Business Analysis And System Design Project

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Problem Statement Matrix

Brief Statements of Problem, Opportunity, or Directive	Urgency	Visibility	Annual Benefits	Priority or Rank	Proposed Solution
1. Over the last year *(when is it a problem)*, the number of customers coming to the restaurant have been very inconsistent. Oftentimes this leads to over-staffing or under-staffing *(what is the problem*). This ultimately has impacted the profits of the restaurant by paying for unnecessary wages or by turning customers away *(why is it a problem)*. This potentially costs the restaurant hundreds of dollars a day. *(how big is the problem)*	5 months	Low	TBD	4	New Development Process Redesign
2. For the last two-three years, COVID restrictions and lack of parking have led to restrictions in sit-in dining. Loyal customers have been turned away or stopped coming back because of the situation. This has contributed to a decrease in revenue of over 65%. This has caused the business to make **negative revenue**.	5 months	High	TBD	3	Customer Loyalty Program Incentives
3. For the last 31 years, payroll and timekeeping have been conducted manually which has taken the Administrator a lot of time to validate staff timesheets and manually transfer employees' hours into the payroll system. This takes up valuable time that the administrative staff could use to work on scheduling, marketing, etc. This inefficient use of time could cost upwards of 10 hours a week.	5 months	Low	TBD	3	Computerized Payroll system Process Redesign New Hardware New Software Other Services
4. For the last 31 years, when orders are taken by staff, the order is recorded by restaurant staff manually on a paper order slip (there is no way for customers to order online) and given to the kitchen to be made. The manual system is inefficient. If the slip is lost or there is difficulty matching the slip to the customer who ordered it, time is wasted, the customer may leave without their order (wastage) or walk out without paying. This contributes to a loss of time and revenue for the restaurant. Ordering online can be more convenient and paying in advance eliminates losses. If the order is wasted, the loss can be 25-75$ worth of ingredients. Potential customers may give up if they cannot order online and the phone is busy. These customers may convert to another restaurant instead costing the business current and future revenue.	ASAP	High	25-75$ 6 times/week 7800-22400 yearly	1	Computer order entry New Hardware New Software
5. Since the restaurant opened in 1991, the restaurant has always relied on their solid	5 months	High	TBD	2	Marketing New Development

reputation, customer loyalty, and word of mouth. Once the pandemic started and the number of customers who had traveled from far places dropped, the restaurant was left with very limited guest traffic without any way to grow new customers. There are no modern marketing strategies being employed such as email ad campaigns, social media, personalized offers for new/returning customers. This problem directly affects the bottom line as the waning loyalty-based customers cannot be relied upon to increase cash flow.			(calculate current loss vs previous income)		New Software Other Services
6. Since 1991, the point-of-sale system has been mostly manual. Order receipts are printed manually and if the receipt is lost they have to spend time to match up the cash, credit, and debit transactions with the cash register tape at the end of the day, costing time and money. It costs $500 or more daily just because they can't keep track of things properly.	5 months	High	400-500/Day 342 Days / year = 136,800$ -171,000$	1	New Software
7. Since its opening, there is still no option for the owner or administrator to see any real time reports on their operation's information such as orders, payroll, account receivables, other metrics, etc. Because of the lack of visibility and current data, management could be wasting thousands of dollars on opportunity costs or missing out on potential revenue.	5 months	Low	TBD	5	New Software New Hardware Process Redesign
Brief Statements of Problem, Opportunity, or Directive	**Urgency**	**Visibility**	**Annual Benefits**	**Priority or Rank**	**Proposed Solution**
8. Since 1991, the management team has had to come to the restaurant to do scheduling, accounting and payroll related tasks. If the management team can access the restaurant accounting system remotely, they can spend more time on other areas such as marketing and scheduling, instead of traveling to and from the restaurant. One to two hours of driving time per week can be saved.	5 months	Low	TBD	5	New software

Urgency – Upgrade to more secure credit/debit card machines - ASAP
Urgency – Customer feedback form - 5 months
Visibility (impact) – Customer-facing website – High
Visibility (impact) – CEO reporting – Low
Annual benefits - $$ amounts if known (show calcs for estimate), TBD undeterminable at this time

Priority – you decide, you can have multiple #1s
Proposed Solution – new development, process redesign, new hardware, new software, other services

PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS MATRIX

CAUSE AND EFFECT ANALYSIS		SYSTEM IMPROVEMENT OBJECTIVES	
Problem or Opportunity	**Causes and Effects**	**System Objective**	**System Constraint**
1. Over the last year, the number of customers coming to the restaurant have been very inconsistent. Oftentimes this leads to over-staffing or under-staffing which ultimately has impacted the profits of the restaurant.	1. Covid-19 has led to seating restrictions limiting indoor dining. 2. No available reporting to determine busy times. 3. No data collected on number of customers coming to the restaurant daily. 4. Customers are turned away because the restaurant is at capacity. 5. When overstaffed unnecessary labour expenses occur. 6. Sometimes employees miss their shift because it is manually recorded, and mistakes may happen. 7. When understaffed customers may walk away because wait time is too long, leaving behind a completed order, not paid for. 8. Restaurant reputation may be impacted by poor customer service when understaffed. 9. Loyal customers may go elsewhere.	1. Automated staff scheduling component 2. Set up automatic shift reminders to help eliminate employee no-shows and reduce the likelihood of restaurant scrambling to avoid understaffing 3. Busy times reporting to help predict staffing needs	1. Schedule data must only be entered once, synced and accessible to all other system components including payroll. 2. Employees must be able to view schedules and update availability. 3. Employees must not be able to update the schedule. 4. Scheduling component is available remotely.

Cause and Effect Analysis

CAUSE AND EFFECT ANALYSIS		SYSTEM IMPROVEMENT OBJECTIVES	
Problem or Opportunity	**Causes and Effects**	**System Objective**	**System Constraint**
1. For the last 31 years, when orders are taken by staff, the order is recorded by restaurant staff manually on a paper order slip and given to the kitchen to be made. Additionally, there is no way for customers to order online.	1. Taking orders manually on a piece of paper is inefficient and prone to errors. 2. Customers may switch to another Restaurant if they have to wait too long to place an order. 3. Manual System is inefficient to match customer orders for pickup.. 4. Due to long wait times the customer may not pick up their order (wastage) which may cost $25-$75 in ingredient cost 5. Customers walk out without paying due to inefficient order system 6. There is no online ordering system for customers, who may not be able to order by phone or in person.	1. System should accept payments by credit card and other major payment methods. 2. Ordering system should be user friendly and easily understood by everyone. 3. System should be able to print receipts. 4. System should allow any staff to enter and update orders. 5. System should create order slips for the kitchen 6. System should allow customers to place and customize their order and view most up-to-date menu	1. The Staff should be able to view the order and suggest changes if any. 2. System should be secure enough to protect customer's credit/debit card information. 3. Online ordering System should be accessible during business hours. 4. System should require staff to have individual logins.

2. Since the restaurant opened in 1991, the restaurant has always relied on their solid reputation, customer loyalty, and word of mouth for their brand.	1. Basic newspaper ad purchase is ineffective because it focuses on a declining market segment 2. COVID restrictions reduced visits from loyal customers 3. Website only provides location and menu. 4. There are no modern marketing strategies being employed such as email ad campaigns, social media This cripples potential sales growth. 5. Lack of incentives or targeted offers for repeat customers 6. The lack of new customers affects the bottom line as loyal customers can't be relied on to increase cash flow	1. Integrate with social media or email marketing platform for targeted advertising 2. Modernize website to be more appealing to customers and easy to place orders 3. Design specials, deals, and other incentives for both new and returning customers 4. Utilize a variety of methods for sharing deals including emails, flyers, website, social media, etc. Implement a marketing management system.	1. Use encryption and network security tools to prevent data breaches 2. Implement access restriction for employees based on their roles
3. For the last 31 years, payroll and timekeeping have been conducted manually, which has taken the Administrator a lot of time to validate staff timesheets and	1. Manually entering data can cause mistakes 2. Manually entering data is slow and time consuming 3. Time spent on these tasks could be better spent on scheduling, marketing, or other tasks 4. This time wastage could amount to 4-10 hours per week of manager time 5. Errors correction is time consuming because of manual entries	1. Electronic timecard system for employees 2. Electronic timesheet/ payroll system for management 3. System should be simple to	1. Payroll and timesheet system need to be secure - only certain staff members should have access. 2. Implement timecard access restriction

manually transfer employees' hours into the payroll system.		use and understand 4. System should print cheques	for employees based on their roles

Requirements And Classification

#	Requirement	Classification
1	The system must allow customers to setup an online account using their first name, last name, address, phone number, email, and credit card information	Functional
2	The system must encrypt customer credit card information	Non-functional
3	Implement electronic biweekly payroll and accounting systems	Functional
4	Implement electronic scheduling system for management	Functional
5	Online ordering system should be accessible during business hours.	Non-functional
6	System should allow all staff to place, view, and edit customer orders.	Functional
7	System should allow login id and password for every staff member.	Non-functional
8	System should accept payments by credit card and other major payment methods when ordering online.	Functional
9	Restrict staff access to different systems (accounting, ordering, payroll or marketing)	Non-functional
10	Upgrading computer equipment to support new system	Non-functional
11	Implement modern marketing and advertising techniques	Non-functional
12	Graphical User Interface that is easy to use and intuitive	Non-functional
13	Electronic ordering system to eliminate hand-written order slips and customer slips	Functional
14	Data reporting system for payrolls, financing, or other information (as required)	Functional
15	Remote access for management to scheduling, payroll, accounting software.	Functional

Decision Table

Initial

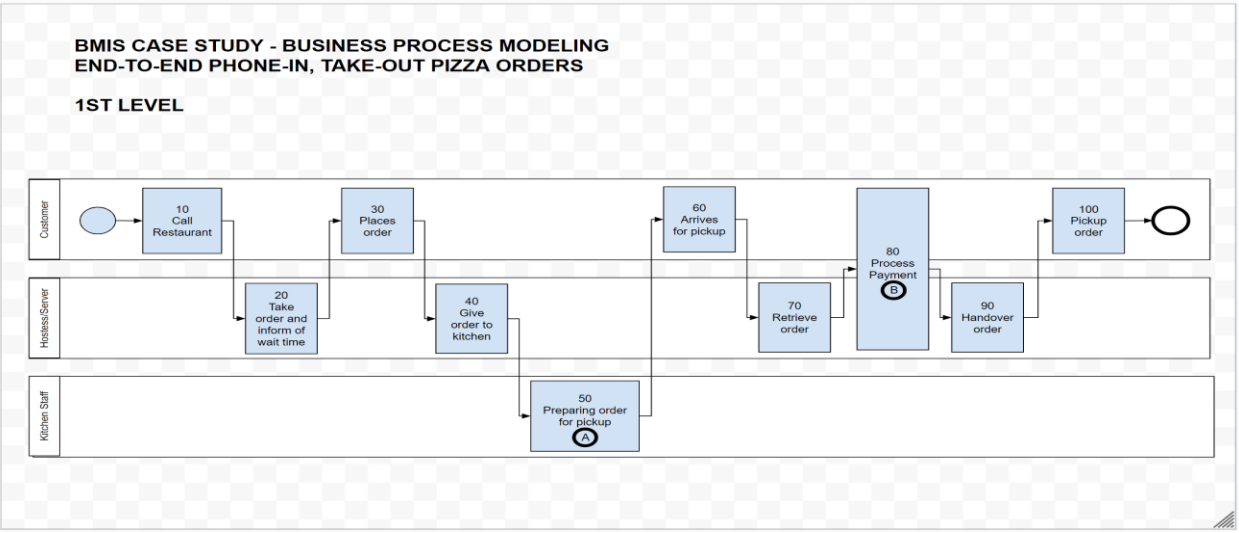
	1	2	3	4	5	6	7	8
Order online 1st/ Every 5th Order	Y	Y	Y	Y	N	N	N	N
Order for delivery	Y	Y	N	N	Y	Y	N	N
Order within 10km	Y	N	Y	N	Y	N	Y	N
20-25% discount	X	X	X	X				
15% discount							X	X
Free delivery	X				X			
No discount						X		

Final

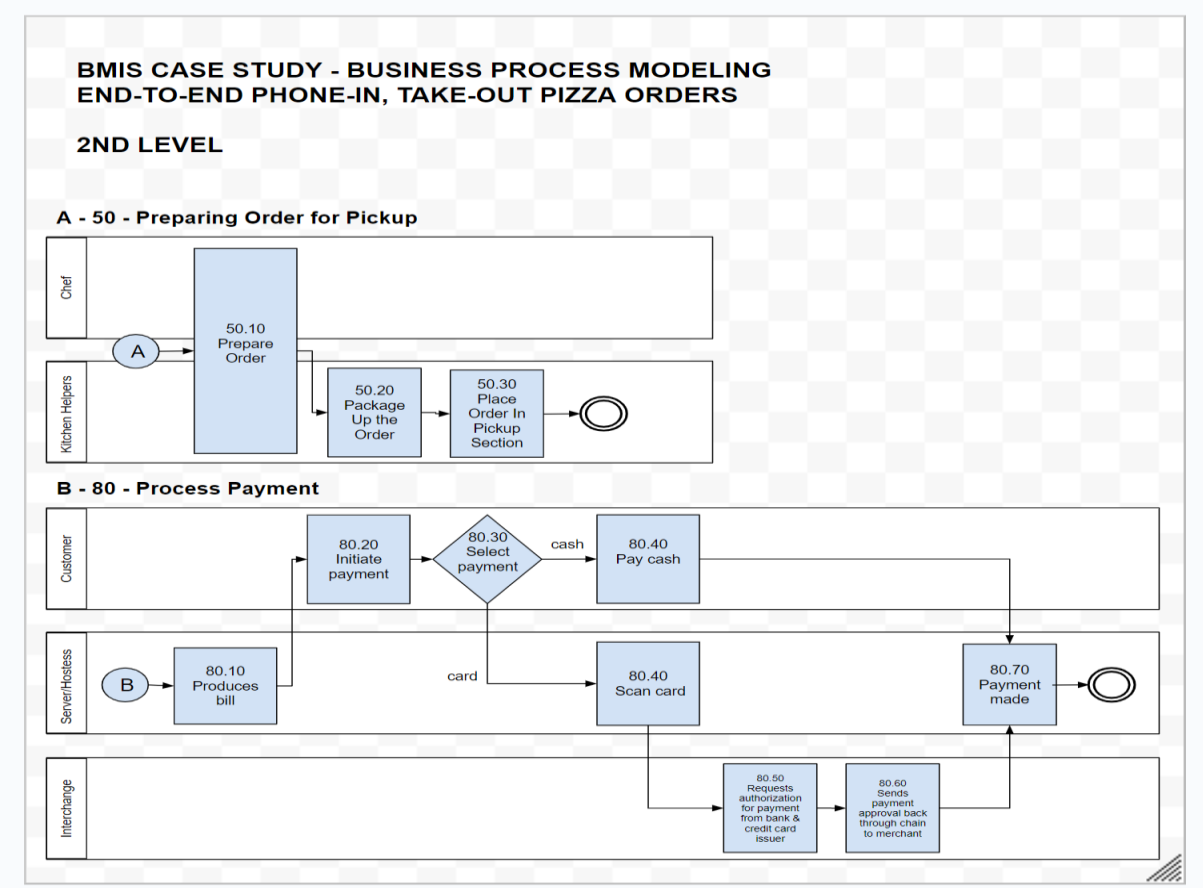
	1	2 (Combines previous 2,3,4)	3	4	5 (Combines previous 7,8)
Order online 1st/ Every 5th Order	Y	Y	N	N	N
Order for delivery	Y	-	Y	Y	N
Order within 10km	Y	-	Y	N	-
20-25% discount	X	X			
15% discount					X
Free delivery	X		X		
No discount				X	

Swim lane Diagram

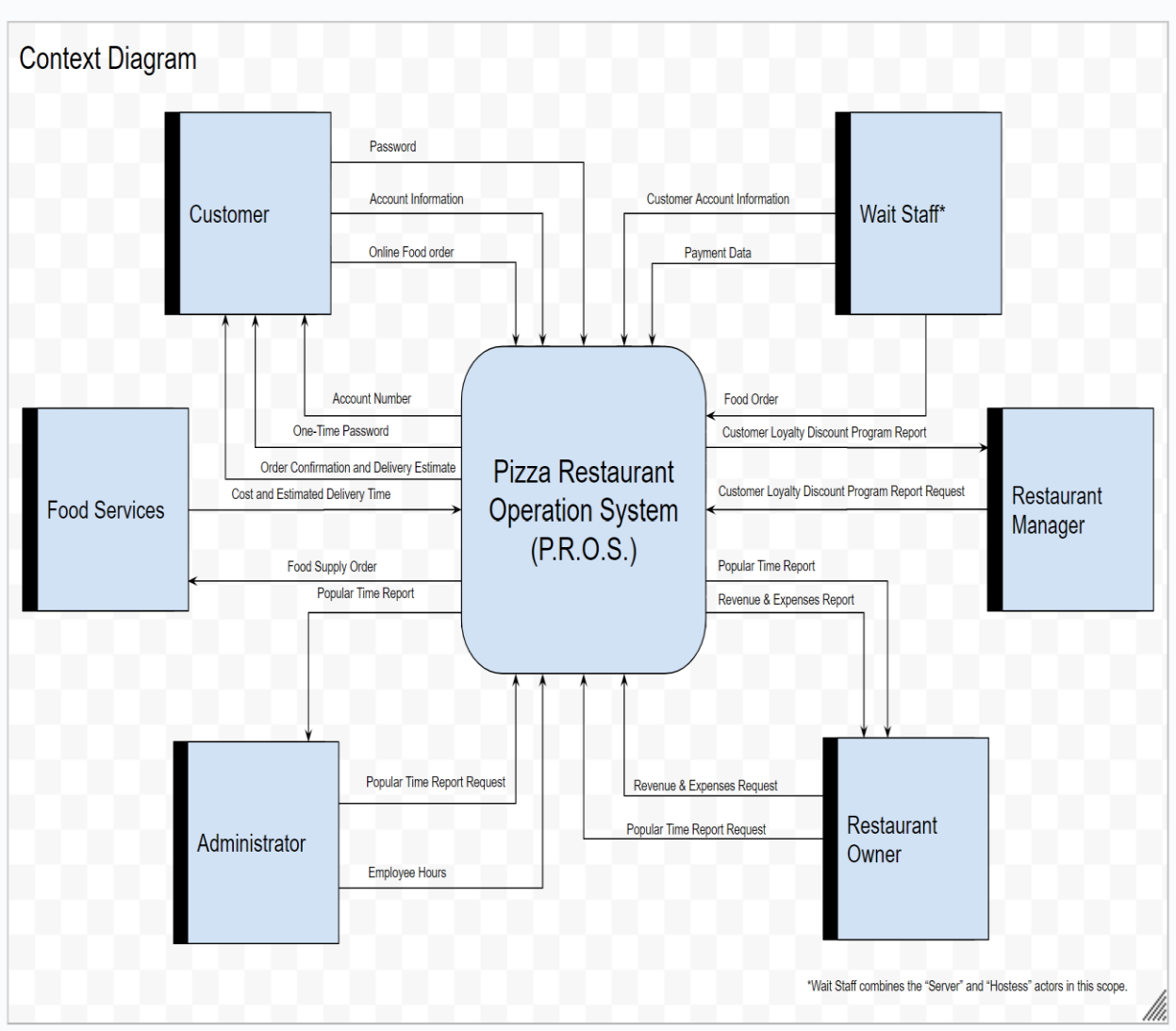
Level 1



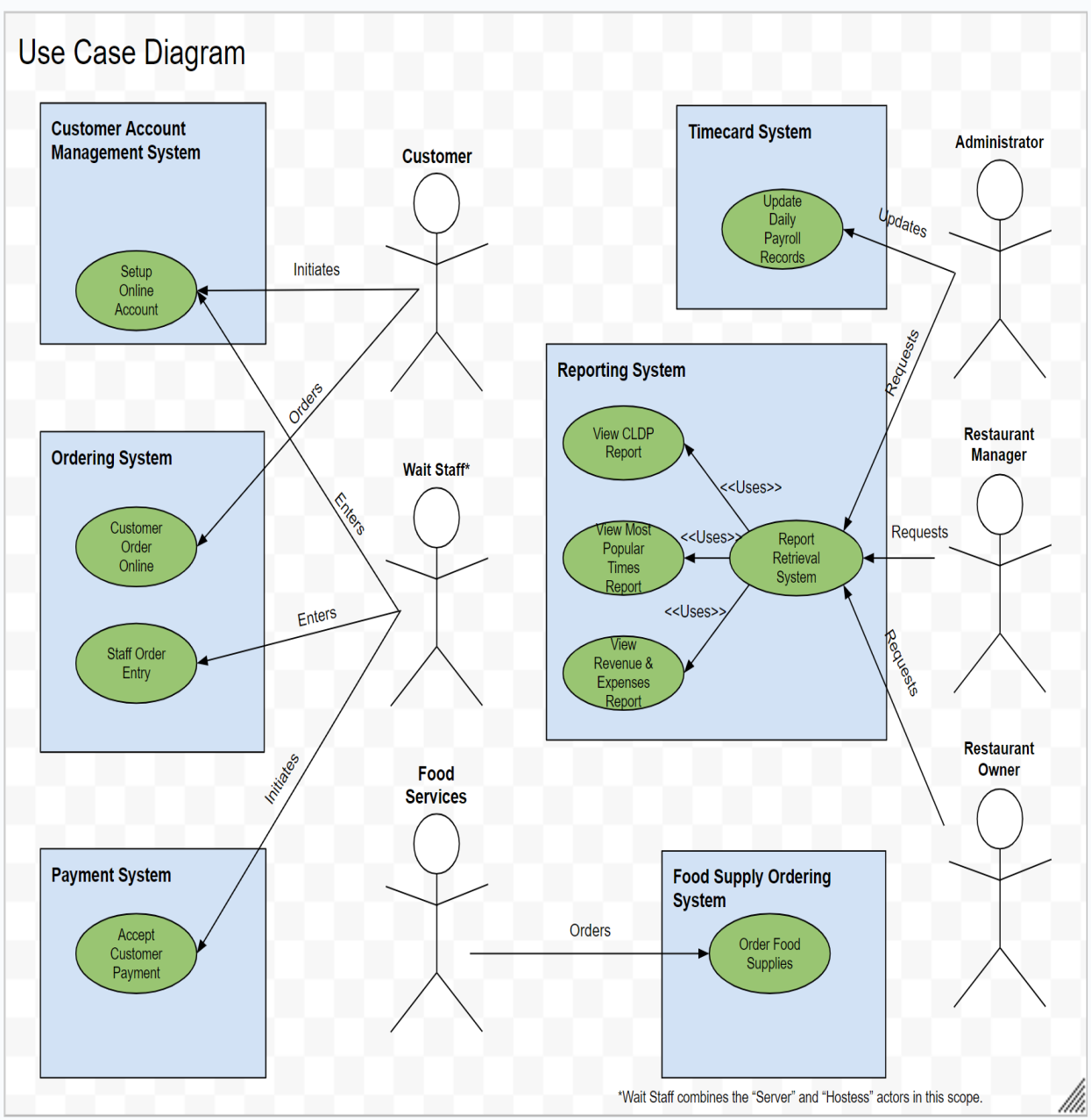
Level 2



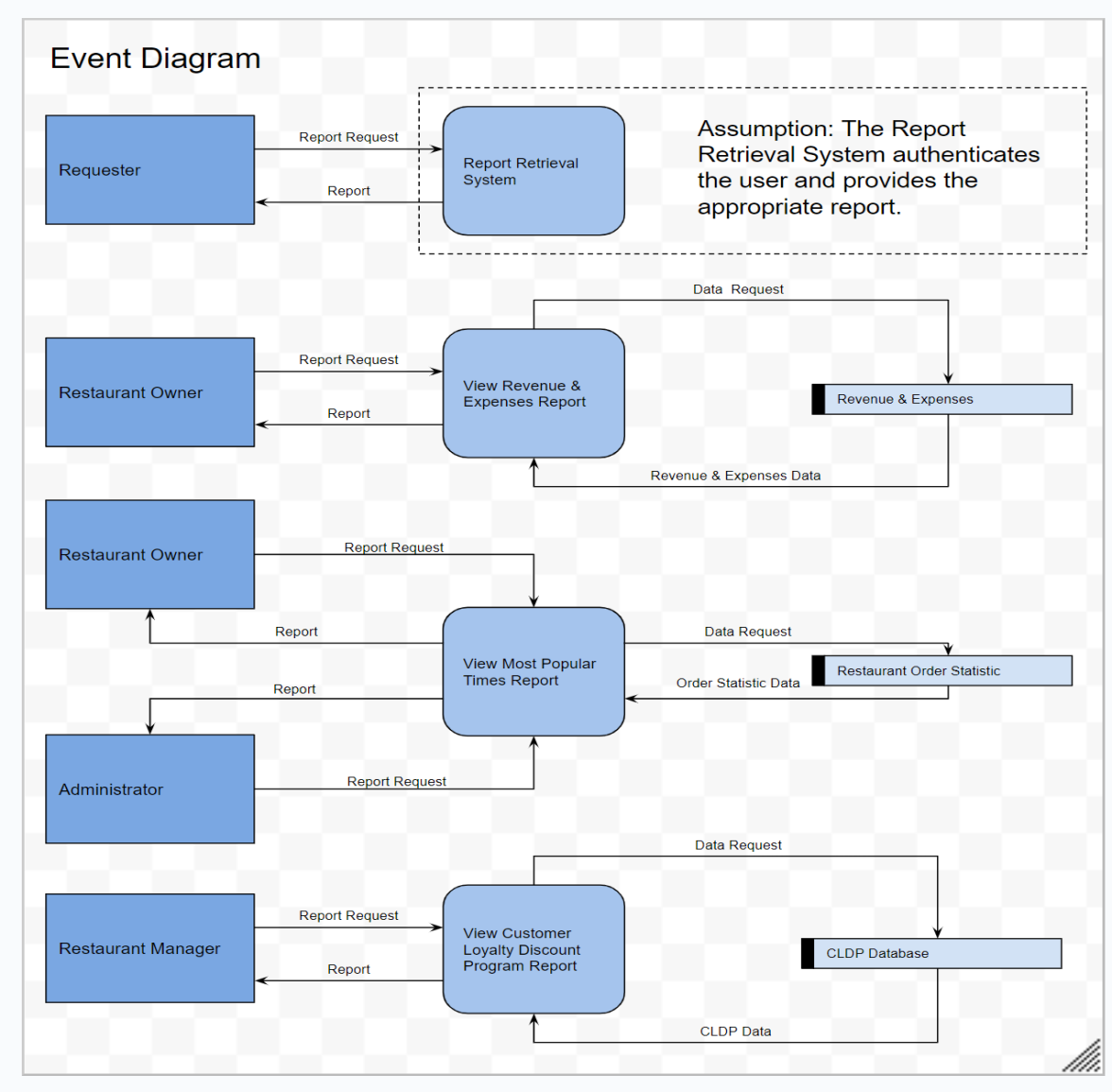
Context Diagram



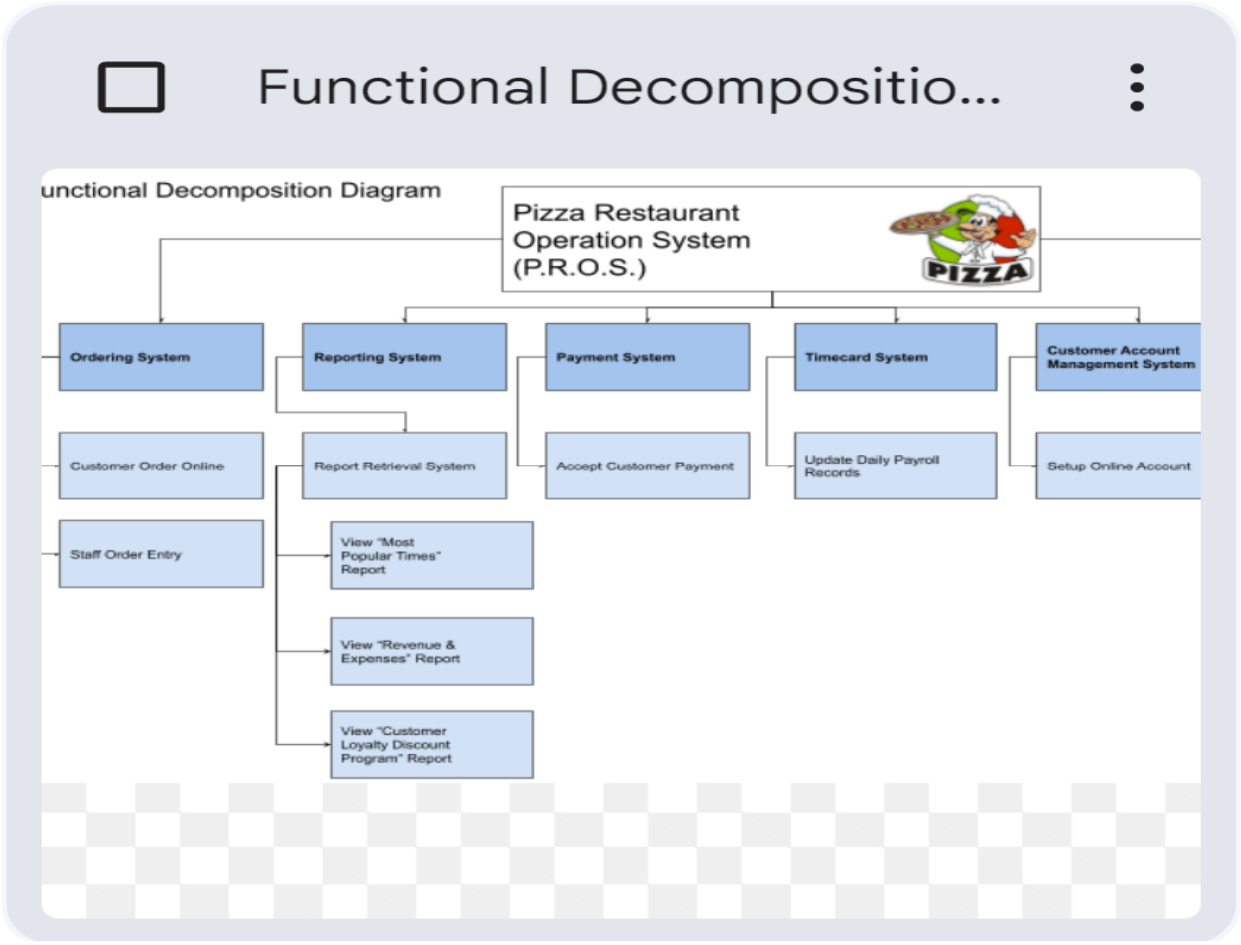
Use Case diagram



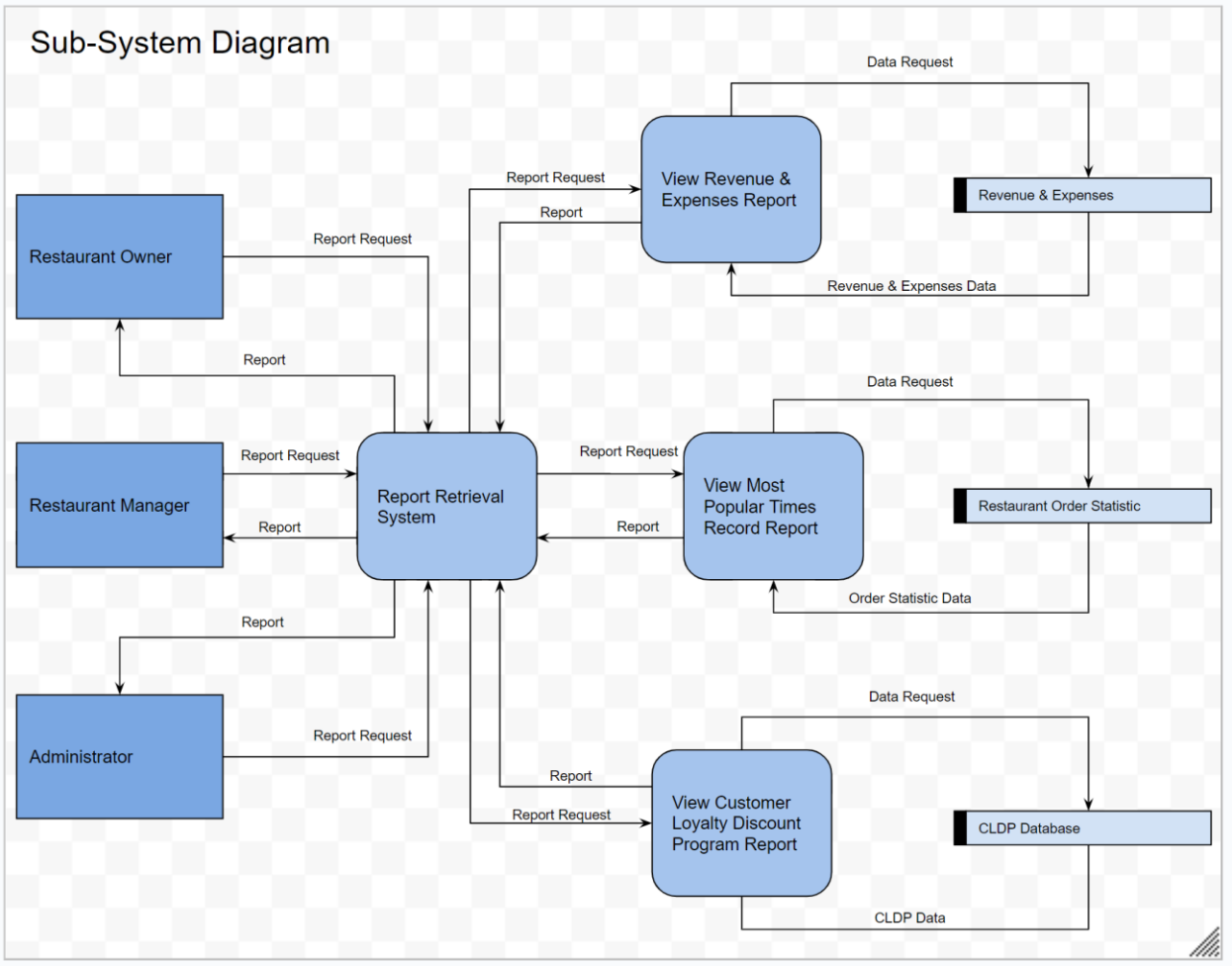
Event Diagram


Event Diagram
Requester
Report Request
Report
Report Retrieval System
Assumption: The Report Retrieval System authenticates the user and provides the appropriate report.
Restaurant Owner
Report Request
Report
View Revenue & Expenses Report
Data Request
Revenue & Expenses
Revenue & Expenses Data
Restaurant Owner
Report Request
Report
View Most Popular Times Report
Data Request
Restaurant Order Statistic
Order Statistic Data
Report
Administrator
Report Request
Restaurant Manager
Report Request
Report
View Customer Loyalty Discount Program Report
Data Request
CLDP Database
CLDP Data

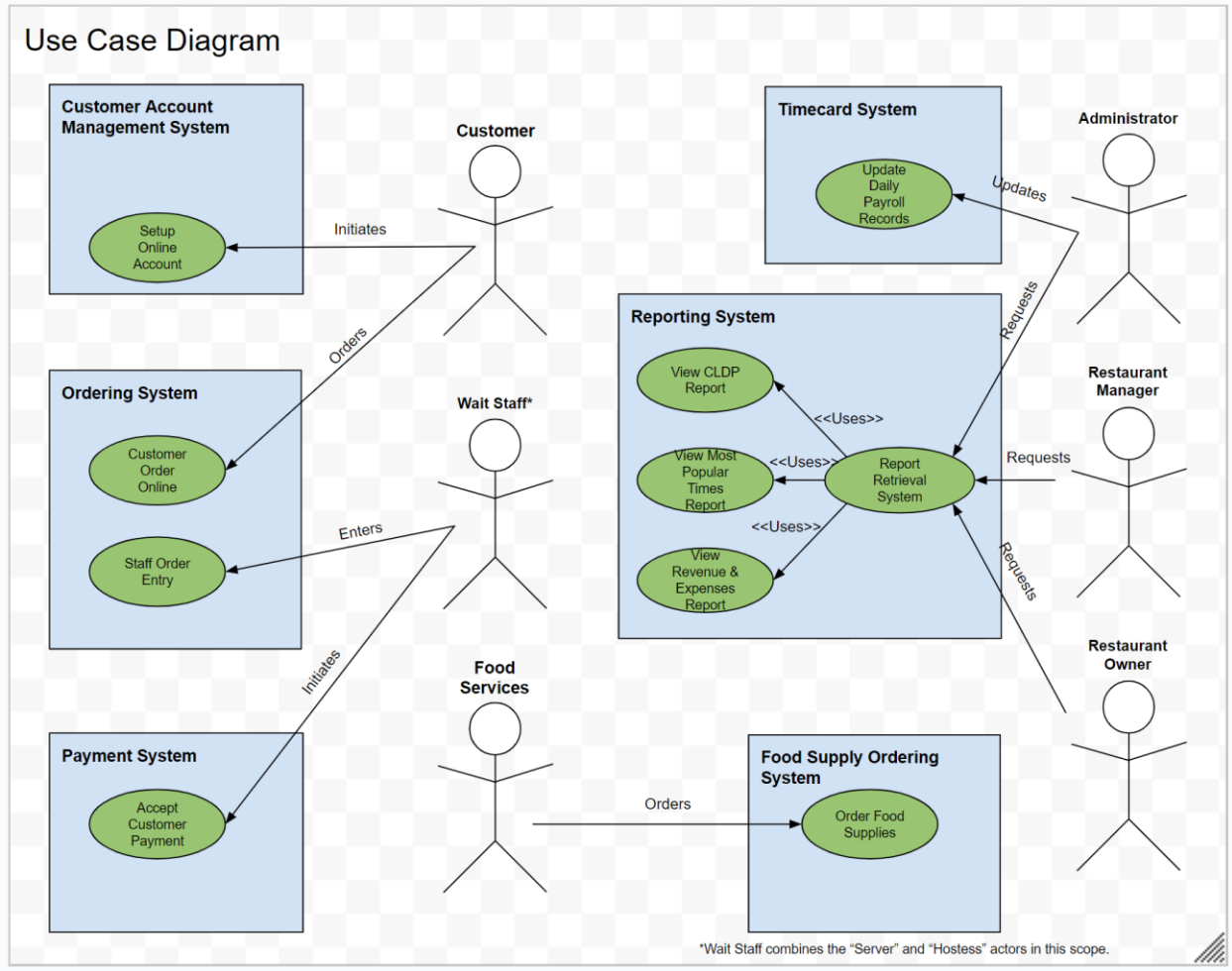
Functional Decomposition Diagram



Sub-System Diagram



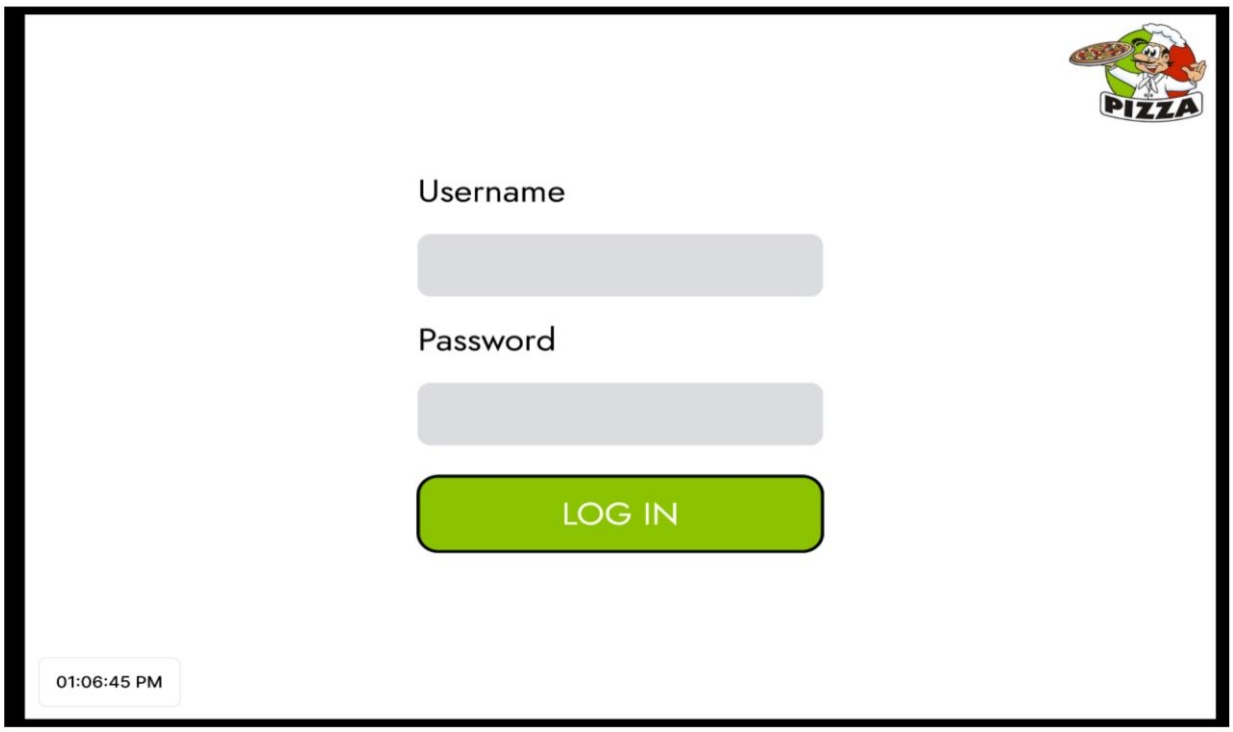
Use Case Diagram



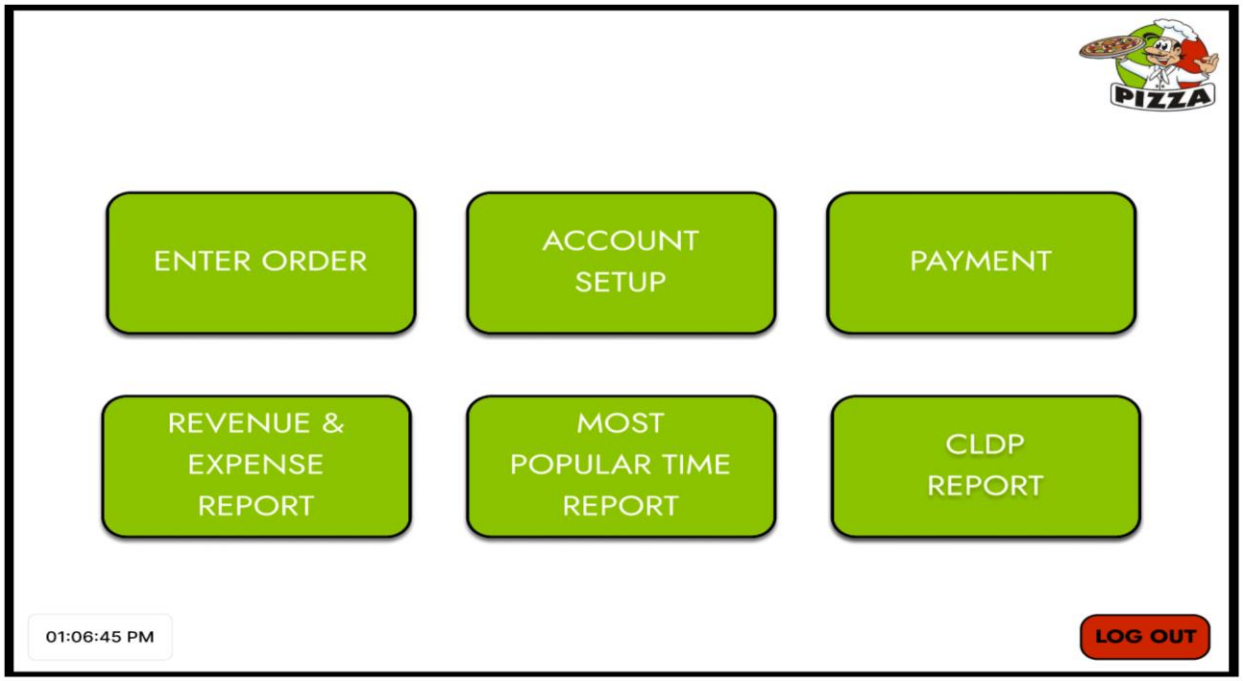
User Interfaces

Created Using Figma

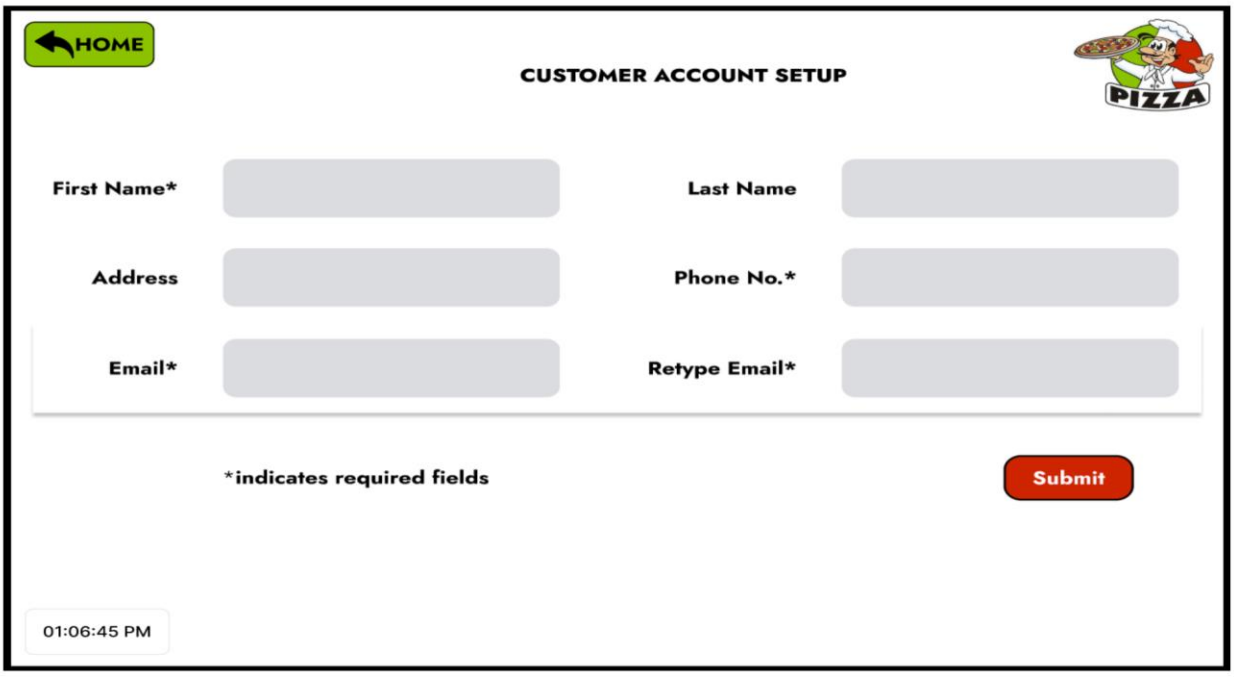
Logon Screen:-



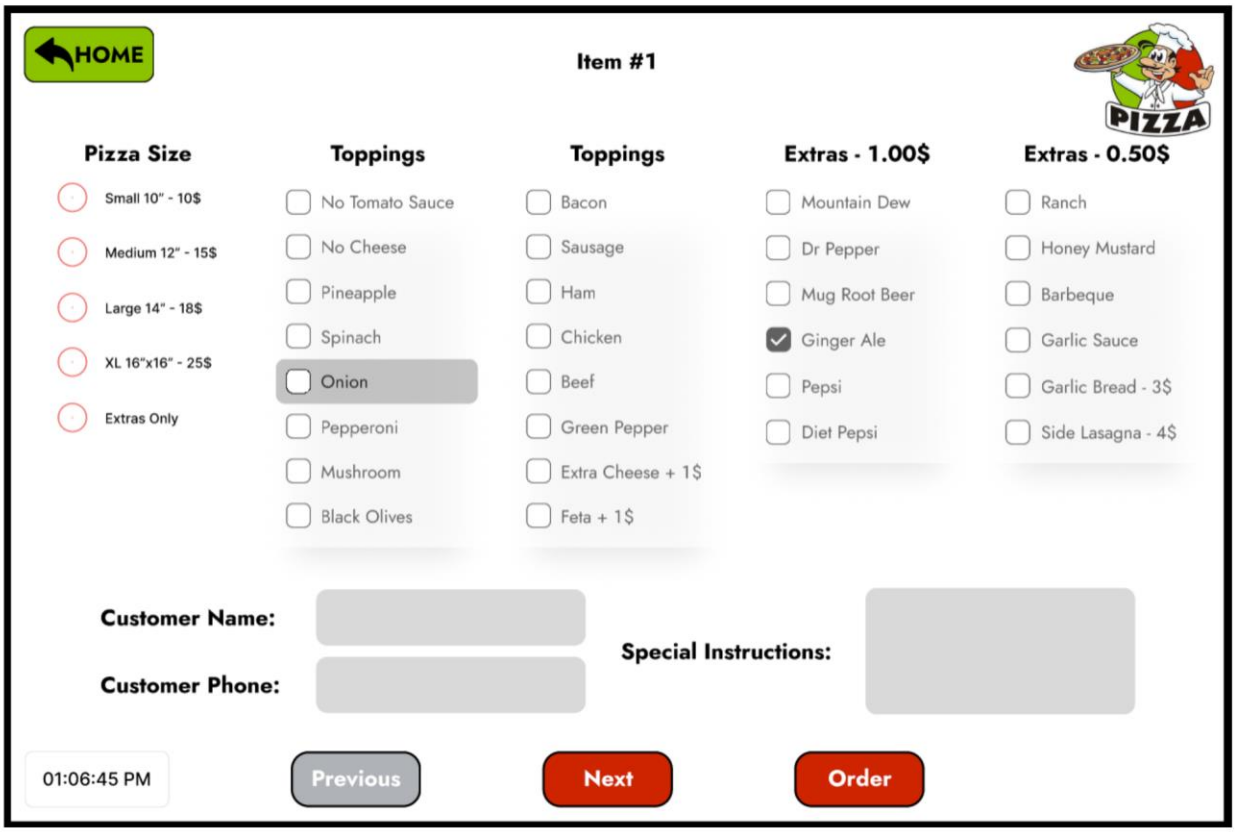
Home Page/Navigation Page



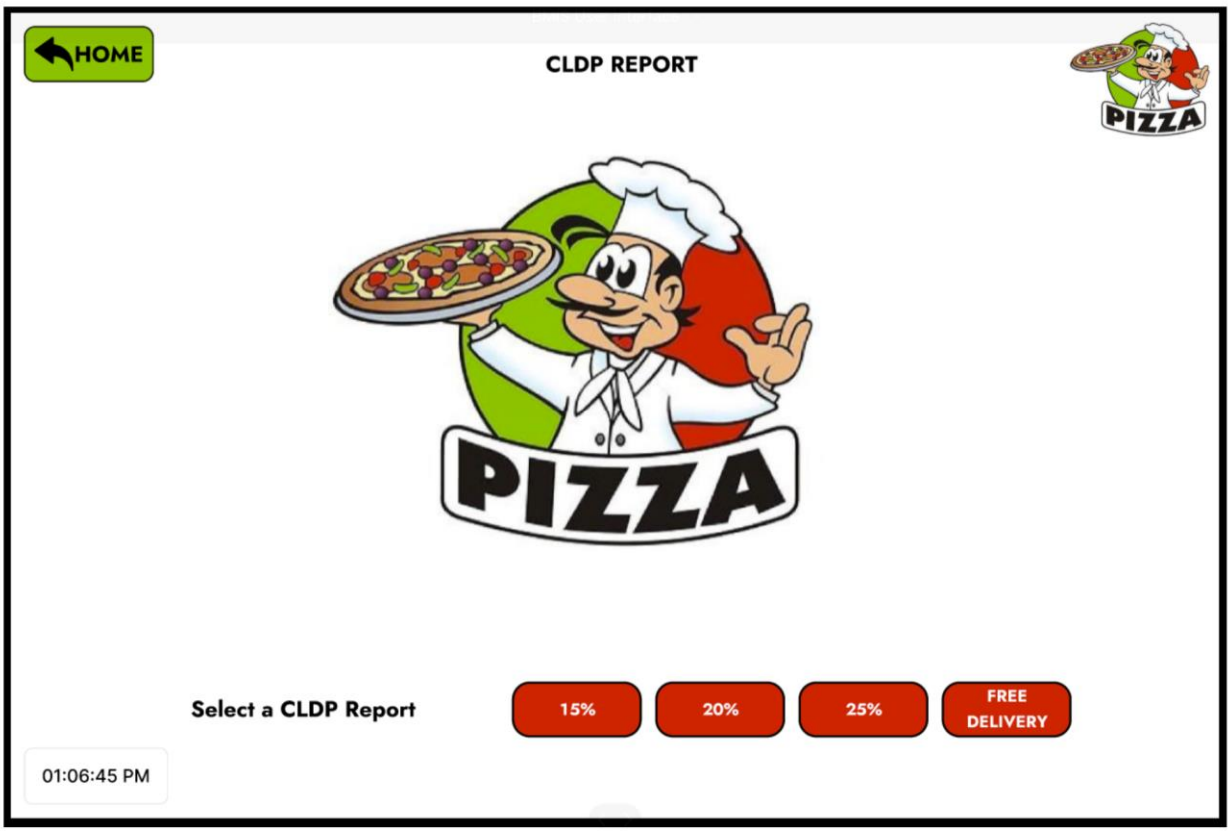
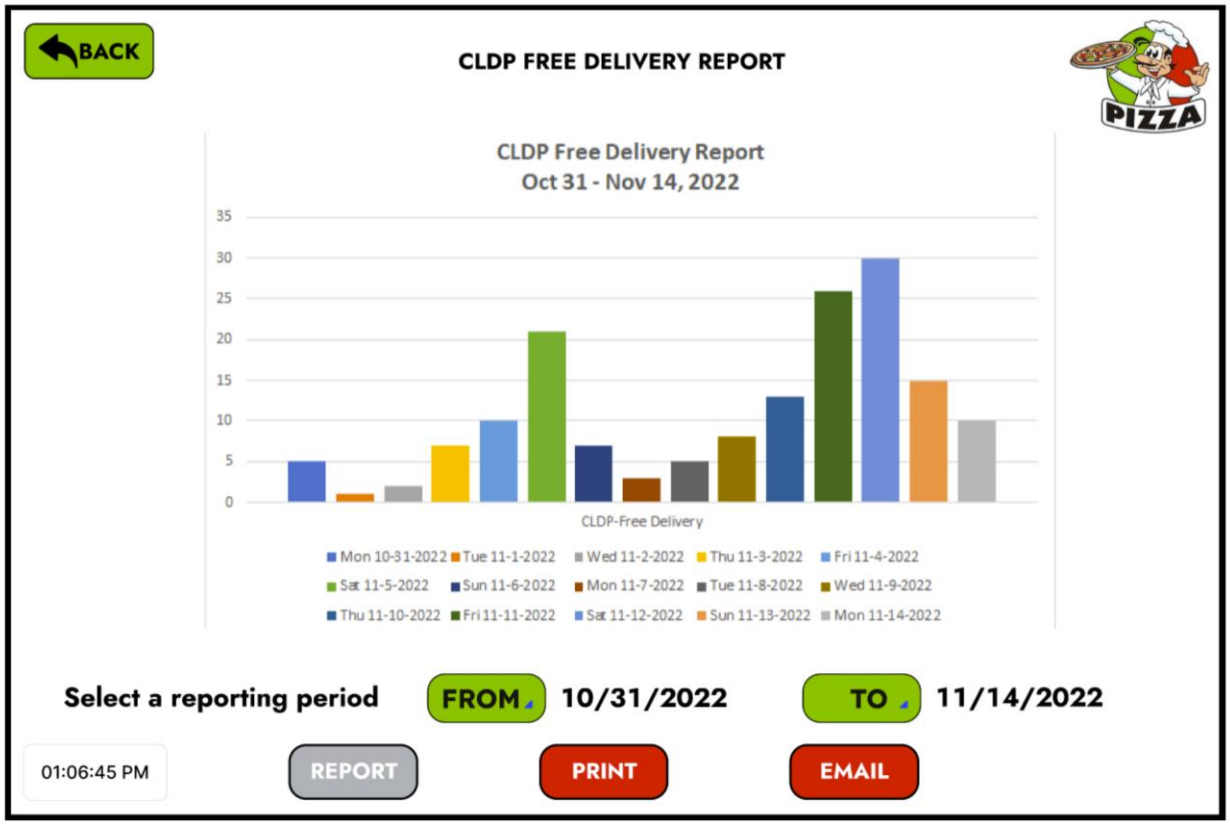
Customer Account Setup Screen



Order Page



Customer Loyalty Discount Program Page



CLDP Free Delivery Report