

MOM and POP's Pizzeria's Pizza System

By Stack UnderFlow

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Intro to Software Engineering Section 01

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Functional Requirements: Authentication & User management

Login: FR-001

- Username/password fields
- Backend verifies credentials via hashed password

Account Creation: FR-002

- Sign-up form with validation
- Stored data in Customer's table, redirects to login

Error Handling: FR-003

- Frontend displays error messages
- Invalid login, missing fields, locked after 5 attempts
- Invalid stock option

Functional Requirements: Homepage & Navigation

Homepage Icons: FR-003

- Six icons (Delivery, Pick-up, Cart, Menu, Order History, Sign-in)
- Clickable buttons with routing logic

Menu Display: FR-004

- Pulls data from MenuItems table
- Categorized into Specialty Pizza, Custom Pizza, Drinks

Functional Requirements: Ordering System

Pizza Customization: FR-005

- UI form with dropdowns/ buttons for crusts, toppings, size, sauce, cheese
- Stored in Orders and OrderItems (Checks inventory before confirming)

Drink Selection: FR-006

- Page with Drink size & Quantity selectors
- Backend checks inventory before confirming

Cart Management: FR-007

- Cart stored in session
- Backend validates stock before

Order Placement: Fr-008

- Order screen prompts for deliver/pickup
- Delivery address confirmed via Customers table

Functional Requirements: Employee & Manager Downloads

Employee Dashboard: FR-009

- Employee redirects to Employee Dashboard,
- Clockin/Clockout timestamps recorded via EmployeeLog
- View orders via Orders table

Manager Dashboard: FR-010

- Manager redirects to Manager Dashboard
- Editable Inventory Table
- View receipts, total sales and employee logs

Inventory Management: FR-011

- Manager can update stock levels
- Changes reflected in Inventory table

Receipt Generation: FR-012

- Receipts auto generated from Orders and Payments
- Accessible via dashboard

Functional Requirements: Backend & Database

Databases: FR-013

- SQL Schema using MSAccess with tables:
 - Customers, Employees, Order, OrdersItems, Inventory, Receipts

Databases Integrations: FR-014

- API endpoints in node.js connect frontend DB

Nonfunctional Requirements (Ilities)

Modifiability: NFR-001

- Modular Architecture, separating UI, API, DB, Backend.

Security: NFR-002

- Encrypted data HTTPS, Password hashing, role-based control

Usability: NFR-003

- Icons, labels, and consistent layout. Responsive and intuitive design

Performance: NFR-004

- Backend optimized with queries

Reliability: NFR-005

- Unit tests for each function. White-box testing for full system validation

Maintainability: NFR-009

- Code documentation, consistent naming conventions, GitHub issue tracking

Privacy: NFR-010

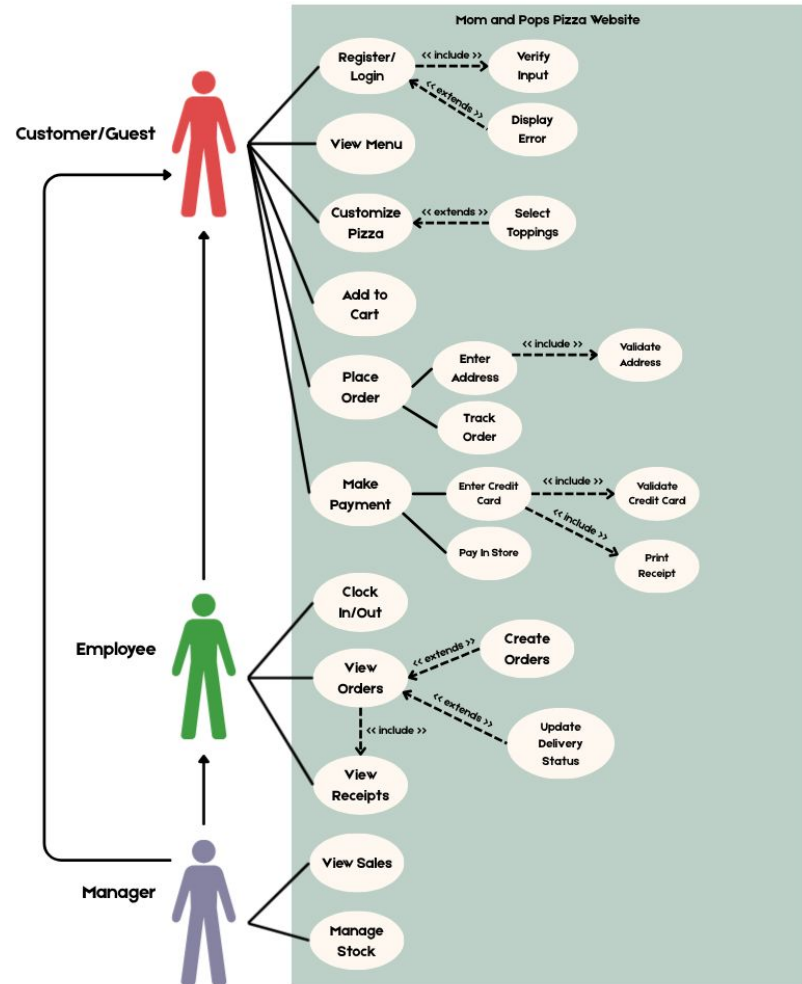
- Payment data encrypted, Employee/Managers restricted from seeing sensitive customer info

Use Case Diagram

Flow of Events

When a user enters the website there will be a small pop-up message prompting them to login. If they are already have created an account they must input their username and password. If they are not registered, then they have the option to create an account and enter a valid password and username. If no information is registered, or the inputs are invalid, a error message will be displayed.

Once the user is signed in, they will be able to navigate the homepage that contains a icon for the menu. There are also icons that represent delivery, pick-up, cart, order, and sign in. The customer will be able to click on any of these icons. For example, if the customer chooses to pick the cart without having anything, it will just appear empty.

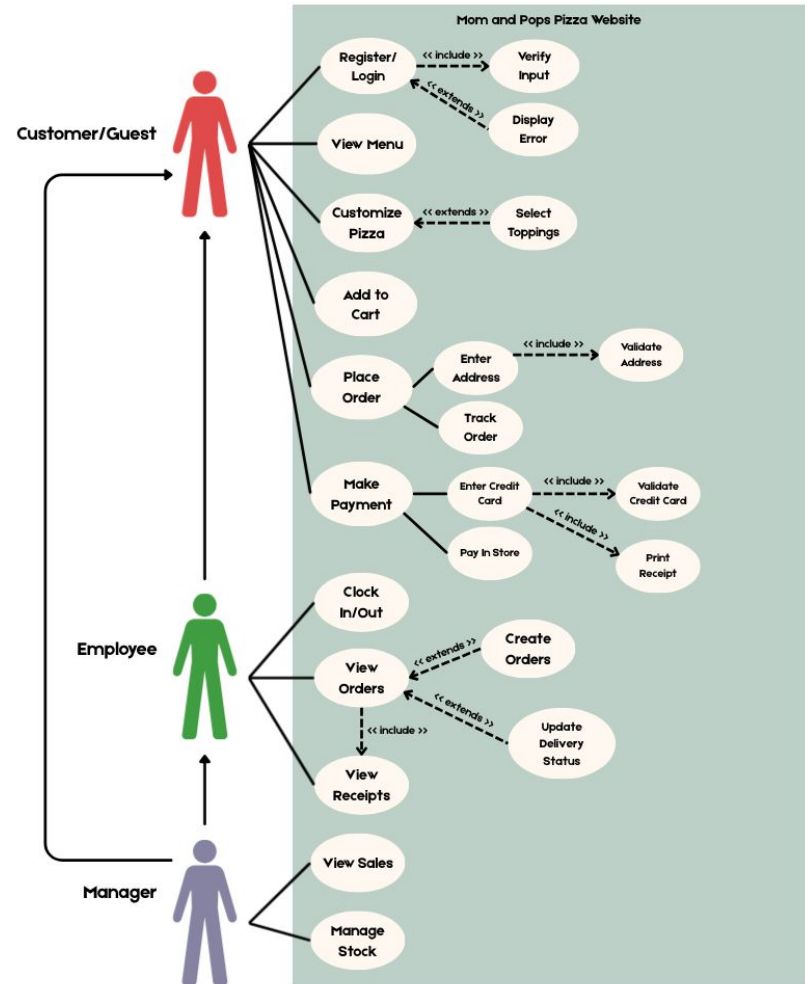


Use Case Diagram

Flow of Event Continued

The menu page will display every item available at the restaurant, as well as the price attached. Once the customer views the menu they can click the order icon. Here the customer can select to customize their pizza, allowing them to select different toppings. However, the user can skip past this option and just order items already listed in the menu.

The customer will then add their item into the cart, they must select an item in order to add anything into the cart. Afterwards, they will be allowed to make a payment or continue browsing the website. If they chose to go ahead and place an order, the customer will be prompted to enter an address. The address will be verified, allowing the customer to be given the option to pick up in store or have it delivered to their address.

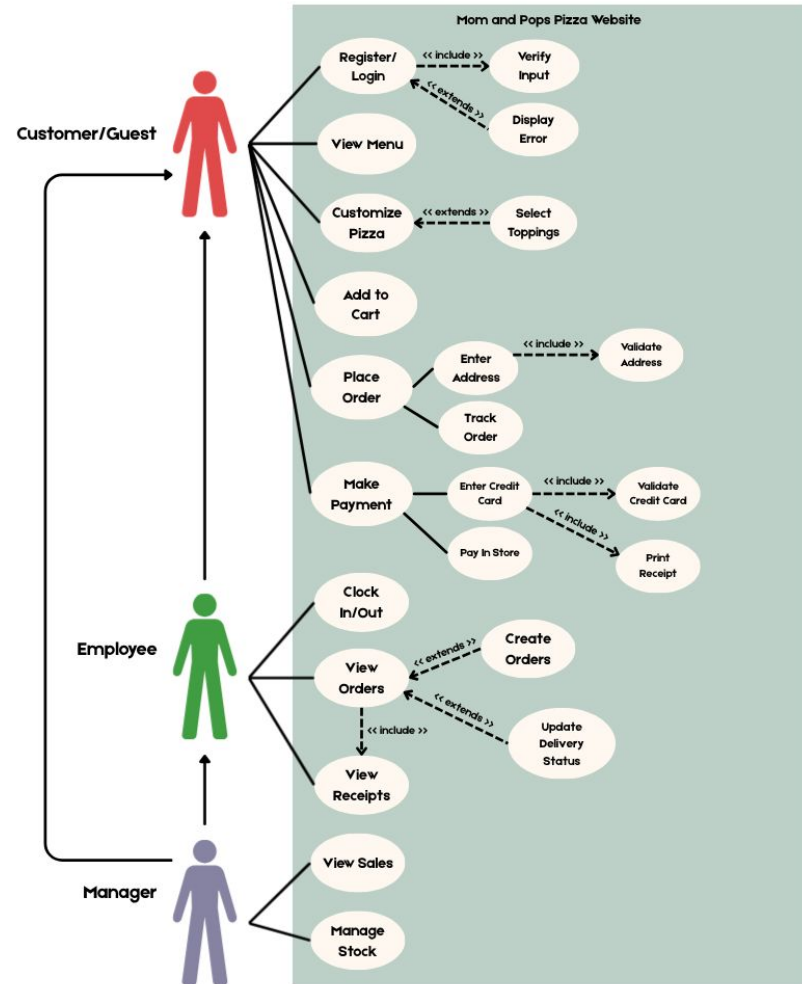


Use Case Diagram

Flow of Event Continued

After selecting a form of delivery, to complete their order, they will be prompted to pick a payment method. The two methods of payment are to pay with a credit/debit card, or pay at the store. They will only be allowed to pay at the restaurant if they select in store pick-up; otherwise, they will put their credit card information. The credit card will be verified by the system and if valid print out a receipt.

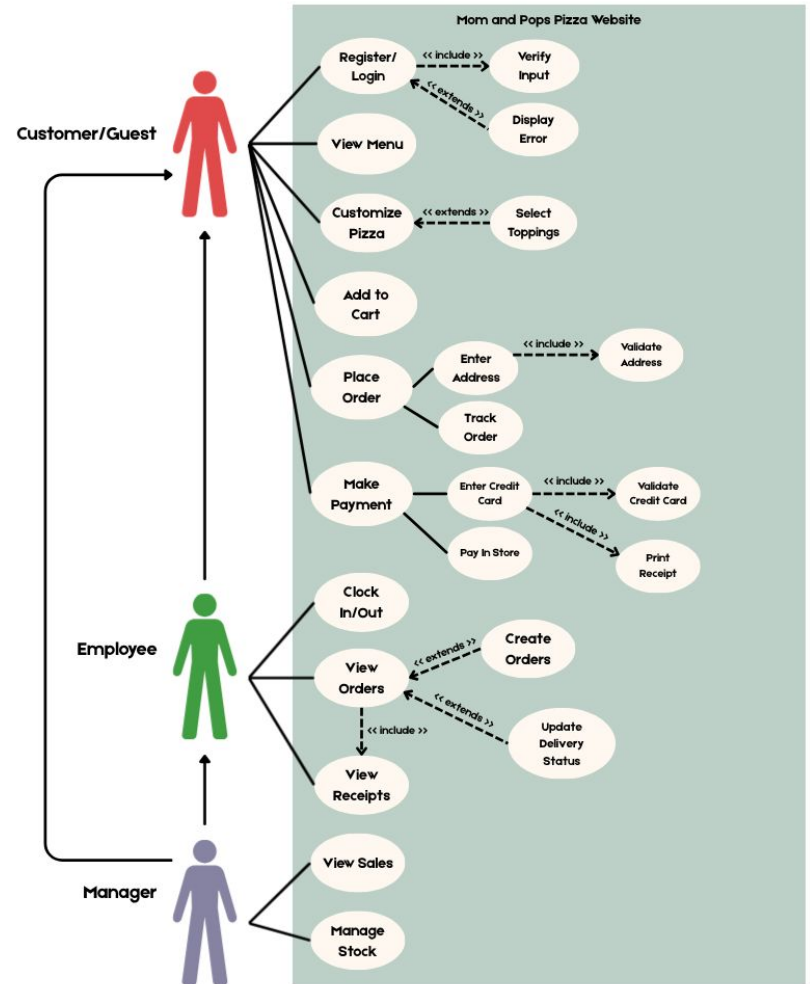
Employees will be allowed to do everything a customer can do. The only extra functions, displayed with extra icons, they have are that they are able to clock in and out within the website. Employees can view current orders as well as create new orders. They are also able to update the delivery status for orders. Alongside they orders, they can also view every receipt attached to each individual order. Allowing them to ensure the customer has paid.

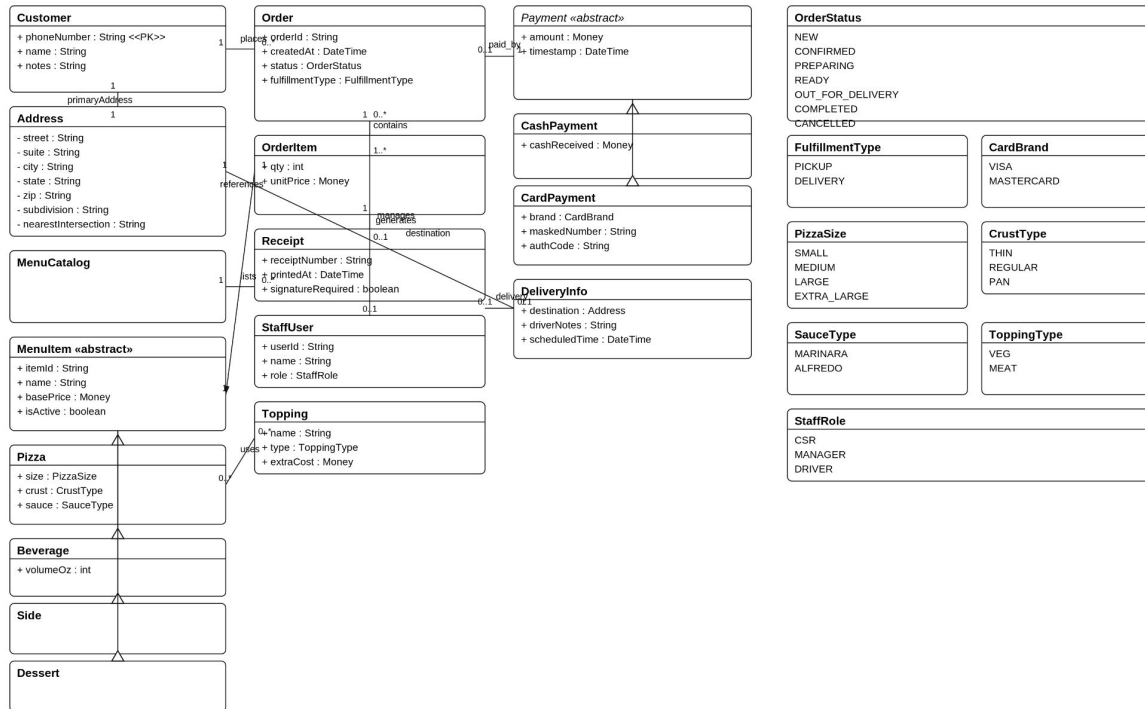


Use Case Diagram

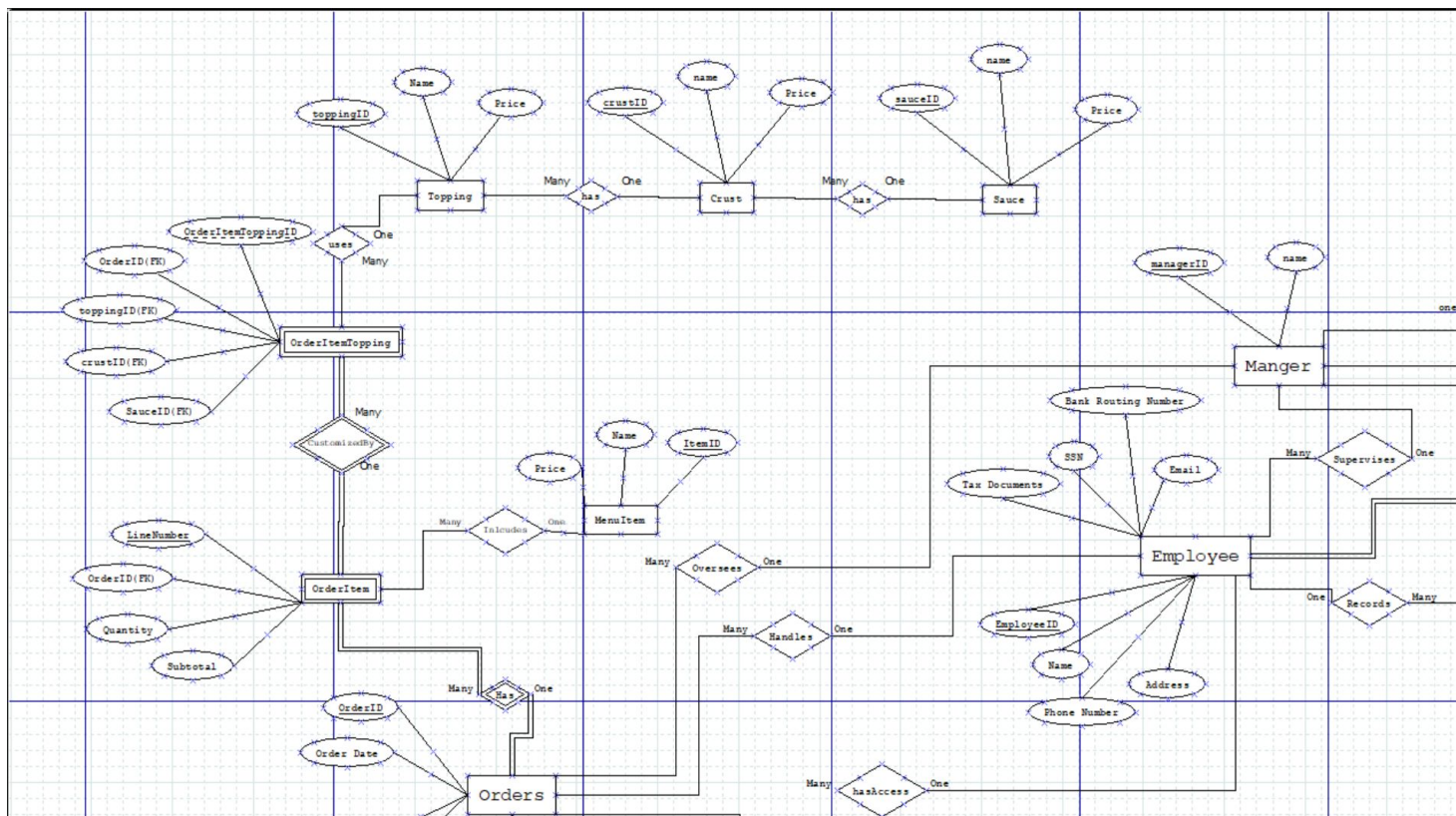
Flow of Event Continued

Managers have two extra functions, also displayed as icons. They are able to access everything a customer and employee can access. Managers are able to view all the sales within the restaurant. They can also manage the stock, meaning they can change the inventory in case certain ingredients are out-of-stock.

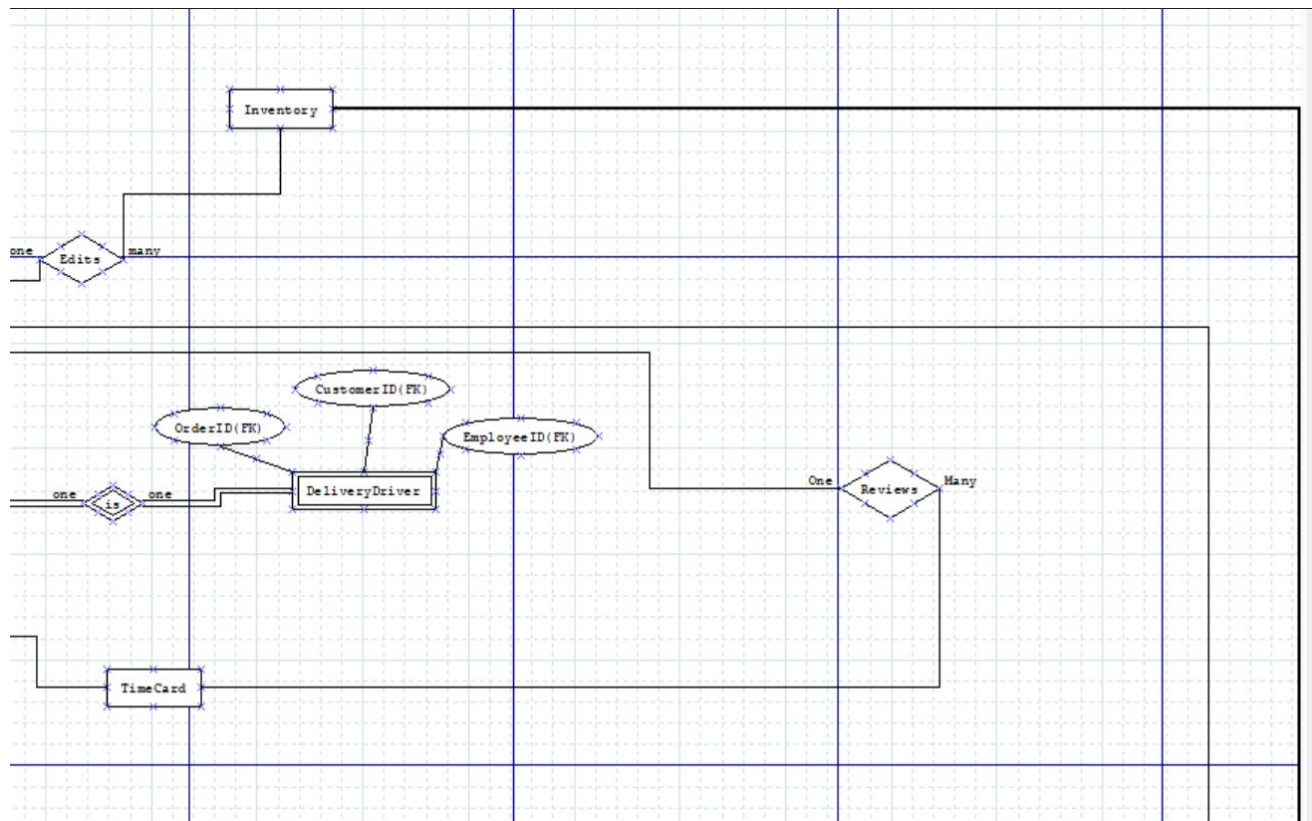




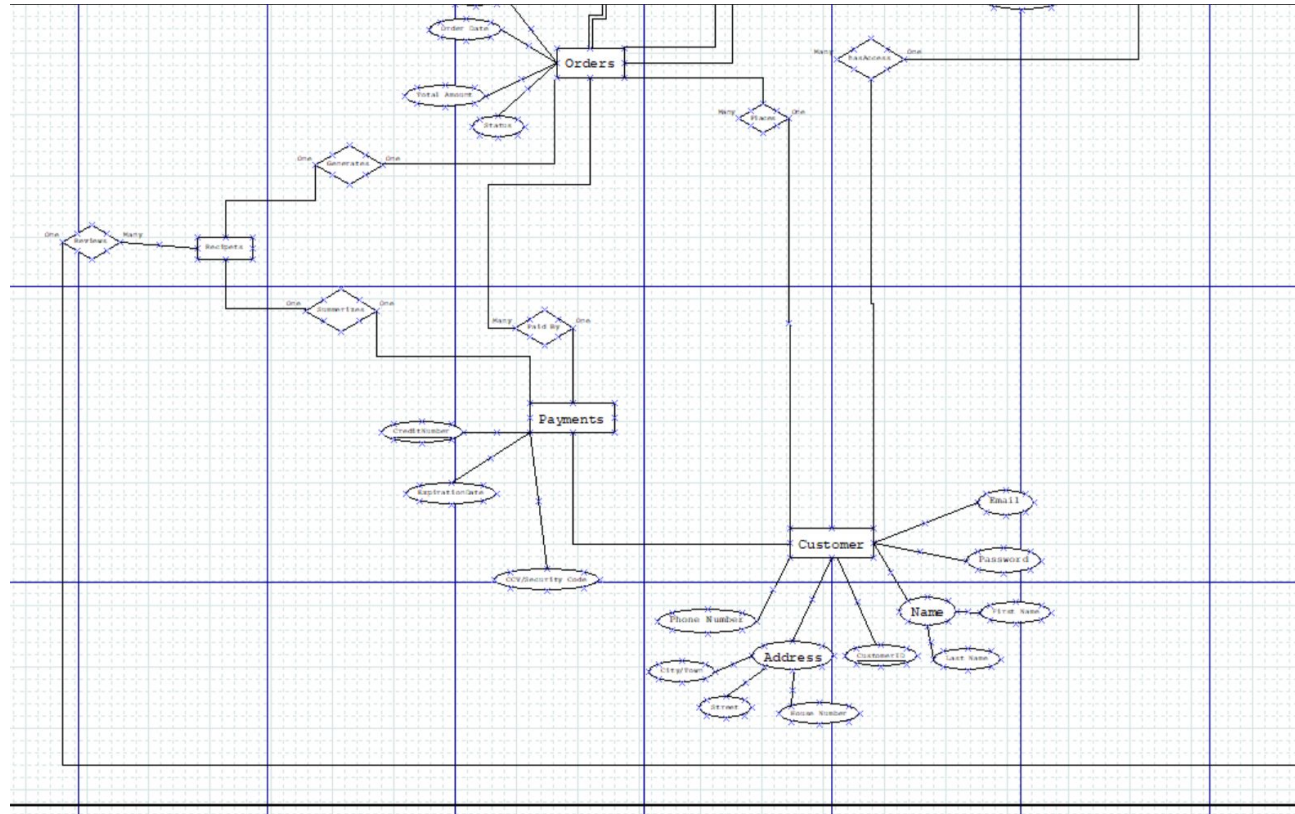
Er Diagram Part 1



ER Diagram Part 2



ER Diagram Part 3



Please note that Orders is connected to Inventory via a Many to One updates relationship.

Also that Receipts is connected to Manager.

Decision Table Part 1

Conditions	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	Rule 12	Rule 13	Rule 14	Rule 15	Rule 16	Rule 17	Rule 18	Rule 19	Rule 20	Rule 21	Rule 22	Rule 23	Rule 24	Rule 25
	TC01	TC02	TC03	TC04	TC05	TC06	TC07	TC08	TC09	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25
User Signed In?	X	✓	X (invalid)	✓ (valid)	✓	X	✓	✓	X	✓	✓	X	✓	✓	X	✓	✓	✓	X	✓	✓	✓ (Emp)	✓ (Emp)	✓ (Mgr)	✓ (Mgr)
Item In Stock?	-	-	-	-	-	-	✓	X	-	✓	X	-	✓	X	-	✓	X	-	-	-	-	-	-	-	-
Quantity > 0?	-	-	-	-	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	-	-	-	-	-	-	-
Address Confirmed? (Delivery)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	✓	-	-	-	-	-
Page / Trigger	Login	Login	Login	Login	Homepage	Homepage	Spec.Pizza	Spec.Pizza	Spec.Pizza	Pizza	Pizza	Pizza	Drink	Drink	Drink	Checkout	Checkout	Checkout	Checkout	Checkout	Checkout	Employee	Clock	Manager	Inventory
Delivery Selected?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	X (Carryout)	-	-	-	-	-
Cart Empty?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-
Employee Role?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	-	-
Manager Role?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓

Decision Table Part 2

Actions																			
Show Username / Password fields	Execute																		
Validate Credentials		Execute	Execute	Execute															
Show Error message – Invalid Credentials			Execute																
Show Success message → Redirect to Homepage				Execute															
Show Icons: Delivery, Pick-up, Cart, Menu, etc.					Execute														
Show Sign In icon					Execute														
Enable Crust/Topping/Size/Sauce/Quantity & Add to Cart						Execute		Execute		Execute									
Show Out-of-Stock Error, Disable Add to Cart							Execute		Execute		Execute								
Prompt to Sign In, Redirect to Login							Execute		Execute		Execute		Execute						
Prompt: Delivery or Carryout?											Execute								
Confirm Address(Delivery)												Execute							
Skip Address, Proceed (Carryout)														Execute					
Reroute to Menu (Cart Empty)															Execute				
Show Employee Tools: Create Order, View Orders, Receipt, Clock In/Out																Execute			
Toggle Clock In, Clock Out																Execute			
Show Manager Tools: Inventory, Sales, Receipt																	Execute		
Allow Edit Inventory (Update Stock Levels)																		Execute	

Test Case Descriptions

TC Descriptions

TC	Description
TC01	Guest login page
TC02	Valid login
TC03	Invalid login
TC04	Login success
TC05	Home signed-in
TC06	Home guest
TC07	Spec pizza in stock
TC08	Spec pizza out
TC09	Guest add spec
TC10	Custom pizza in
TC11	Ingredient out
TC12	Guest add custom
TC13	Drink in stock
TC14	Drink out
TC15	Guest add drink
TC16	Checkout prompt
TC17	Delivery confirm
TC18	Delivery no addr
TC19	Guest checkout
TC20	Carryout skip
TC21	Empty cart
TC22	Employee tools
TC23	Clock toggle
TC24	Manager tools
TC25	Edit inventory