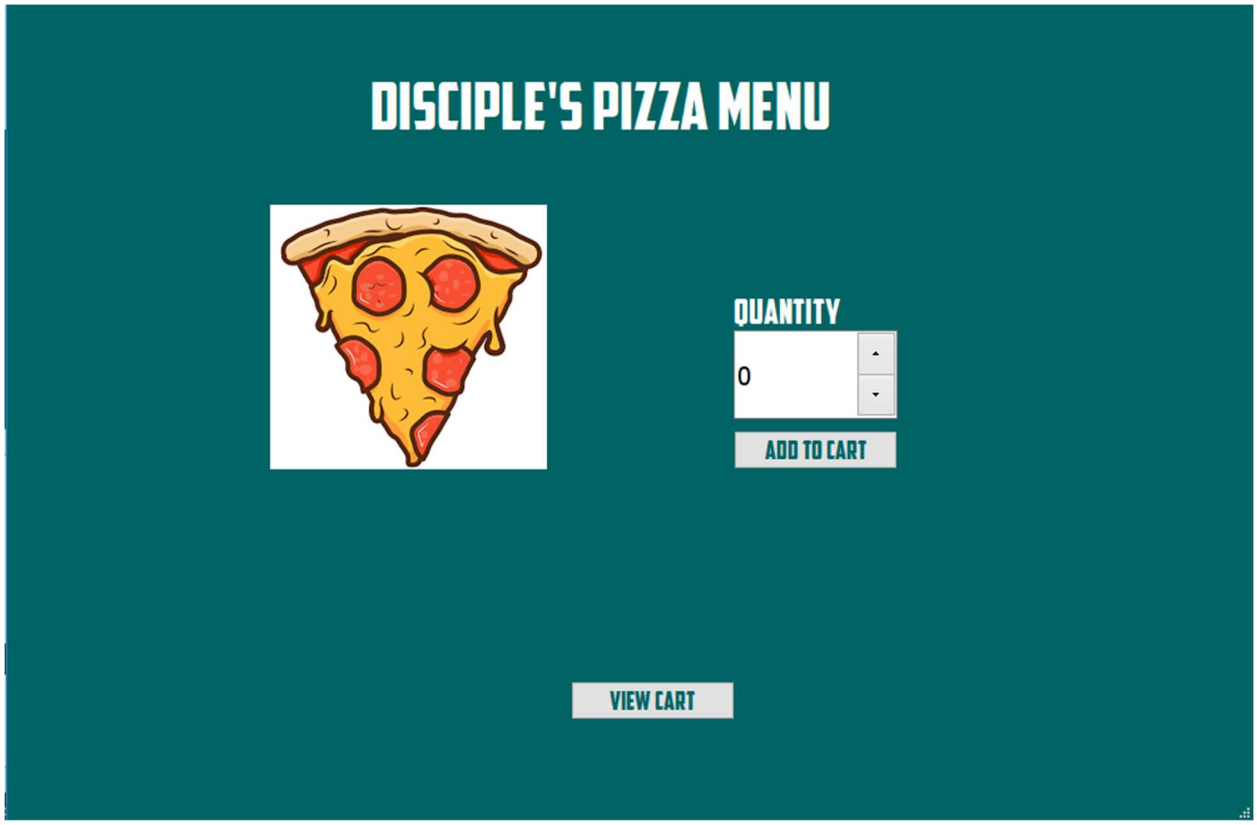
Menu:



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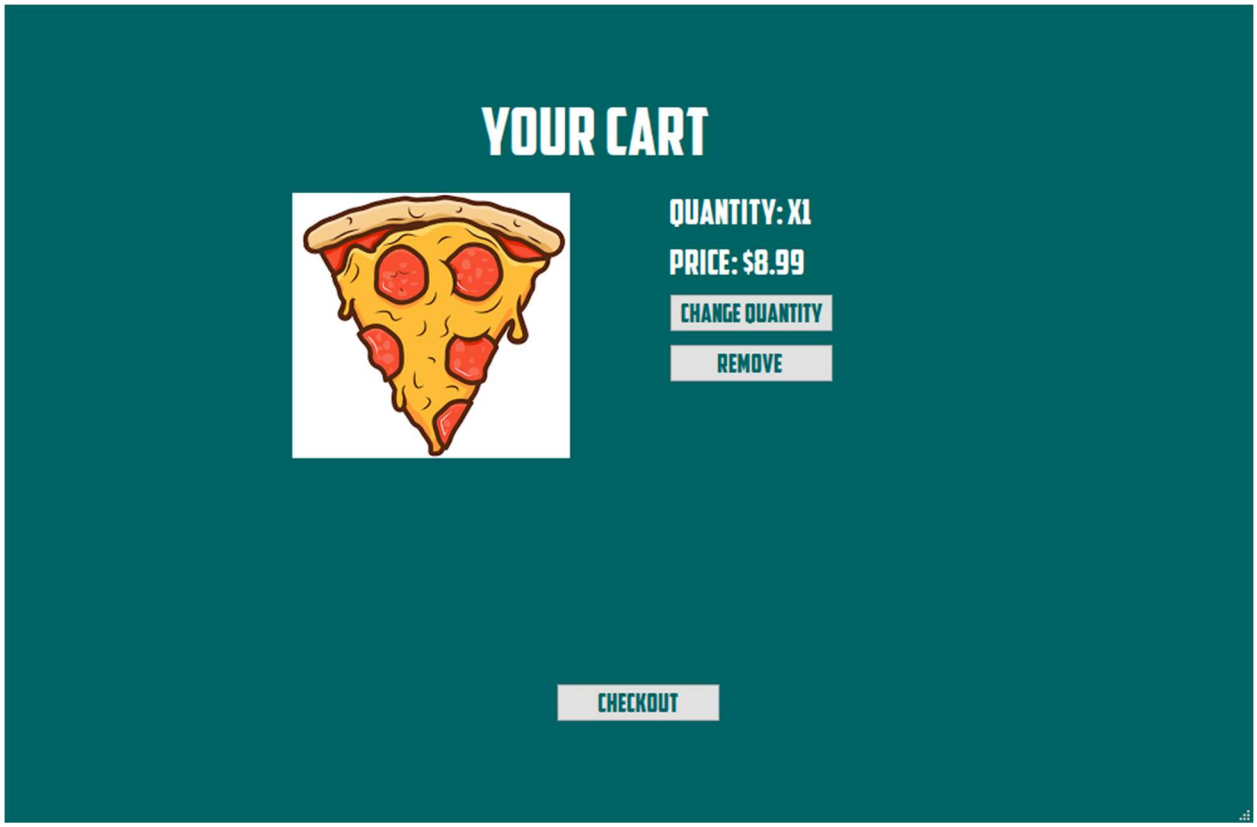
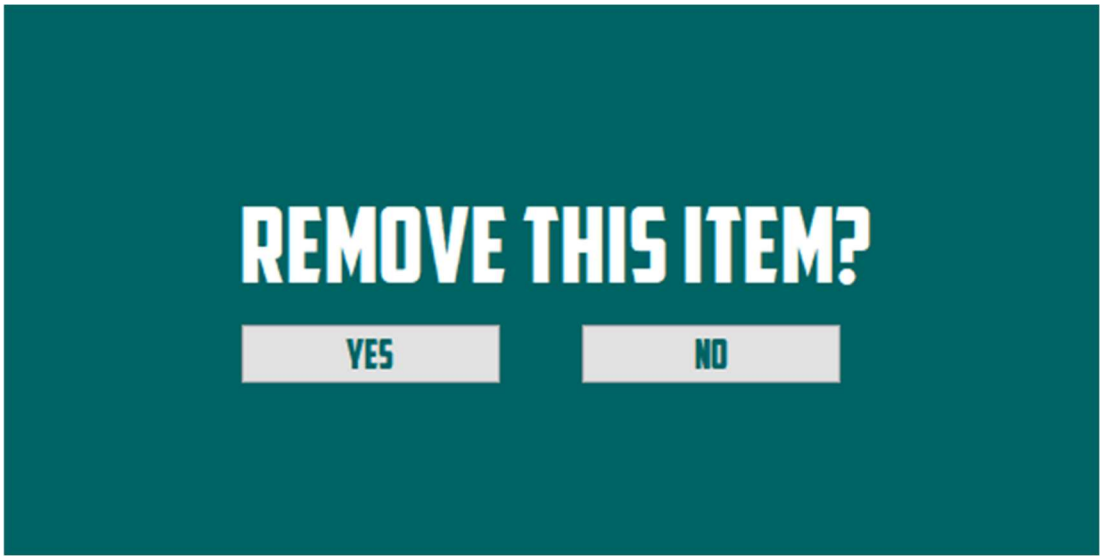
Cart:



Change Quantity:

Confirm Removal:



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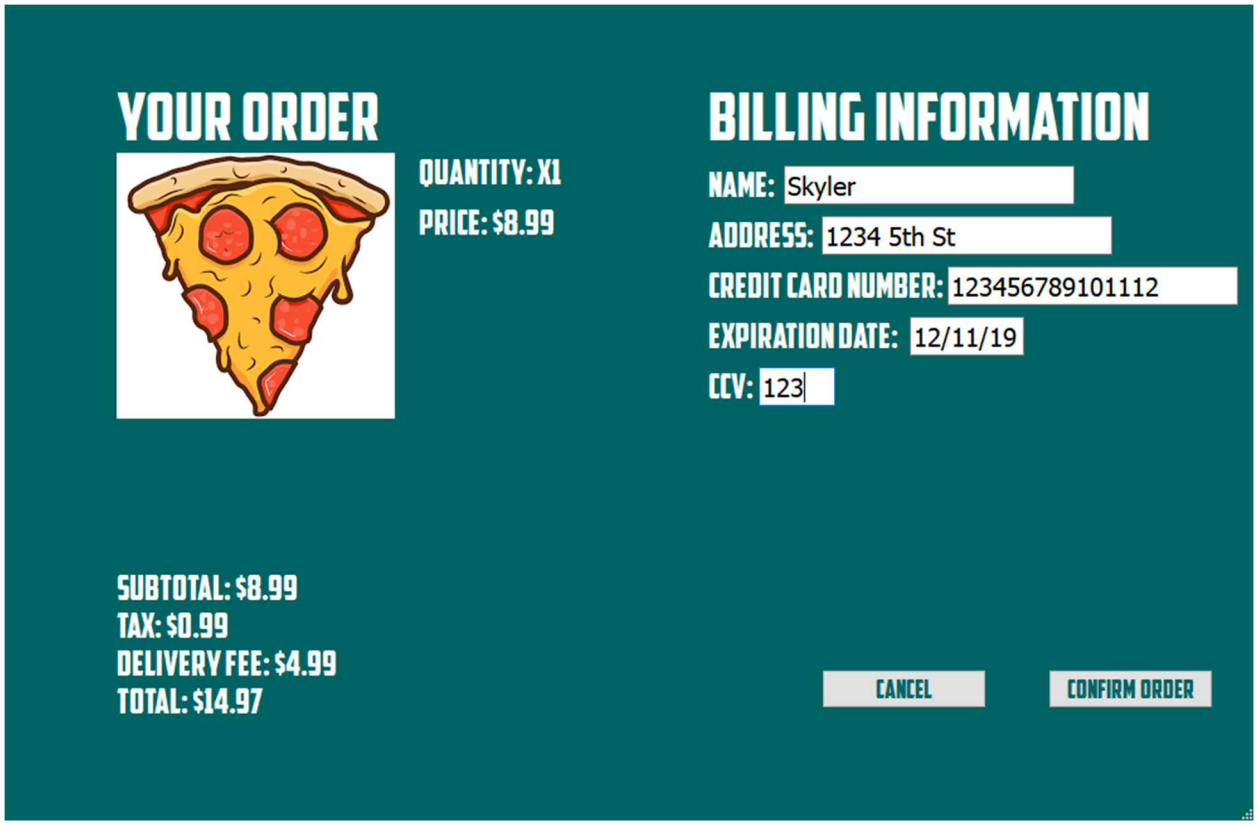
Checkout:



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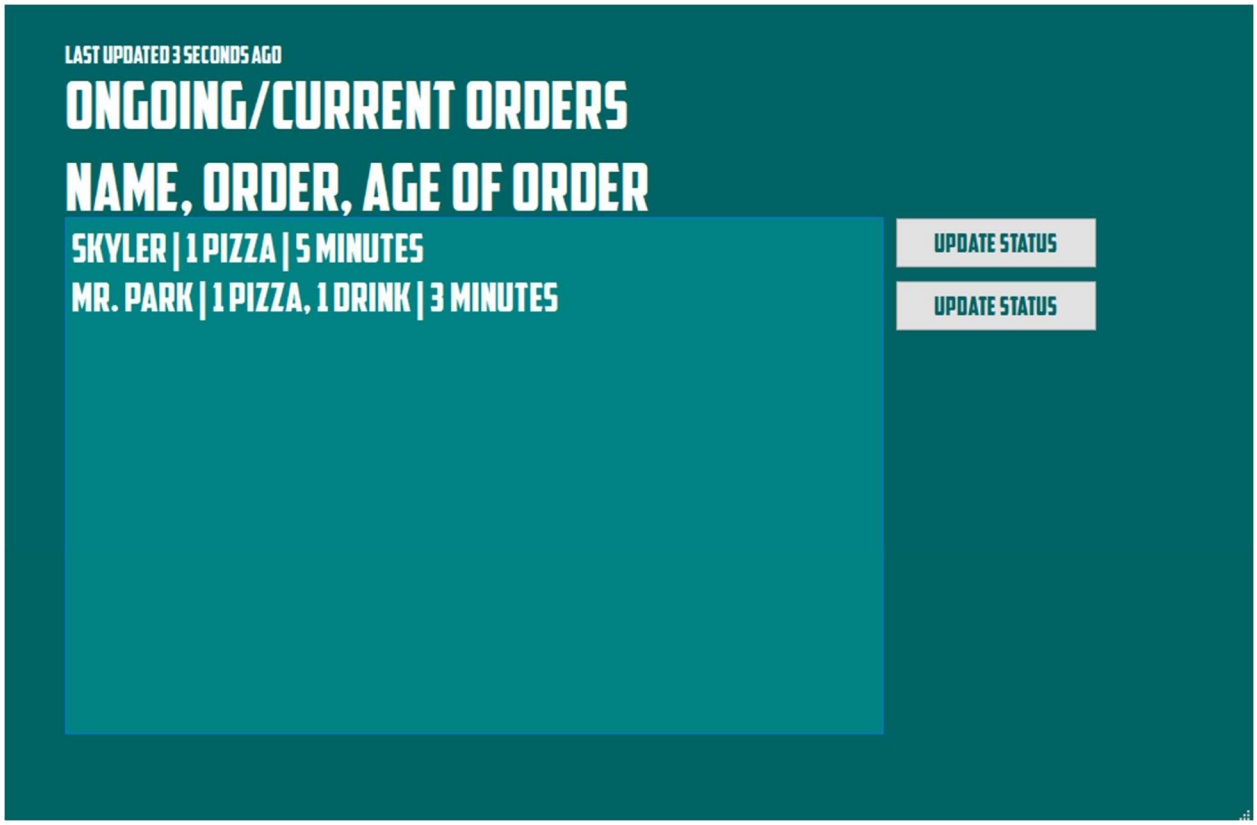
View Orders:



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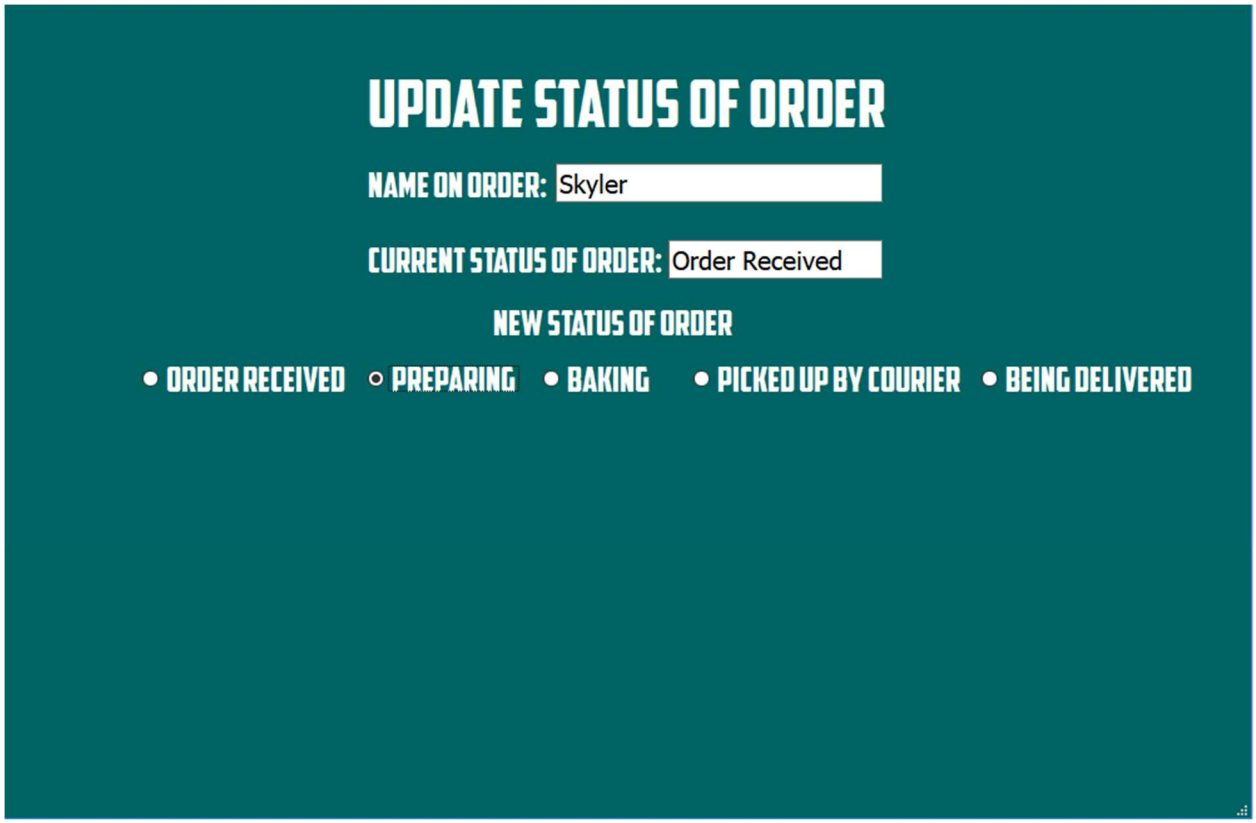
Update Status:



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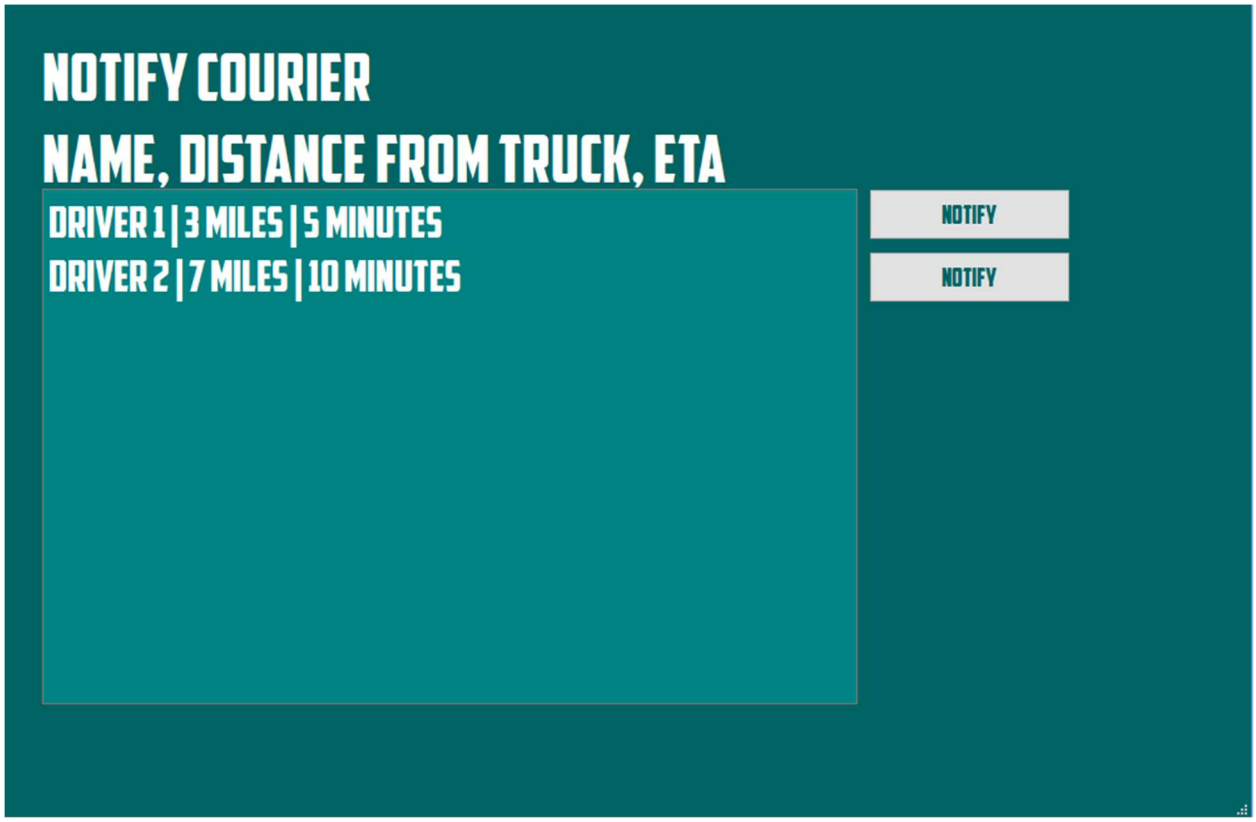
Couriers Nearby:



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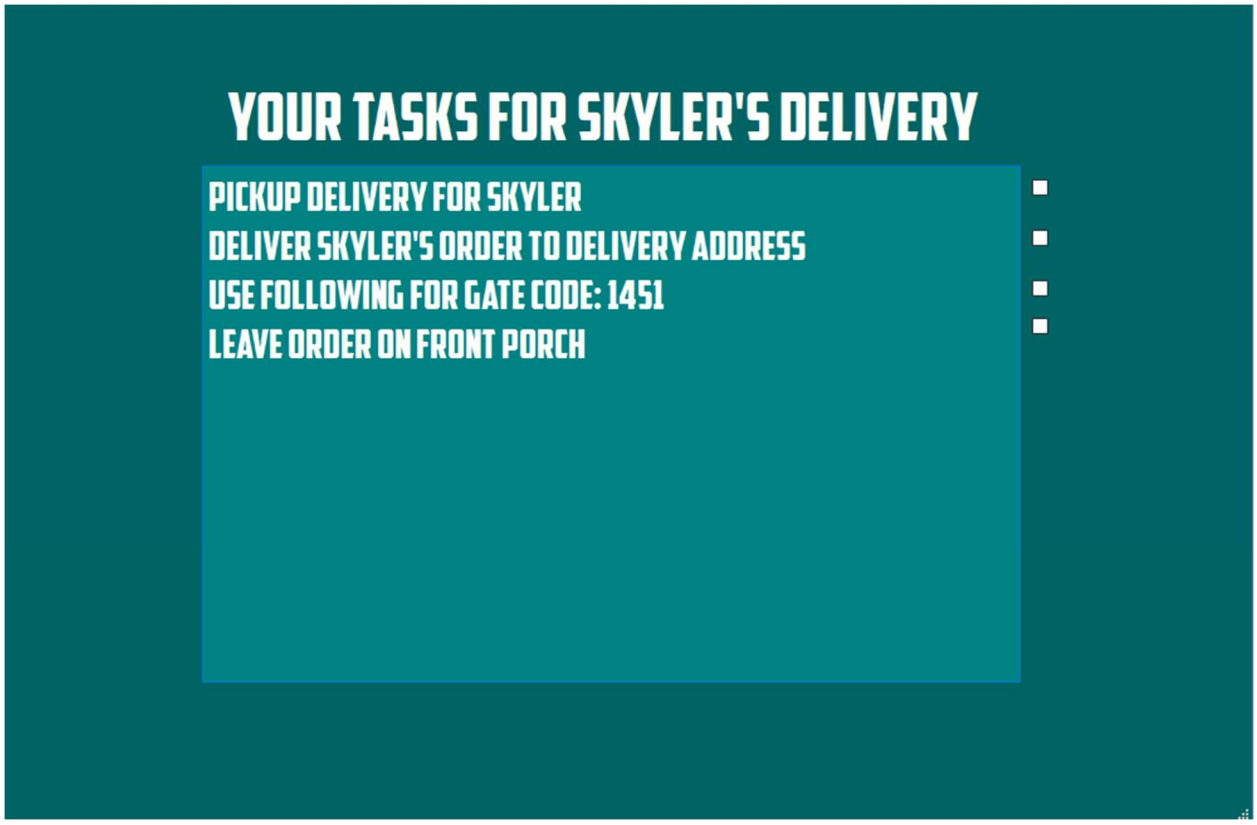
Delivery Tasks:



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Delivery Destination:

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Pending Pickup:

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5.0 Appendices

Glossary

DPDS: Disciple's Pizza Delivery System; The system being designed and implemented by Skyler's Systems for Disciple's Pizza

Bibliography

Disciple's Pizza Delivery System (DPDS) Proposal

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Diagrams have been created using LucidChart.com and Draw.io