

Development Project

SWE 3313/02

Fall 2020

Group 6

Ivan Alkhovik, Malvika Shastry, Bhumika Shastry, Aubrey Bailey

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Project Plan

Scope

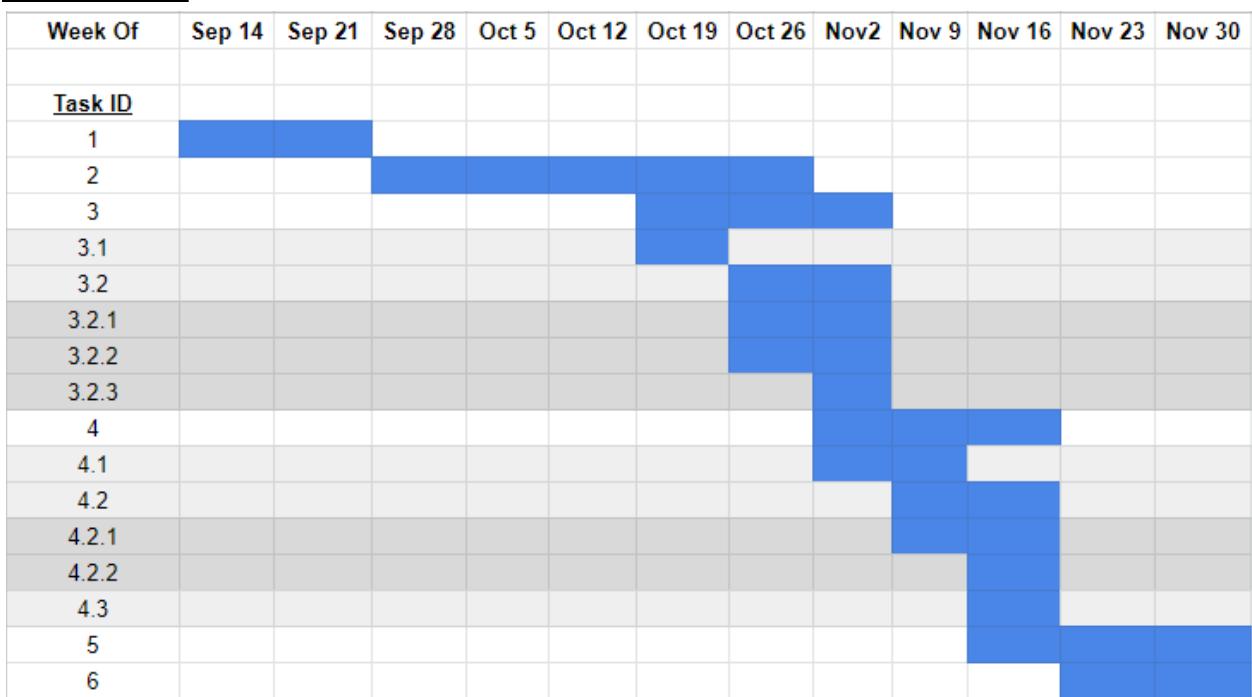
- Customer Record (Database)
 - Phone number (primary key)
 - Name
 - Address
 - Type of charge account(Visa/Mastercard)
 - Should be able to make accounts and order from those accounts
 - Username/Password
 - Email
- Restaurant Menu (GUI)
 - Pizza sizes
 - Types of toppings
 - Various crust options
 - Side dishes
 - Beverages
- Payment
 - Type (Credit Card, Cash, Check, EFT)
 - Amount
- Receipt
 - Place to sign (if Credit Card)
 - Customer info
 - List of items ordered
 - Delivery/pickup
 - Amount due

Schedule

Task ID	Work Breakdown	Planned Start	Planned Finish	Workload Planned	Workload Actual	Progress (%)
1	Project Plan	Sep 14	Sept 25	Scope, schedule, team organization, technical/ data/ test descriptions	Scope, schedule, team organization, technical/ data/ test descriptions	100
2	Prototype 1	Sep 28	Oct 30	Development of basic program		0
3	Requirements Documents	Oct 19	Nov 6	Tasks 3.1 and 3.2		0
3.1	Requirements Definitions	Oct 19	Nov 6	Functional and non-functional requirements		0
3.2	Requirements Specification	Oct 26	Nov 6	Tasks 3.2.1, 3.2.2, and 3.2.3		0
3.2.1	Case Diagrams/ Documents	Oct 26	Nov 6	Program's expected behavior diagrams		0
3.2.2	Class Diagrams/ Documents	Oct 26	Nov 6	Program structure diagrams		0
3.2.3	ER Diagrams	Nov 2	Nov 6	Database relationship diagrams		0
4	System Design Documents	Nov 2	Nov 20	Tasks 4.1, 4.2, and 4.3		0

4.1	Conceptual Designs	Nov 2	Nov 20	Screenshots/ reports of prototype 1		0
4.2	Technical Designs	Nov 9	Nov 20	Tasks 4.2.1 and 4.2.2		0
4.2.1	Detailed Class Diagrams	Nov 9	Nov 20	More detailed class diagrams		0
4.2.2	Database Descriptions	Nov 16	Nov 20	Table descriptions		0
4.3	Technical Support Specifications	Nov 16	Nov 20	Summary of technical support to be expected		0
5	Prototype 2	Nov 16	Dec 4	Improvement of prototype 1		0
6	Presentation Video	Nov 23	Dec 4	Consolidation of all documents into a video		0

Gantt Chart:



Key:

Blue areas are scheduled work times for the main tasks.

Light gray areas are subtasks of the main tasks.

Dark gray areas are subtasks of the subtasks.

Team Organization

Team Roles:

- ❖ Ivan Alkhovik - Project Leader and Manager: Planning of project; Execution of project; Assigning team roles, Defining scope and Breakdown structure; Pitching in for development of project.
- ❖ Malvika Shastry - Lead Document Writer and Developer: Leads the team in all areas of documentation and file management; Consulting and planning of project; Pitching in for development of project.
- ❖ Bhumika Shastry - Lead Programmer and Developer: Leads the team in programming; Consulting and planning of project; Pitching in for development of project.
- ❖ Aubrey Bailey - Lead Database Manager and Developer: Leads the team in database management; Consulting and planning of project; Pitching in for development of project.

Resumes:

Ivan Alkhovik:

- **Contact Information:**
 - Email: ialkhovi@students.kennesaw.edu
- **Education:** Kennesaw State University (2019-Present)
 - Software Engineering
- **Experience:**
 - Redesigned website for Atlanta Area Multiple Myeloma Support Groups (AAMMSG).
- **Skills:**
 - Java, C++
 - Data Structures
 - Database Systems

Malvika Shastry:

- **Contact Information:**
 - Email: mshastry@students.kennesaw.edu
 - Phone: 6787091122
- **Education:** Kennesaw State University (2018-2022)
 - Bachelor of Science in Computer Science, Minor in Mathematics
- **Experience:**
 - Mathematics Tutor, SMART Center, KSU (Feb 2020-July 2020) - 6 Months
 - Technology Ambassador, Women In Technology Campus, KSU (Aug 2020-Present) - 2 Months
- **Skills:**
 - Java, C++
 - Data Structures
 - Database Systems-SQL
 - Computer Organization and Architecture- MARIE Assembly Language

- **Clubs:**
 - Phi Eta Sigma Honor Society
 - Women In Technology Campus – KSU
 - South Asian Student Association

Bhumika Shastry:

- **Contact Information:**
 - Email: bshastry@students.kennesaw.edu
 - Phone: 6787091110
- **Education:** Kennesaw State University (2018-2022)
 - Bachelor of Science in Computer Science
- **Experience:**
 - Inaugural Class of CCSE Student Ambassador
- **Skills:**
 - Java, C++
 - Data Structures
 - Database Systems-SQL
 - Computer Organization and Architecture
 - MARIE Assembly Language
- **Clubs:**
 - Phi Eta Sigma Honor Society
 - Women In Technology Campus – KSU
 - South Asian Student Association
 - Kainat Dance Club

Aubrey Bailey:

- **Contact Information:**
 - Email: ABaile71@Students.Kennesaw.Edu
- **Education:** Kennesaw State University (2014-2020)
 - Bachelor of Science in Computer Science
- **Skills:**
 - Java, C++
 - Data Structures
 - Database Systems-SQL
 - Technical Writing
- **Experience:**
 - Developed website for Children's Advocacy Group speaker
 - Multiple years worth of development experience with open-source community driven projects
 - Teaching classes on Introductory Programming Principles to young students
- **Clubs:**
 - Attained the rank of Eagle Scout
 - KSU Japanese Culture Club

Technical Description

Computer System:

Website Title:

Pizza Felice - Pickup and Delivery Only

Login Screen:

- Sign in with username and password.
- If a customer has forgotten the password, there's an option that sends a one time password to the registered email account.
- If there is no account, create an account.

Online Profile:

Customer is taken to their account profile with the following options:

- About the Company:
 - This button has information about the pizza company, a little bit about the history, the employers, etc.
- Place an Order:
 - This button lets the customers place an order at the pizza store.
- Previous Orders:
 - This button lists the previous orders of the client.
- Feedback:
 - This input button allows the customer to give feedback about anything regarding the pizza shop.
- Contact us:
 - This button provides the customer with options to contact the employees at the pizza store.
- Log Out:
 - The log out button allows the customer to sign out of their online profile.

Menu:

Selection screen will consist of images and corresponding descriptions, from which customers can choose.

- Pizzas: Custom Pizzas
 - Size:
 - Small(serves 1), Medium(serves 2), Large(serves 4), Extra Large(serves 6)
 - Toppings:
 - Bell Pepper, Olives, Onion, Mushrooms, Spinach, Chicken, Pepperoni
 - Crust:
 - Thin, Thick, Salted

- Sauces:
 - Tomato, Alfredo, Marinara
- Cheese:
 - Cheese, Extra Cheese, No Cheese
- Extras:
 - Garlic, Salt, Parmesan, Olive Oil
- Side Dishes:
 - Breadsticks, Pastas, Chicken Rolls, Veggie Rolls, Salads, Chips, Sandwiches
- Beverages and Drinks:
 - Coke, Sprite, Seven Up, Mountain Dew, Gatorade, Dr. Pepper, Bottled Water

Additional Functionality:

- Option to choose quantity of the dishes ordered
- Option to edit an order within a limited time frame
- Option to choose delivery or pickup: If delivery option is chosen, then type in address
- Option to select desired date and time for pickup or delivery
- Payment Options:
 - Check, Cash, Credit Card
- Automatically generated order confirmation
- Automatically generated receipt

Hardware Requirements:

Any device that can run a browser (Laptop, Phone, Tablet): To go to the pizza website, a customer can use any device as long as it has a reliable internet connection.

Internet connection:

To visit the pizza website, a customer needs to have access to a reliable internet connection.

Storage:

Storage would be needed to store database data of customers; however, as this is a small “Mom and Pop” restaurant, large amounts of storage would not be needed.

Software Requirements:

Web browser:

A customer needs to use any modern web browser like Google, Internet Explorer, Mozilla Firefox, Bing, etc. in order to visit the pizza website.

Other Requirements :

None initially identified.

Development Restrictions:

The application needs to run on a variety of devices so efficient code is mandatory.

Design Constraints:

The clients want an application that is easy to use and to understand as well as simple. They have also mentioned that webpages of similar restaurants, such as Papa John's and Domino's, aren't liked.

Design Decisions and Coding Method:

Algorithms:

Implementing algorithms for searching by name or address, sorting and traversing by name or address.

GUI:

A Graphical User Interface will be used for the pizza menu options, as it is a necessity to use various methods (such as buttons or text fields) to get input from the user.

Coding languages:

- SQL
 - Anticipate the need to use SQL to manage the database of clients.
- HTML
 - The usage of HTML combined with CSS will allow the website to be visually appealing to both the client and their customers.
- CSS
 - CSS will allow to fine tune the visuals of the website to the client's liking.
- Javascript
 - Javascript will handle much of the process of ordering a pizza.

Effort Estimation:

This project will take about 2 months of time, consisting of 1.5 months of production of the software and any necessary documents with the software and 0.5 months for testing.

Data Management Plan

The main sources of data management will come from the customers, employees, and the managers. Customers will be people that place orders from the restaurant, employees will be the average workers in the restaurant, and managers will be higher-level, trusted employees who may need more privileges to complete any specialized tasks.

Customers:

They will be able to access three sets of data: their personal data, their current order, and the menu of the restaurant. It is important for the customer to be able to see their personal data to verify that the restaurant has the correct information saved, and it is important for the customer to view their order and the menu to confirm that they have ordered the right meal. To ensure customer privacy, customers will only be able to access their own personal data which will be protected by username and password. Customers will only be able to change two things: their personal data, to allow for any changes that may need to occur, and their current order. However, the changes to the current order may only be made within a certain time frame of order placement, which keeps the employees from using unnecessary resources.

Employees:

They will be able to access the same sets of data as the customers, but they will have access to all sets of data instead of the singular customer data. The employees will be able to access any informational data (name, address, order, etc.) that will allow them to fulfill the order and deliver/give the right person the pickup. The employees should not be able to change any other information that they can view.

Managers:

They will be able to access and change any information needed to complete any given specialized tasks. For example, they will need to be able to alter the menu in case that a certain product goes out of stock, or they may need to remove certain disruptive customers from further service. For these reasons, the manager should be able to access and change most of the available information.

Others:

Any current and future database managers/ developers for the restaurant should be able to access and alter all information for their tests.

Test Plan

There should be two major areas of testing: The account creation/ usage and the menu/ ordering system.

Account creation and usage:

Needs to be tested to ensure that there is security between accounts and that customers can modify and save their account's information. First, the account creation and modification needs to be tested. This will be done through multiple customer accounts, seeing if they are able to be created and accessed on other devices, and seeing if they can be altered and then have the information also update in the database. Then, the security between customer accounts should be tested by having customer accounts access each other without the user's credentials with a successful test occurring when each customer account can only access itself. The employees accounts need to be tested for a different version of security. Their accounts should be tested for being able to access identification information (name, address, etc.) of active customers (customers who are ordering). Testing employee accounts should conclude when they are only able to view that information from customers who ordered, not customers who have not ordered at the moment, and employee accounts should not be able to view the credit card information (if applicable) of customers as an independent system will take care of payment. Employees will also need to be trained to understand how to search the database and find their needed information. Finally, manager accounts should be able to remove accounts from the database, and this will be tested through the manager deleting an account and ensuring that the database reflects that change.

Menu and ordering system:

Needs to be tested to ensure that each menu item is able to be ordered and that this information can later be accessed. First, the menu system needs to be tested to show that all buttons produce an output which is saved. Also, tiers with multiple buttons (such as toppings or sides) need to be tested, so that each choice does not overwrite the first choice but instead adds on to it. The menu system should be tested for canceling items from the cart. Finally, the menu system needs to be tested for menu changes by managers. The menu items should be inaccessible and provide no outputs when removed by a manager. After the menu system is tested to produce the required outputs, the ordering system needs to be able to receive those outputs and save them into an order. This order should be able to be retrieved by an employee-level account which in tandem with the customer's information would allow order completion for customers.

Prototype 1 Document

General Notes

Following screens created:

- Home page
- Login page
- Account page
- Ordering pages (size, crust, etc)
- Order Confirmation/ Payment page
- Status of Order page
- About Us page

- Each page has a banner with home, account, and cart buttons on top.
- Yellow highlights are used to show selection of items.
- Prices shown are based on the small-sized pizza's pricings.
- Each page will have a white and red coloring scheme.
- Not all images are included. The ones included are used to create a general sense of how the prototype works.

Home Page

Contains:

- Images of pizzas/ orders previously made as a sort of advertisement for anyone visiting the site.
- Has a button that begins the pizza order.

The screenshot shows the Home Page of "Mom and Pop's Pizzeria". The header includes a house icon, the restaurant name, a shopping cart icon, and an account link. Below the header are four images of pizzas: a supreme pizza, a pepperoni pizza being pulled apart, a pepperoni pizza, and a veggie pizza. At the bottom is a button labeled "Create Your Pizza".

Login Page

Contains:

- Brought here through “account” button on banner (if not already logged in).
- Input fields for email and password with which people can login.
- Has a “create account” link if a person does not have an account.
- Both the “Login” button and “create account” link open up the Account Page where users can edit or add new information (if using an existing account or creating a new one, respectively).

Home Mom and Pop's Pizzeria Cart account

Login Here

Email:

Password:

[Create Account](#)

Back **Login**

Account Page

Contains:

- Can be brought here through the “account” button on the banner (if logged in) or through the Login Page.
- Has fields for all of a user’s information (name, address, email, etc.).
- Can update those fields as needed.
- The page has more entries as you scroll down (which is why “Phone Number” shows up twice).



Account

Email:

Password:

First Name:

Last Name:

Phone Number:



Phone Number:

Address:

City:	State:	Zip Code:
<input type="text" value="City"/>	<input type="text" value="State"/>	<input type="text" value="Zip Code"/>

Credit Card Number:

Expiration Date:	Security Code:
<input type="text" value="Expiration Date"/>	<input type="text" value="Security Code"/>

About Us Page

Contains:

- Pizzeria's operating hours.
- Pizzeria's address in text and on a map.
- Pizzeria's web address and telephone number to allow customers to contact the Pizzeria.



Mom and Pop's Pizzeria



account

About Us

Operating Hours:

- Sunday - Thursday
11:00 am - 9:00 pm
- Friday and Saturday
11:00 am - Midnight

Location:

680 Arntson Rd, suite 156

Contact Us:

- MomAndPopPizzeria.com
- (770) 555-1212

Map of With Marker on 680 Arntson Rd.

[Back](#)

Size Order Page

Contains:

- Slider to select pizza size
- Slider motion changes size of pizza image
- Price of each size shown next to continue button.



Mom and Pop's Pizzeria



account

Choose Your Pizza's Size



All pizzas contain regular tomato based sauce.

[Back](#)

[Continue](#)

+ \$4.00



Choose Your Pizza's Size



All pizzas contain regular tomato based sauce.

Back

Continue

+ \$6.00



Choose Your Pizza's Size



All pizzas contain regular tomato based sauce.

Back

Continue

+ \$8.00



Choose Your Pizza's Size



All pizzas contain regular tomato based sauce.

Back

Continue

+ \$10.00

Crust Order Page

Contains:

- Clickable picture buttons to select type (selected is highlighted).
- Default type is selected to be "regular".



Choose Your Pizza's Crust



Thin Regular Pan

[Back](#) [Continue](#)



Choose Your Pizza's Crust



Thin Regular Pan

[Back](#) [Continue](#)

Meat Toppings Order Page

Contains:

- Clickable picture buttons to select topping (selected is highlighted).
- First topping selection is free.
- Each additional topping increases additional price (shown as increments of \$0.50 for a small pizza).
- The additional price for each size is stated below the selection buttons.



Choose Your Pizza's Toppings



First topping is free. Each additional topping (including the vegetable toppings) is an extra \$0.50 (small), \$0.75 (medium), \$1.00 (large), or \$1.25 (extra large).

[Back](#) [Continue](#) + \$0.00



Choose Your Pizza's Toppings



First topping is free. Each additional topping (including the vegetable toppings) is an extra \$0.50 (small), \$0.75 (medium), \$1.00 (large), or \$1.25 (extra large).

[Back](#) [Continue](#) + \$0.00



Choose Your Pizza's Toppings



First topping is free. Each additional topping (including the vegetable toppings) is an extra \$0.50 (small), \$0.75 (medium), \$1.00 (large), or \$1.25 (extra large).

Back

Continue

+ \$0.50

Vegetable Toppings Order Page

Contains:

- Clickable picture buttons to select topping (selected is highlighted).
- First topping selection (including meat toppings) is free.
- Each additional topping increases additional price (shown as increments of \$0.50 for a small pizza).
- The additional price for each size is stated below the selection buttons.



Choose Your Pizza's Toppings



First topping is free. Each additional topping (including the meat toppings) is an extra \$0.50 (small), \$0.75 (medium), \$1.00 (large), or \$1.25 (extra large).

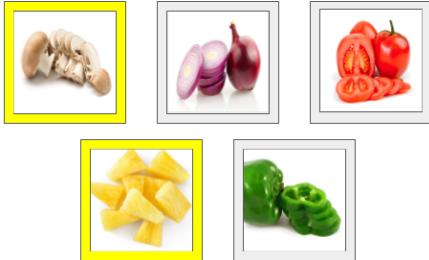
Back

Continue

+ \$0.00

 Mom and Pop's Pizzeria  account

Choose Your Pizza's Toppings



First topping is free. Each additional topping (including the meat toppings) is an extra \$0.50 (small), \$0.75 (medium), \$1.00 (large), or \$1.25 (extra large).

+ \$1.00

Sides Order Page

Contains:

- Clickable picture buttons to select sides (selected is highlighted).
- Prices of each side are stated below the buttons.
- Buttons have a quantity drop-down menu for the amount of each side.
- Additional price is stated near "continue" button based on the amounts selected.

 Mom and Pop's Pizzeria  account

Choose Your Sides



The Big Chocolate Chip Cookie is \$4.00, Breadsticks are \$4.00, and Breadstick Bites are \$2.00.

+ \$0.00



Choose Your Sides



The Big Chocolate Chip Cookie is \$4.00, Breadsticks are \$4.00, and Breadstick Bites are \$2.00.

[Back](#) [Continue](#) + \$4.00

Drinks Order Page

Contains:

- Clickable picture buttons to select sides (selected is highlighted).
- Prices of a drink are stated below the buttons.
- Buttons have a quantity drop-down menu for the size of each drink.
- Additional price is stated near “continue” button based on the amounts selected.



Choose Your Drinks



Each drink is \$1.00, regardless of size.

[Back](#) [Continue](#) + \$0.00

 Mom and Pop's Pizzeria  account

Choose Your Drinks

 M	Orange <input type="button" value="size"/>	Root Beer <input type="button" value="size"/>	 S
 size	Diet Orange <input type="button" value="size"/>	Diet Root Beer <input type="button" value="size"/>	Lemonade <input type="button" value="size"/>

Each drink is \$1.00, regardless of size.

+ \$2.00

Order Confirmation/ Payment Pages

Contains:

- Summary (list of all items, their quantities, and the price sum) of the order
- Also sums the price of items and any fees that are added onto the price.
- Allows customer to select the method through which they want to pay.

 Mom and Pop's Pizzeria  account

Receipt

Order No.

Item	Price	Quantity	Cost
			\$
			\$
			\$

Total Price: Amount: \$
 Tax: \$
 Delivery fee: \$
 Grand Total: \$



Receipt
Order No.

Item	Price	Quantity	Cost
Small Pizza (Pepperoni)	\$4.00	1	\$4.00
Pepsi (Small)	\$1.00	1	\$1.00
Breadstick Bites	\$2.00	2	\$4.00

Total Price:

Amount:	\$ 9.00
Tax:	\$ 0.63
Delivery fee:	\$ 2.00
Grand Total:	\$ 11.63



Choose Payment Option:

Checks
Cash
Credit Card

Order Status Page

Contains:

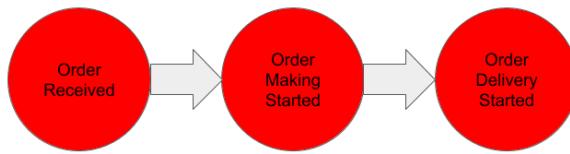
- Shows status of order by describing what step of pizza production the workers are on.
- Shows estimated time until order completion/ delivery.
- Color changes as steps are completed.



Mom and Pop's Pizzeria



account



Estimated Time of Delivery: ___ Minutes

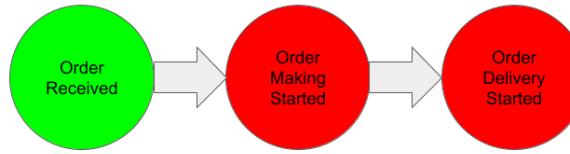
Back



Mom and Pop's Pizzeria



account



Estimated Time of Delivery: ___ Minutes

Back

Requirements Document

Requirements Definition

Functional Requirements

1. Accounts

1.1 Creation

- People should be able to create accounts that store information such as phone number, name, address, and credit card information.

1.2 Updating

- People should be able to login to their created accounts and update any information that needs changing.

1.3 Removal

- People should be able to remove their accounts from the system. Account removal abilities should also be given to the pizzeria for cases with disruptive customers.

2. Ordering

2.1 Selecting Items

- Customers should be able to select and deselect items (pizza sizes, crusts, toppings, sides, drinks, etc.) from the program, and these selections/ deselections should be reflected in the final order.

2.2 Order Retrieval

- The program should be able to retrieve all the selections from the order process and create a summary for the customer. The program should then be able to calculate the total price of the order depending on the selected menu items and their quantities.

2.3 Payment

- The program should be able to ask customers for their payment method (check, cash, or credit card) for the order. If the customer chooses the credit card payment option, the program should be able to use a saved option or allow them to input new credit card information.

Non-Functional Requirements

Security

- The program needs to contain security measures between accounts. One person should not be able to view or update the account information of another person without having that account's login information.

Performance

- The program needs to be able to finish most or all inputs within a certain amount of time. For this program, it should take about a few minutes to go through the entire program with the GUI elements to account for the time the user will need to make decisions and choose options. It should then give out the necessary output with buttons and input fields.

Modifiability

- This program will be in use for many years because the Mom and Pop Pizzeria will be successfully running their business in the foreseeable future. Hence, the program needs to allow for modification and upgradation whenever necessary to maximize optimization.

Usability

- This program needs to be effectively used by the clients, which is the Mom and Pop Pizzeria and their customers. Since this program is centered between the interactions of the program and the end user, there needs to be efficiency and success based on these interactions.

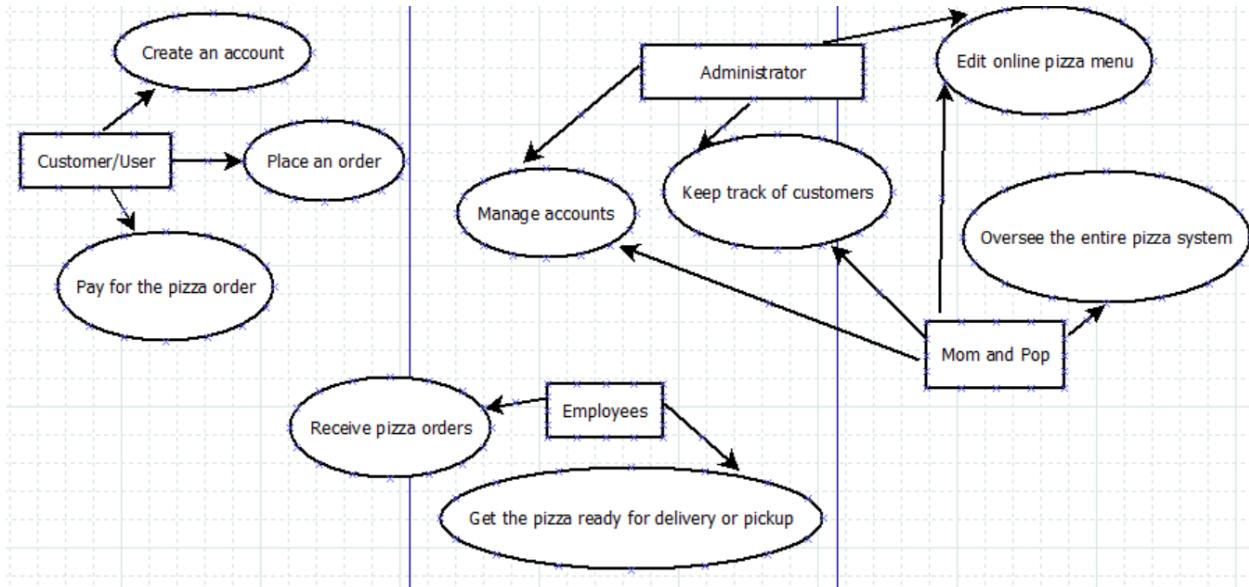
System Requirements

User Interface

- The User Interface will be a graphical user interface(GUI). The program will be coded using the programming language Java which means that the computers need to support Java.

Requirements Specification

Use Case Diagram



Use Case Flow of Events

1.0 Flow of events for the pizza ordering system of users Use Case

1.1 Preconditions

No preconditions required and identified.

1.2 Main Flow

This use case begins when the user logs into the Mom and Pop Pizzeria account by entering their phone number and password. The system verifies if the account and password is valid (E-1). The user next chooses to place an order where the system prompts the user to select the desired activity: ADD1, ADD2, REVIEW, PAY, or QUIT.

If the activity selected is ADD1, the S-1: Add a pizza size, topping, crust subflow is performed.

If the activity selected is ADD2, the S-2: Add a beverage and beverage size subflow is performed.

If the activity selected is REVIEW, the S-3: Review and place the order subflow is performed.

If the activity selected is PAY, the S-4: Pay for the pizza order subflow is performed.

If the activity selected is QUIT, the use case ends.

1.3 Subflows

S-1: Add a pizza size, topping, crust

The system displays the pizza screens from where the user can choose the desired size, topping, and crust options. The system displays the pizza sizes screen containing 4 buttons for the pizza size (E-2). The system displays the pizza toppings screen containing 8 buttons for the toppings from which 4 combinations can be made (E-3). The system displays 2 pizza crust options (E-4).

S-2: Add a beverage and beverage size

The system displays the beverage screens from where the user can choose the desired beverages and sizes. The beverage screen contains 5 buttons for the beverages (E-5). The beverages size button screen contains 3 distinct sizes (E-6).

S-3: Review and place the order

The pizza system retrieves the order (E-7), reviews the order (E-8) and displays the final screen to proceed to payment.

S-4: Pay for the pizza order

The pizza system is ready for payment and the user proceeds to pay(E-9). The pizza system is ready for delivery or pickup.

1.4 Alternative/Exceptional Flows

E-1: An invalid user account number and password is entered. The user can enter the account number or password again or terminate the user case.

E-2: An invalid pizza size is chosen. The user can rechoose the pizza size or terminate the use case.

E-3: An invalid pizza topping is chosen when a certain combination limit is only allowed. The user can rechoose the pizza topping or terminate the use case.

E-4: An invalid pizza crust option is chosen. The user can rechoose the pizza crust or terminate the use case.

E-5: An invalid beverage is chosen. The user can rechoose the beverage or terminate the use case.

E-6: An invalid beverage size is chosen. The user can rechoose the beverage size or terminate the use case.

E-7: The pizza sizes, toppings, crust options, and beverages cannot be displayed. The user is informed that this option is not available at the current time. The use case begins again.

E-8: The pizza ordering system cannot place the order. The user is informed and the use case begins again.

E-9: The pizza ordering system is not able to process the user's payment method. The user is informed and the use case begins again.

2.0 Flow of events for the pizza ordering system of Mom and Pop Pizza's Administrators, Employees Use Case

2.1 Preconditions

No preconditions required and identified.

2.2 Main Flow

This use case begins when the employees or administrators log into the Mom and Pop Pizzeria database and use the phone numbers of the customers to check orders and manage accounts. The system makes sure if the account exists by checking the Mom and Pop Pizza database (E-1). The employees next use the online menu system to check for updates, errors, and daily checks. The system prompts the employee to select the desired activity: EDIT, RECEIVE, PREPARE, KEEP, or QUIT.

If the activity selected is EDIT, the S-1: Edit online pizza menu subflow is performed.

If the activity selected is RECEIVE, the S-1: Receive the pizza orders subflow is performed.

If the activity selected is PREPARE, the S-3: Prepare pizza subflow is performed.

If the activity selected is KEEP, the S-4: Keep track of customers and manage accounts subflow is performed.

If the activity selected is QUIT, the use case ends.

2.3 Subflows

S-1: Edit online pizza menu

The online pizza menu system is edited by the employees of the Mom and Pop Pizzeria (E-2).

S-2: Receive the pizza orders

The pizza menu system receives the order placed by the customer. The system removes the link to the pizza order (E-3). The use case begins again. The payment is also processed depending on cash, checks, or credit cards (E-4). The pizza system then gets the order ready by sending it to the employees who prepare the pizza orders.

S-3: Prepare pizza

The Mom and Pop Pizza receives the pizza order and gets the pizzas ready for delivery or pickup.

S-4: Keep track of customers and manage the accounts

The Mom and Pop administrators keep track of all the customers, their pizza orders, payment options, and other necessary details.

2.4 Alternative/Exceptional Flows

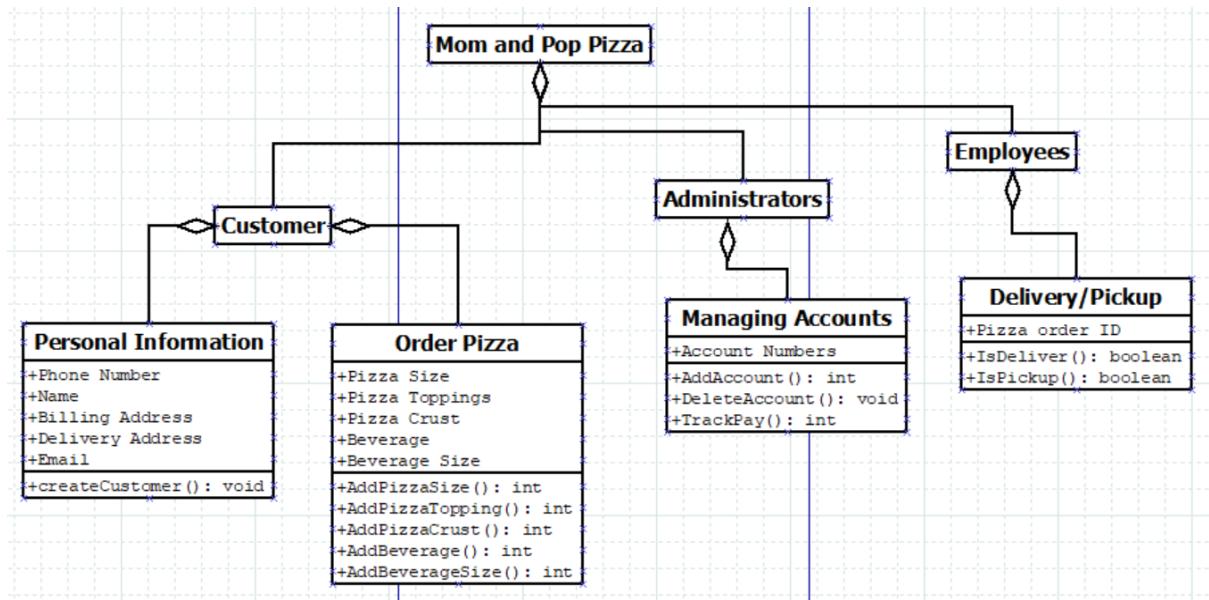
E-1: An invalid phone number is entered. The employee can enter the phone number again or terminate the use case.

E-2: An invalid online pizza option is being edited. The employee can edit the menu again or terminate the use case.

E-3: An invalid pizza order is received which is not able to be processed. The customer is notified and this link between the employee and pizza order is removed. The use case continues.

E-4: An invalid payment option is received. The customer is notified and the employee can check for the correct payment option or terminate the use case.

Class Diagram



Class Documentation

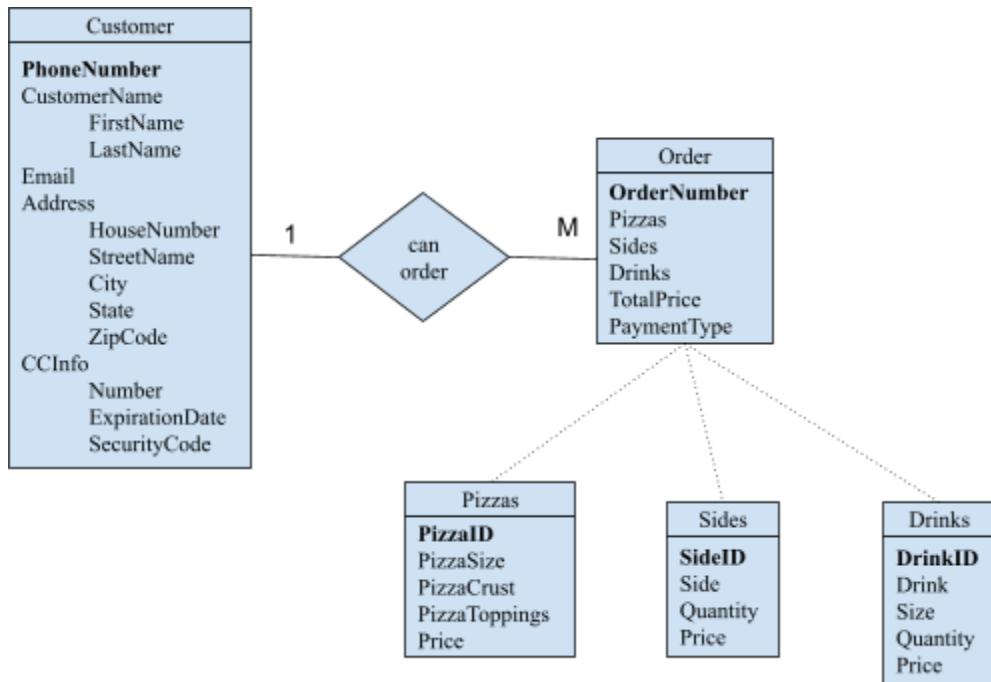
The above class diagram lists the classes used like Customer, Administrators, and Employees. Each class has variables and functions to carry out its unique tasks.

The Customer class has a Phone Number, Name, Billing Address, Delivery Address and Email as its variables with a single function called `createCustomer()` which would return a void value, under its Personal Information class. The Customer class also has an Order Pizza class which has Pizza Size, Pizza Toppings, Pizza Crust, Beverage and Beverage Size as its variables and its functions include `AddPizzaSize()`, `AddPizzaTopping()`, `AddPizzaCrust()`, `AddBeverage()` and `AddBeverageSize()`, with all the functions returning an integer value.

The next main class is the Administrators class which has a Managing Accounts class under it, with Account Numbers as a variable and its functions include `AddAccount()` returning an integer value, `DeleteAccount()` returning a void value and `TrackPay()` returning an integer value.

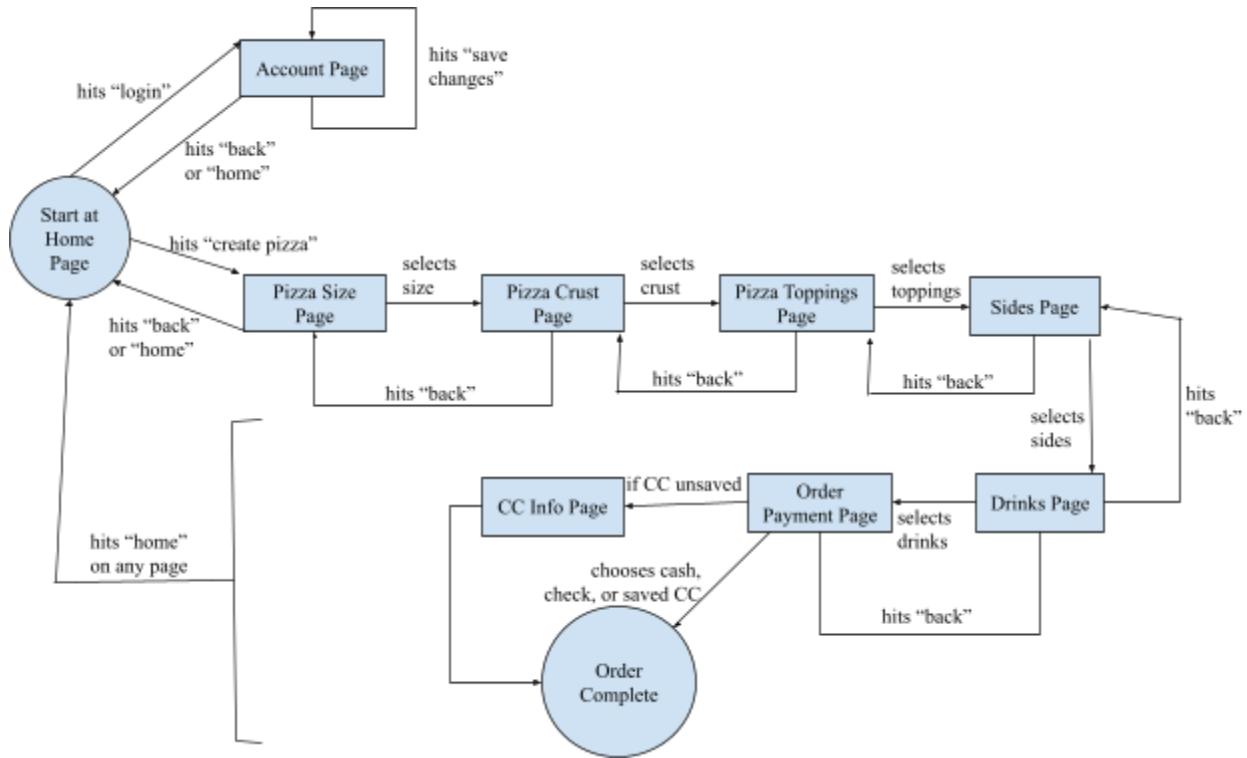
The last class is the Employees class with Pizza order ID as a variable and `IsDeliver()` and `IsPickup()` as its functions which return a boolean value under its Delivery/Pickup class.

Entity Relationship Diagram



The customer entity is keyed by the customer's phone number and contains the following information: name, email, address, and credit card information. The order entity is keyed by an order number and contains the selection of pizzas, sides, and drinks the customer has made. The customer has a one-to-many relationship with the orders because the customer can create/buy multiple orders.

State Transition Diagram



The customer begins their ordering experience on the homepage of the Pizzeria's program. From that point, they have two choices: login to an account or order a pizza. In the account, they can add information (for easier purchases) and save. When ordering a pizza, each page has selections of menu items, a continue button, a back button, and a home button. The continue button moves the process forward a step, the back button moves the process backwards a step, and the home button returns the customer all the way to the home page. If the customer does not have saved information when completing the purchase, they will be asked to provide information before the order is completed.

Systems Document

Conceptual System Design

Register receipt

Mom and Pop Pizzeria

Order no:

Date:

Item	Price	Quantity	Cost
			\$
			\$
			\$
			\$

Total Price: Amount: \$

Tax: \$

Delivery fee: \$

Grand total: \$

Sample Register Receipt

Mom and Pop Pizzeria

Order no: D-28

Date: November 20, 2020

Item	Price	Quantity	Cost
Small Pizza(Pepperoni) + Onions + Mushrooms	\$4.00 +\$0.50 +\$0.50	1	\$4.00 +\$1.00
Pepsi(Small)	\$1.00	3	\$3.00
Lemonade(Small)	\$1.00	1	\$1.00
Breadstick Bites	\$2.00	2	\$4.00

Total Price: Amount: \$13.00

Tax: \$0.78

Delivery fee: \$2.00

Grand total: \$15.78

Order Slip

Mom and Pop Pizzeria

Date:

Time Stamp:

Order No:

Item	Quantity	Size

Special Requests:

Sample Order Slip

Mom and Pop Pizzeria

Date: November 20, 2020

Time Stamp: 13:07

Order No: D-28

Item	Quantity	Size
Pizza (Pepperoni) + Onion + Mushroom	1	S
Pepsi	3	S
Lemonade	1	S
Breadstick Bites	2	-

Special Requests:

-Extra onion topping on pepperoni pizza

-Extra mushroom topping on pepperoni pizza

Daily Business Report

Date:

Week No.

- Customers: (add comments here)

In this section, the number of customers who ordered pickup and the number of customers who ordered delivery are recorded. At the end of the week, the final number is tallied.

- Menu:(add comments here)

The staple menu of pizza, sides, and drinks is elaborated. Any specials of the day or a holiday special is also mentioned.

- Capital:(add comments here)

Profits or loss, if any incurred, which is adjusted for the daily change. The amount of money spent on electricity, plumbing, and other costs.

- Food: (add comments here)

The inventory of vegetables used, any unused food that was thrown.

- Employees: (add comments here)

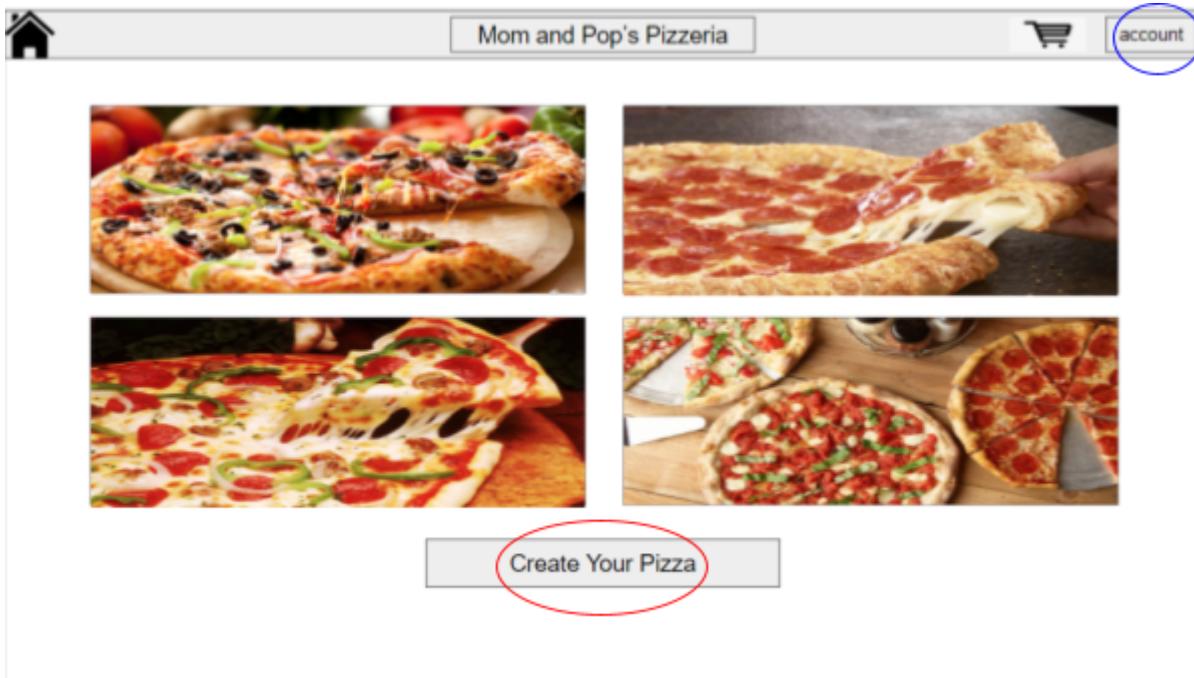
The list of employees who attended, their job hours, and the list of employees who took a day off.

- Checklist: (add comments here)

What worked and what didn't work. Feedback from customers and employees.
Implement new changes the following week.

Signed by Manager

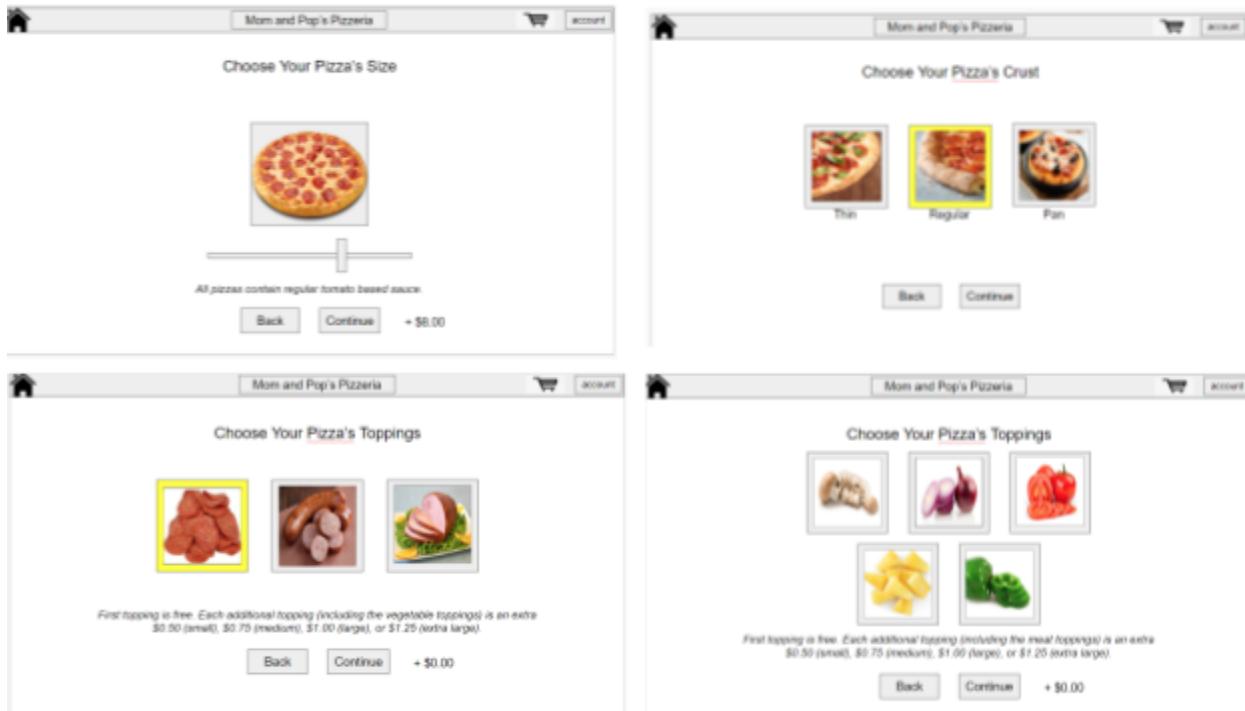
Screenshots:



Users will have two main paths when beginning to use this program: account maintenance and order creation. Users begin on the home page where they have two main choices: visit account page (blue) or begin ordering (red).

The diagram illustrates the user flow between the login page and the account management page. On the left, the "Login Page" shows fields for "Email" and "Password", and a "Create Account" button highlighted with a blue oval. On the right, the "Account Management Page" shows fields for "Email", "Password", "First Name", "Last Name", and "Phone Number". An arrow points from the "Create Account" button on the login page to the account information fields on the account management page.

For the first path (visit account page), the user is sent to either a login page (if they aren't logged in) or the account information page (if they are logged in). The login page allows a user to login and enter the account information page, or create a new account which also sends them to that account information page. The account information page will allow them to update or add their information into the system.



Examples of Ordering Pages (not all shown)
which lead to:

Receipt

Item	Price	Quantity	Cost
			\$
			\$
			\$

Total Price:

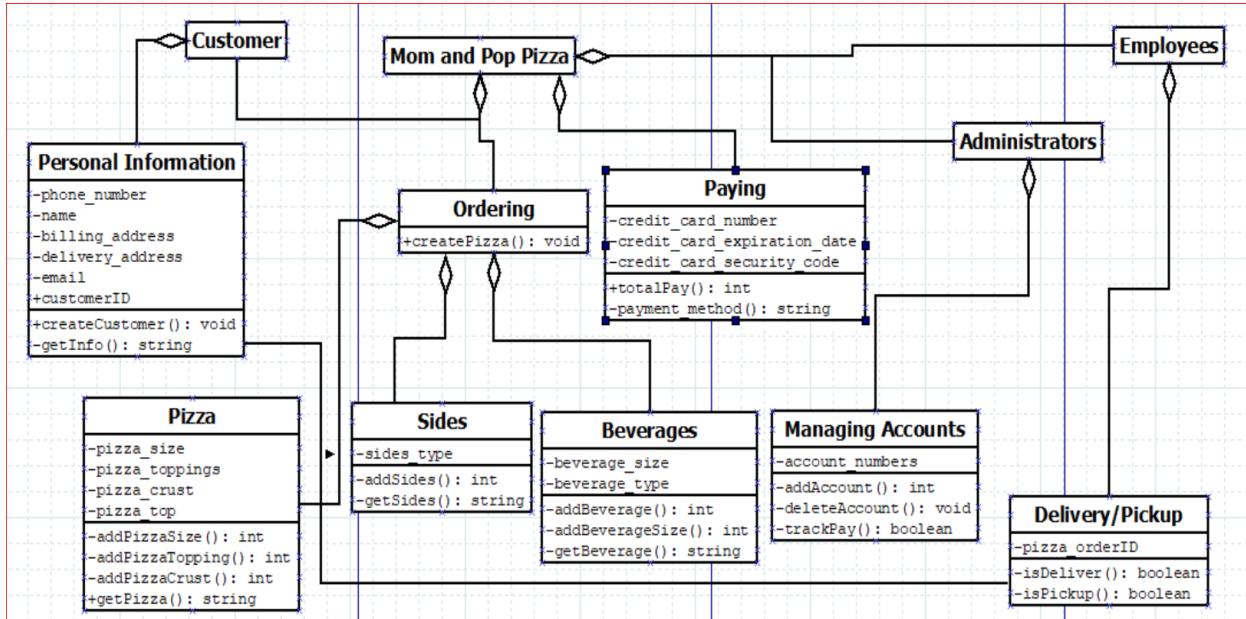
Amount:	\$
Tax:	\$
Delivery fee:	\$
Grand Total:	\$

Order Summary Page

The second path (begin order) will take the user through a series of steps where they are given choices of sizes, toppings, etc. from the menu. These options are highlighted when the user selects them, the additional price is shown, and the summary screen at the end of the process takes notes of these items and sums their price. After the user is done ordering their item, they can add it to cart and then checkout, or they can continue and restart the process to add more pizzas. The final page adds up all the items and creates an overall receipt/ sum of prices.

Technical Design

Detailed Class Diagrams:



There are 8 classes in the pizza project with private as well as public variables and methods.

- ❖ The first class is **Customer_Personal_Information** which contains private variables and a public variable as well as private and public methods. The variables store the customer's personal information that is needed as data in Mom and Pop's Pizzeria Database. The `createCustomer()` method that creates an entry with the customer's information, and the `getInfo()` method returns the customer's information.

1. Class: **Customer_Personal_Information**

Variables:
customerID (public)
phone_number (private)
name (private)
billing_address (private)
delivery_address (private)
email (private)

Methods:
createCustomer() : void (public)
getInfo() :string (private)

- ❖ The next class is **Ordering** which takes care of the food orders of pizza choices, beverages, and sides. The concept of inheritance is used here as the classes of **Pizza**, **Beverages**, and **Sides** are the child classes of **Ordering**. Each of these three classes consist of private variables and methods:

- ❖ The Pizza class consists of variables which store the values for sizes, toppings, and crust options for the pizza. There's another variable pizza_top which is a string and it accounts for the numerous toppings that might be included in a pizza. The methods add these options for the final order tally and the getPizza() method returns the value of the pizza variables.
- ❖ The Beverages class consists of variables which store the values for beverage size and type. The methods addBeverage() and addBeverageSize() add the beverage options for the particular order and finally the getBeverage() method returns the value of the beverage variables.
- ❖ The Sides class consists of private variable sides_type which can be added in the addSides() methods. The getSides() method returns the value of the sides options.

2. Class: Ordering

Methods: createPizza(): void (public)

Class: Pizza

Variables: pizza_size (private)
pizza_toppings (private)
pizza_top (private)
pizza_crust (private)

Methods: addPizzaSize(): int (private)
addPizzaTopping(): int (private)
addPizzaCrust(): int (private)
getPizza(): string (public)

Class: Beverages

Variables: beverage_size (private)
beverage_type(private)

Methods: addBeverage(): int (private)
addBeverageSize(): int (private)
getBeverage(): string(private)

Class: Sides

Variables: sides_type (private)

Methods: addSides(): int (private)
getSides(): string (private)

- ❖ The next class is Paying which contains private functions like payment_method() which returns the type of payment, as well as private variables of the credit card number, its expiration date, and its security code. There is also the final payment calculation which is the totalPay() method.

3. Class: Paying

Variables: credit_card_number (private)
credit_card_expiration_date (private)

Methods:

credit_card_security_code(private)	
totalPay(): int	(public)
payment_method() :	string (private)

- ❖ The next class is Administrator_Manage_Accounts which can add or delete accounts of the customer in the Mom and Pop Pizzeria database. It also has a private method trackPay() which returns a boolean value if the customer has paid the bill for their order or not.

4. Class: Administrator_Manage_Accounts

Variables: account_numbers (private)

Methods:

addAccount(): int	(private)
deleteAccount(): void	(private)
trackPay(): boolean	(private)

- ❖ The final class is Employees which has a private variable pizza_orderID. This variable is related to the customerID because the customer has a unique relationship with the pizza order. The methods in this class are private and consist of the type if it's a pickup or if it's a delivery.

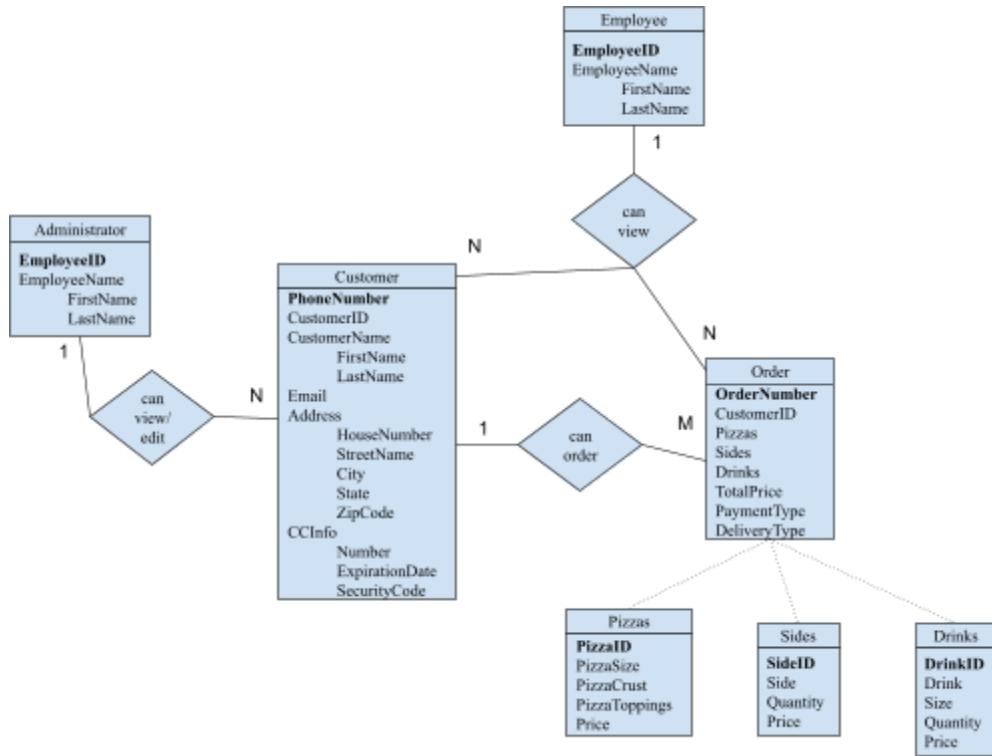
5. Class: Employees

Variables: pizza_orderID: (private)

Methods:

isDeliver(): boolean	(private)
isPickup(): boolean	(private)

Database Table Descriptions:



- The database will consist of the customer, employee, administrator, and the order tables.
- The customer database table will be mainly used to store the customers information for purchasing purposes and for delivery purposes. The table will store the customer's name, address, and credit card information (which the customer has a choice to provide for easier purchases). The customer table will also be related to the order table (where a customer can make many orders).
- The order table will contain the food selection that the customer had selected. This will consist of all the pizzas, sides, and drinks that the customer has selected, and it will also provide information on the total price, how the customer is paying, and how the customer will receive the order. The order database table will have sub-tables to record multiple pizza, side, or drink orders.
- The employee table will be used to provide additional functionality for the pizzeria's employees. This will allow the employees listed in the table to view a customer's information and a customer's order to be able to complete and deliver the order.
- The administrator table will be used to provide administrative functionality to specific employees. This will allow certain employees (like managers or owners) to be able to edit customer information. This can be used for customer service problems or for situations where the owners may want to refuse service to a disruptive customer.
-

Technical Support Specifications

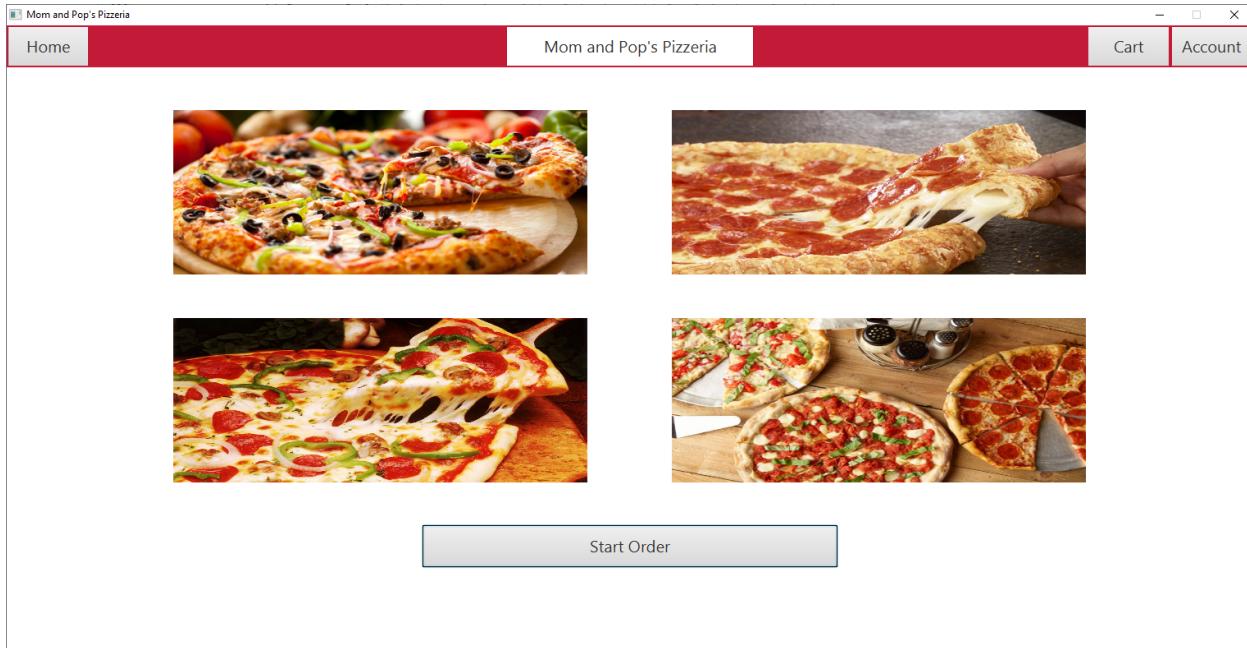
Testing of the features should be done during development to ensure that every button works and account information saves. Assuming testing is done correctly, users will actually not need technical support in these situations. However, basic support for understanding how these functions work will be provided.

In addition to this basic support, technical support will be provided through email and phone for various reasons:

- Email support will be related to problems that do not need an immediate reply. These can include problems such as account deletion, problems with account information management, and other general complaints. The email support will be viewed periodically during a day, and replies are to be expected within a business day. The customer in need of support will be asked to provide their name and phone number with their issue as to identify them.
- Phone support will be related to problems that require more immediate attention from the employees. These types of problems may include last-minute order changes, delivery location changes, payment issues or any other issue that may occur with an everyday order. Phone support will be more immediate as employees will be able to locate a customer's information straight from the phone number that is calling.
- In both email and phone support, the customer may be required to provide additional information for identification, such as an address or the last four digits of their saved credit card.

Prototype 2

Home Page:



Account Pages (in order):

- Login Page
- Account Creation Page
- Account Management Page

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Create Account

Email:	Email	Phone #:	Phone Number	Zip Code:	Zip Code
Password:	Password	Address:	Address	CC #:	Credit Card Number
First Name:	First Name	City:	City	Exp. Date:	Expiration Date
Last Name:	Last Name	State:	State	CCV:	Security Code

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Account Information

Email:	ialkhovi@students.kennesaw.edu	Phone #:		Zip Code:	
Password:	123	Address:		CC #:	
First Name:	Ivan	City:		Exp. Date:	
Last Name:	Alkhovik	State:		CCV:	

Ordering Pages (in order):

- Pizza Size
- Pizza Crust
- Pizza Meat Toppings
- Pizza Veggie Toppings
- Sides
- Drinks
- Order More?
- Payment/ Delivery Info
- Thank You

The screenshot shows a web browser window for "Mom and Pop's Pizzeria". The header includes a logo, the restaurant name, and navigation links for "Home", "Cart", and "Account". The main content area displays a message "Choose your pizza's size." followed by four pizza options: Small, Medium, Large, and Extra Large. The "Large" pizza is highlighted with a yellow border and a blue circular selection indicator. Below each pizza is its name and price. At the bottom, there are buttons for "Go Back", "Continue Order", and an additional button with a price of "+\$8.00".

Mom and Pop's Pizzeria

Home Cart Account

Choose your pizza's size.

Small

Medium

Large

XL

Small Pizza: \$4.00

Medium Pizza: \$6.00

Large Pizza: \$8.00

Extra Large Pizza: \$10.00

All pizzas contain regular tomato-based sauce.

Go Back Continue Order +\$8.00

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Choose your pizza's crust.



Thin Crust Regular Crust Pan Crust

Go Back Continue Order +\$0.00

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Choose your pizza's toppings.



Pepperoni Sausage Ham

First topping is free. Each additional topping (including the vegetable toppings) is an extra \$0.50(small), \$0.75(medium), \$1.00(large), or \$1.25(extra large).

Go Back Continue Order +\$1.00

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Choose your pizza's toppings.

First topping is free. Each additional topping (including the vegetable toppings) is an extra \$0.50(small), \$0.75(medium), \$1.00(large), or \$1.25(extra large).

[Go Back](#) [Continue Order](#) [+\\$2.00](#)

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Choose your sides.

Chocolate Chip Cookie: \$4.00 Breadsticks: \$4.00 Breadstick Bites: \$2.00

[Go Back](#) [Continue Order](#) [+\\$8.00](#)

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Choose your drinks at \$1.00 each regardless of size.

S ▾ 1 ▾	S ▾ 1 ▾	M ▾ 2 ▾	S ▾ 1 ▾
Pepsi	Orange	Root Beer	Sierra Mist

S ▾ 1 ▾	S ▾ 1 ▾	S ▾ 1 ▾	S ▾ 1 ▾
Diet Pepsi	Diet Orange	Diet Root Beer	Lemonade

[Go Back](#) [Continue Order](#) +\$2.00

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Cart Account

Would you like to order more?

Your Order:

Name: Guest	Order Another Pizza
Size: Large	
Crust: Regular Crust	
Meat Toppings: Sausage, Ham	
Veggie Toppings: Onion, Tomato	
Price: 11.00	
Side: Breadsticks	Order More Sides
Quantity: 2	
Price: 8.0	
Drink: Root Beer	Order More Drinks
Size: M	
Quantity: 2	
Price: 2.0	
Total Price: 21.00	Proceed to Payment
Payment Method:	

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Account

Choose your payment method.

Your Order:

Name: Guest
Size: Large
Crust: Regular Crust
Meat Toppings: Sausage, Ham
Veggie Toppings: Onion, Tomato
Price: 11.00

Side: Breadsticks
Quantity: 2
Price: 8.0

Drink: Root Beer
Size: M
Quantity: 2
Price: 2.0

Total Price: 21.00

Payment Method:

Carryout Delivery

Pay with Cash

Pay with Check

Pay with Credit Card

Mom and Pop's Pizzeria

Home Mom and Pop's Pizzeria Account

Your Order:

Size: Large
Crust: Regular Crust
Meat Toppings: Sausage, Ham
Veggie Toppings: Onion, Tomato
Price: 11.00

Side: Breadsticks
Quantity: 2
Price: 8.0

Drink: Root Beer
Size: M
Quantity: 2
Price: 2.0

Total Price: 21.00

Payment Method: Cash

Delivery Method: Carryout

Thank you for your purchase.