

Statement of Work Report

Th Group 8

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Client and Industry Background (1)

The client that we have chosen for our information systems project is *Rockville Soccer Supplies*. This company was founded in 1994 and has multiple locations throughout the DC, Maryland, and Virginia area. Our client is a family-owned business that sells soccer apparel and equipment to both individual consumers, professional teams, and local leagues. Rockville Soccer Supplies is in the retail industry which is responsible for selling the finished goods directly to the market consumers. The company currently fulfills team uniform orders by pressing crests, numbers, and sponsors. Their role in this industry is to function as an option for purchasing the finished goods manufactured and supplied from other wholesalers and brands like Nike, Adidas, and Puma.

Details of the business problems and opportunities (2)

Using the Wetherbe's PIECES problem-solving framework, we determined optimal ways to improve the performance of their online systems for sales and the rewards program they offer. *Rockville Soccer Supplies* currently collects few customer data and makes little use of the data it does have. The first step in the new system would be to acquire customer-related information from each customer purchase from online stores. *Rockville Soccer Supplies* currently have a lackluster rewards system. With a better rewards system, the customer experience will improve as well as the overall quality of the shopping experience. These benefits would transfer over to control and efficiency over the business and its functions as well, whether it be inventory, sales, rewards offerings, and/or customer information. By building these information solutions for

Rockville Soccer Supplies, they will see a more positive reported customer experience, while also improving the company's backend information and system processes.

Project Scope (3)

Processes

This project will focus on the following three processes:

1. Reward System:
 - a. Overhaul of system design to enhance customer retention
2. Customer Database:
 - a. Increase customer interactivity through profile creation
 - b. Collect data on customers
3. Online Sales System

Processes that are not included:

1. Communication System

Users and Functionalities (4)

The three users we included for our information system are customers, employees, and managers. The customers will be able to browse the website, create a profile, place an order, give feedback, and receive reward points. As the customers create their profiles or generate feedback, the data is then processed and stored. The employees can view customer feedback, process customer orders, and add inventory. The manager has the functionalities of adding products to the portal, removing products, changing product prices, viewing the profile of the profiles created by users, and viewing feedback from customers.

Project Objective (5)

The objective of our project for Rockville Soccer Supplies is to build an information system solution that improves upon their current practice. Specifically, their current rewards system is lacking. We would also like to see improvements to the collection of customer purchases and feedback. We ultimately want to make sure the customers keep coming back by creating a positive experience for them.

Measures of Success (6)

To measure the success of our system, we can look at changes in:

- Customer satisfaction as measured by customer feedback
- Volume of feedback received
- Number of customers using the rewards system
- Number of new customers joining

Constraints, Limitations, or Special Challenges (7)

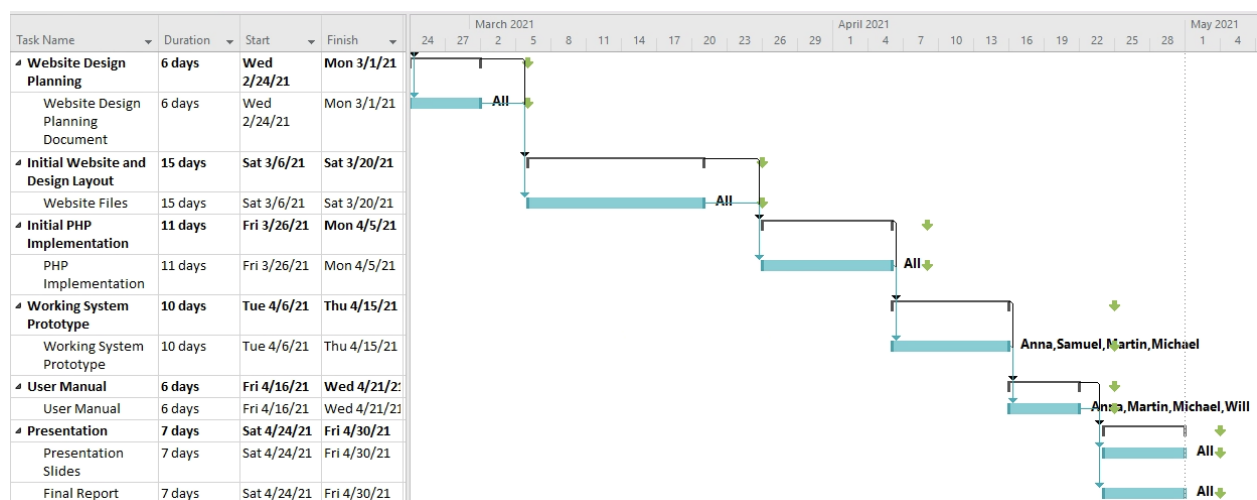
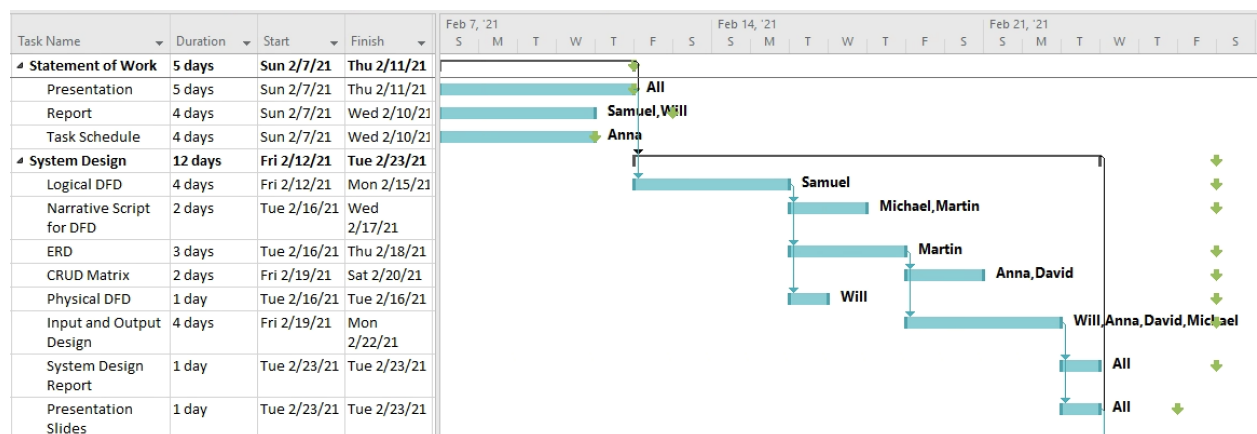
The most prevalent constraint for our project would be the implementation process for our final product. Implementing would require a high level of frequent, clear communication between our group and the client. Another related obstacle that our team will encounter is having to work through and create the actual information system which will require a deep understanding of the current system that RSS uses for its reward system and website.

Another challenge our group may face is collecting information from RSS virtually. While in the midst of the COVID-19 pandemic, having to communicate with the business owners strictly

through virtual means may complicate the design process. With that said, the use of video calling and screen-sharing, among other technologies, should prove useful in overcoming these difficulties.

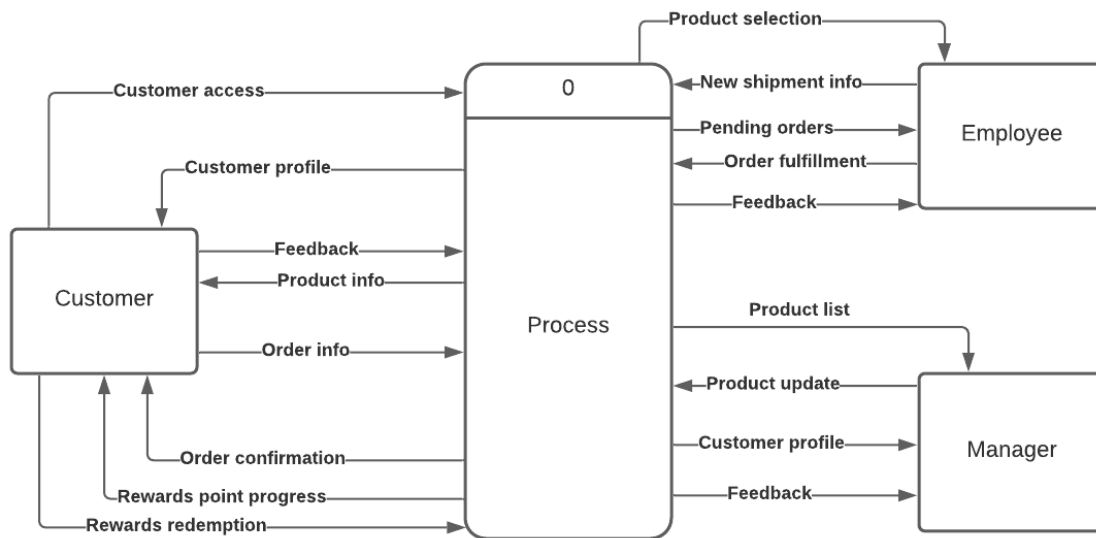
Task List and Timeline (8)

The following image is our group's task list and timeline. Some tasks later on in the project will be assigned to specific group members once we progress through the timeline.



System Design

Context Diagram



External Entities:

- **Customer:** This external entity represents any customer making an online purchase or retail purchase from Rockville Soccer Supplies. The customer can browse the website, create a profile, place an order, give feedback, and earn reward points.
- **Employee:** This external entity represents any employers of Rockville Soccer Supplies. The employee can view customer feedback, process customer orders, and add inventory.
- **Manager:** This external entity represents managers of Rockville Soccer Supplies. The manager can add products to the portal, remove products, change product prices, view the profile of the profiles created by users, and view feedback from customers.

System Inputs:

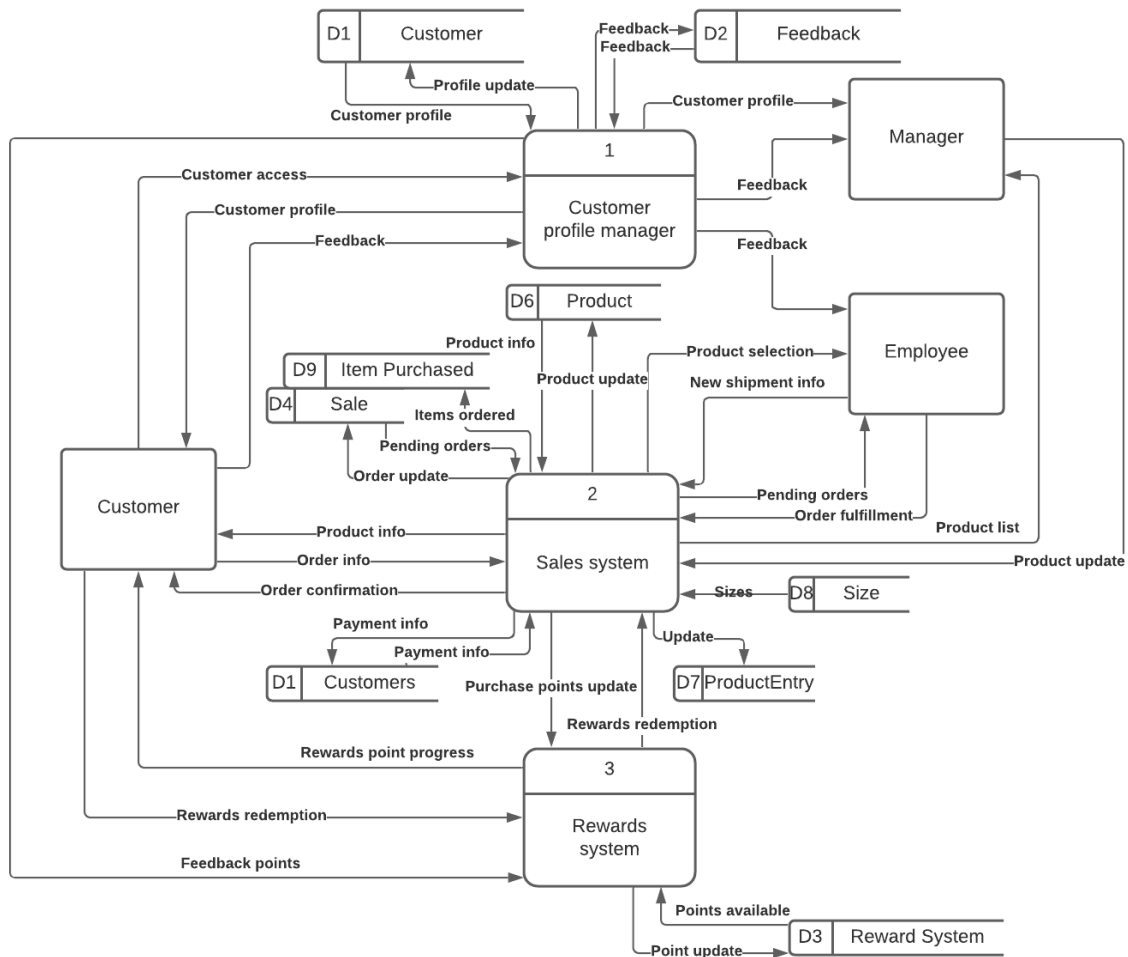
- From Customer:
 - Customer Access: Customer interacting with proposed system
 - Feedback: Given by customer
 - Order: Made when a customer purchases an item
 - Rewards Redemption: Happens when customer redeems reward points for a reward
 - Customer Profile: Create or edit customer profile
- From Employee:
 - New Shipment Info: Given when employee updates shipment info
 - Order Fulfillment: Happens when an order is fulfilled by an employee
- From Manager:
 - Product Update: Happens when a manager updates a product

System Outputs:

- To Customer
 - Customer Profile: Interaction of customer information and the proposed system
 - Product Info: Information of product given to customers
 - Order Confirmation: Sent to customer after completion of an order
 - Rewards Point Progress: Displayed to customers to show how many points are available for redemption
- To Employee
 - Product Selection: Displays all available products
 - Pending Orders: Happens when there is an order placed into the system and is available for the employee to fulfill
 - Feedback: Given by customers through the system to the employee
- To Manager
 - Product List: Given by system for manager to view list of products
 - Customer Profile: Displays all information of a customer's profile to a manager
 - Feedback: Given by customers through the system to the employee

Level 0 DFD

Level 0 DFD



Level Zero Diagram:

For the Level Zero Diagram, the same external entities are used from the context diagram but are expanded into three processes and 8 data stores.

Data Stores:

- Customer: This data store contains all the information about customers
- Feedback: This data store stores all the feedback that is provided by the customers
- Rewards System: This data store contains a record of all reward points
- Sale: This data store is a record of all customer orders from the online platform
- Item Purchased: The items purchased corresponding to a sale record
- Product: This data store maintains all information about the current products
- ProductEntry: This data store represents any data of the current inventory for each product and size
- Rewards: This data store maintains all information about rewards
- Size: The data store contains sizing information

Processes:

1. Customer Profile Manager: This process manages the interaction between the customer and the proposed system. The specific activities that this process is responsible for are Create Profile, Read Profile, Submit Feedback, and Read Feedback
 - a. Process Inputs
 - i. From Customer: Customer Access (this is an aggregated data flow that shows up in level one as “login” and “sign up”), Feedback
 - ii. From Customer (data store): Customer Profile
 - iii. From Feedback (data store): Feedback
 - b. Process Outputs
 - i. To Customer: Customer profile
 - ii. To Employee: Feedback
 - iii. To Manager: Feedback
 - iv. To Rewards System: Feedback points
 - v. To Customer (data store): Profile update
 - vi. To Feedback (data store): Feedback

2. Sales System: This process manages all interactions that are relevant to a sale. The specific activities that this process represents are Display Product, Update Product, Stock Product, Order Product, Fulfill Order.

a. Process Inputs

- i. From Customer: Order info
- ii. From Employee: New Shipment Info, Order Fulfillment
- iii. From Manager: Product Update (this is an aggregated data flow that shows up in level one as “product addition”, “product removal”, “product detail”)
- iv. From Rewards System: Rewards Redemption
- v. From Customer (data store): Payment Info
- vi. From Sale (data store): Pending Orders
- vii. From Product (data store): Product Info

b. Process Outputs

- i. To Customer: Product Info, Order Confirmation
- ii. To Employee: Pending Orders, Product Selection
- iii. To Manager: Product List
- iv. To Rewards System: Purchase Points Update
- v. To Customer (data store): Payment Info
- vi. To Sale (data store): Order Update (this is an aggregated data flow that shows up in level one as “new order” and “order fulfillment”)
- vii. To Product (data store): Product Update (this is an aggregated data flow that shows up in level one as “product addition”, and “product removal”, “product detail”)
- viii. To ProductEntry (data store): Update (this is an aggregated data flow that shows up in level one as “inventory deduction” and “new inventory”)
- ix. To Item Purchased (data store): Items Ordered

3. Rewards System: This process represents any interaction between the proposed system and the rewards for the customer. The specific processes include Update Feedback Points, Display Reward Progress, and Redeem Rewards.

a. Process Inputs:

- i. From Customer: Rewards Redemption
- ii. From Customer Profile Manager: Feedback points
- iii. From Sales System: Purchase Points
- iv. From Reward System (data store): Points available

b. Process Outputs:

- i. To Customer: Rewards Point Progress
- ii. To Sales System: Rewards Redemption
- iii. To Rewards Point (data store): Point Update

Level 1: Customer Profile Manager



Process 1.1 - Create profile: use by the customer to create an account

Process inputs:

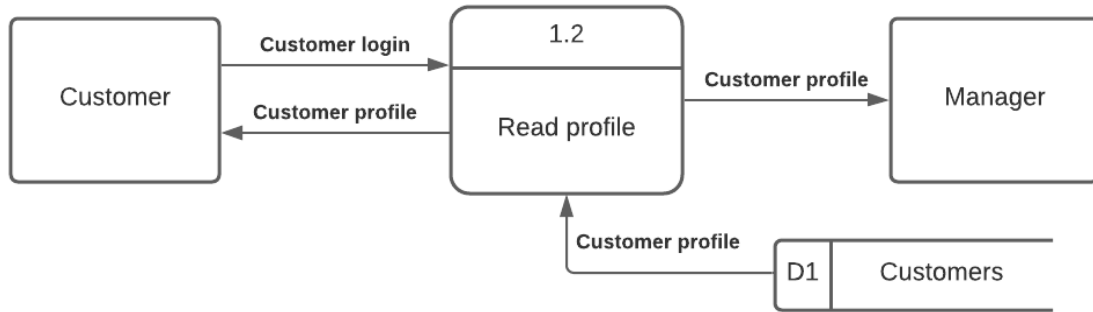
From Customer

- Customer sign up info: information such as name, address, phone, and date of birth that the customer gives when registering for an account

Process outputs:

To Customers data store

- Profile update: Information provided by the customer when creating a profile



Process 1.2 - Read profile: use by the customer to read his or her profile. Also viewable by the manager for customer insights

Process inputs:

From Customer

- Customer login: customer login credentials

From Customers data store

- Customer profile: customer information, such as name and address, that will be visible when the customer access their profile

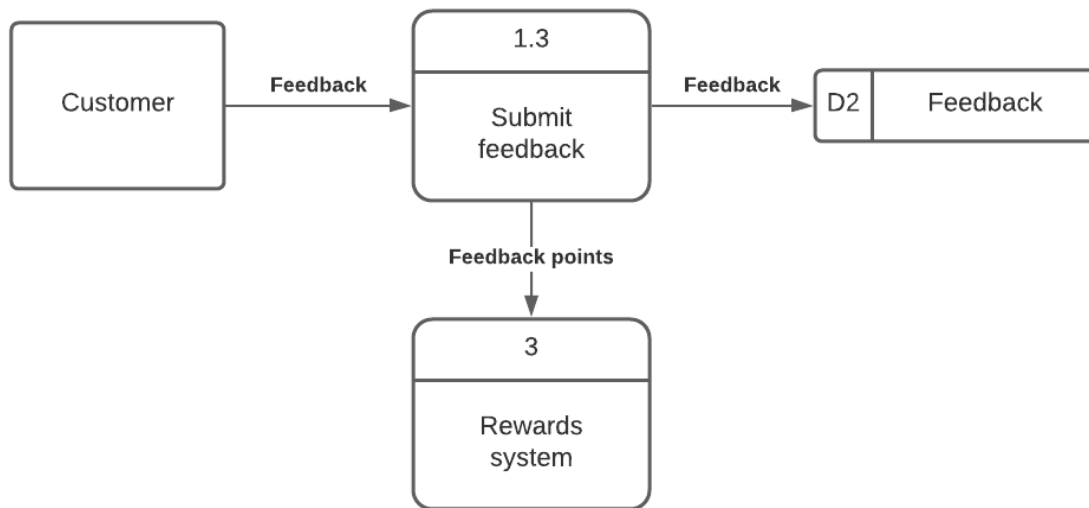
Process outputs:

To Customer

- Customer profile: customer information, such as name and address, that will be visible when the customer access their profile

To Manager

- Customer profile: customer information that can be viewed individually or on an aggregate level



Process 1.3 - Submit feedback: lets customers submit feedback to the store and earn rewards points for it

Process inputs:

From Customer

- Feedback: any feedback that the customer might give rewarding their experience with Rockville Soccer Supplies

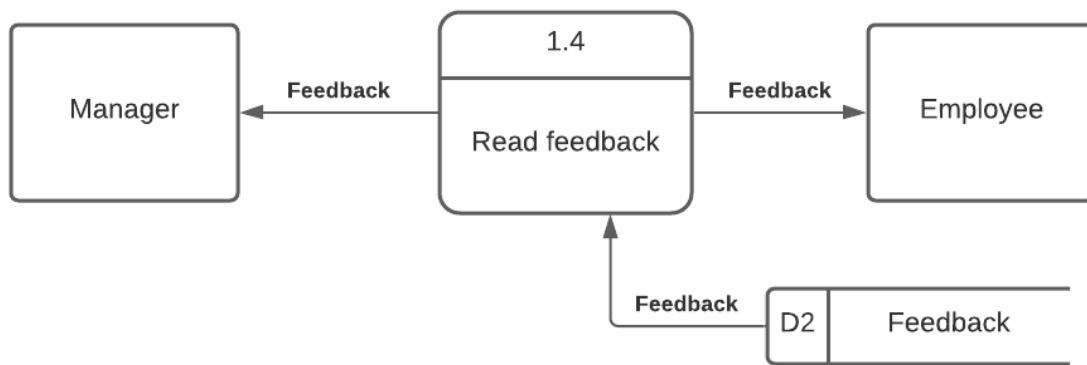
Process outputs:

To Feedback data store

- Feedback: any feedback that the customer might give rewarding their experience with Rockville Soccer Supplies

Process 3 Rewards system

- Feedback points: rewards points that the customer earned from submitting feedback.



Process 1.4 - Read feedback: lets manager and employees read customer feedback

Process inputs:

From Feedback data store

- Feedback: any feedback that the customer might give rewarding their experience with Rockville Soccer Supplies

Process outputs:

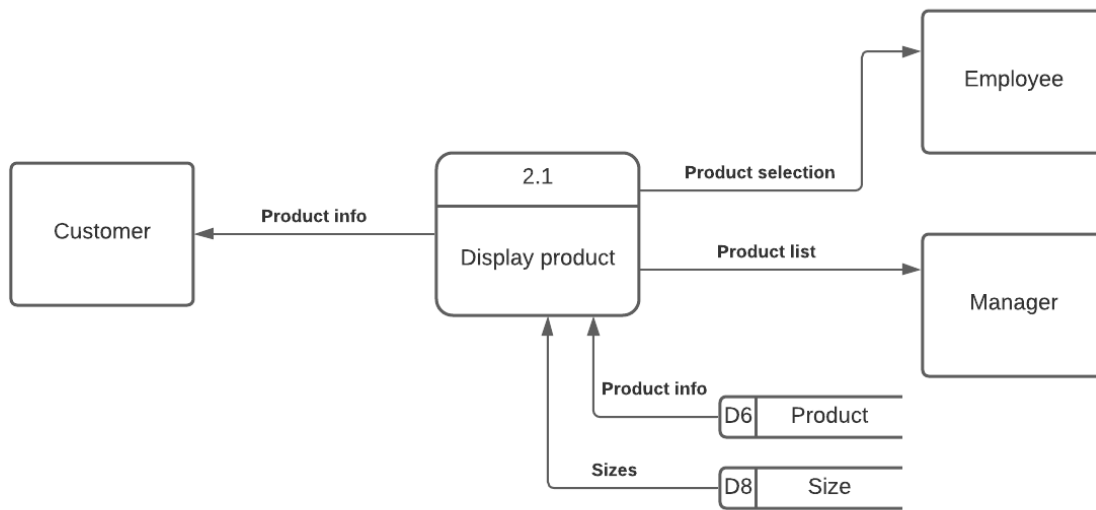
To Manager

- Feedback: customer feedback to improve on the business

To Employee

- Feedback: customer feedback to improve on the business

Level 1: Sales System



Process 2.1 - Display product: show product available for sale

Process inputs:

From Product data store

- Product info: product name, description, and price

From Size data store

- Sizes: available sizes for the product

Process outputs:

To Customer

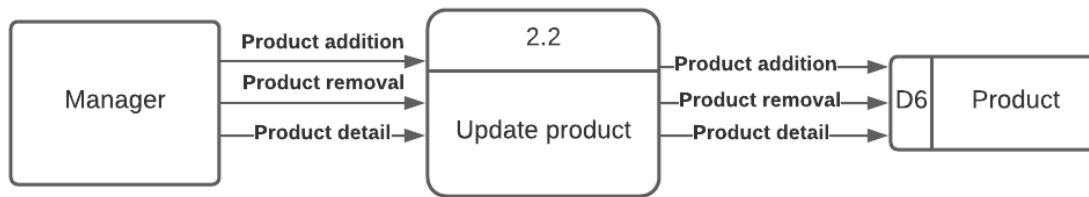
- Product info: Product description and availability

To Employee

- Product selection: Product description and availability

To Manager

- Product list: Product description and availability



Process 2.2 - Update product: lets manager modify the product and rewards offering

Process inputs:

From Manager

- Product addition: new product name, description, and indication of whether the product is for the rewards system
- Product removal: removal of a product
- Product detail: product changes such as a change in description or price

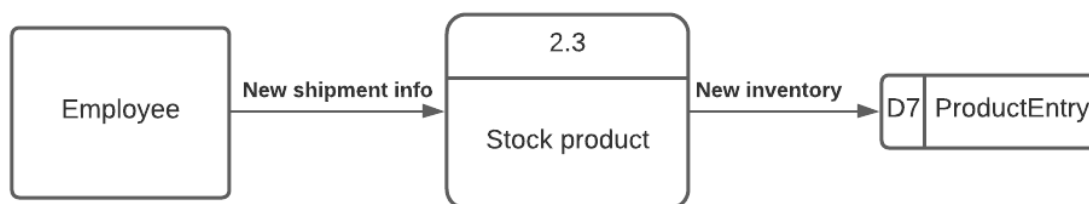
Process outputs:

To Product data store

- Product detail: product changes such as a change in description or price

To Rewards data store

- Reward addition: new reward name and description
- Reward removal: removal of a reward



Process 2.3 - Stock product: let employees add in new product inventory as they arrive from suppliers

Process inputs:

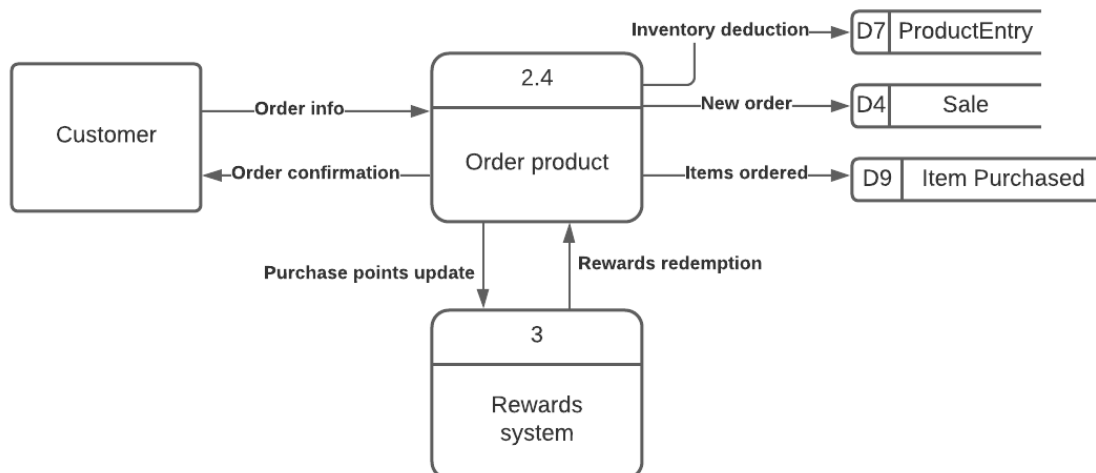
From Employee

- New shipment info: new stock from suppliers

Process outputs:

To Inventory data store

- New inventory: update the inventory with new stock from suppliers



Process 2.4 - Order product: let customer make an order for a product

Process inputs:

From Customer

- Order info: product and quantity that the customer is ordering

From Rewards system

- Rewards redemption: redeemed rewards discount to apply

Process outputs:

To Customer

- Order confirmation: confirmation to a customer that an order has been made (sent to paypal)

To ProductEntry data store

- Inventory deduction: reduction in inventory according to the customer's order

To Sale data store

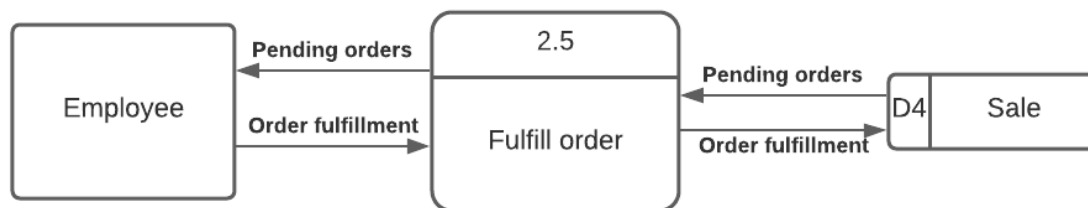
- New order: order details for employees to process

To Item Purchased datastore

- Items ordered: items in the customer's order

To Rewards system

- Purchase points update: rewards point earned by customers from making purchases (equal to half the price of the order) or rewards point deduction from redeeming a reward



Process 2.5 - Fulfill order: used by the employee to fulfill pending customer orders

Process inputs:

From Employee

- Order fulfillment: employee making an order as fulfilled once the employee prepared and shipped the order

From Sale data store

- Pending orders: customer orders that have not yet been processed

Process outputs:

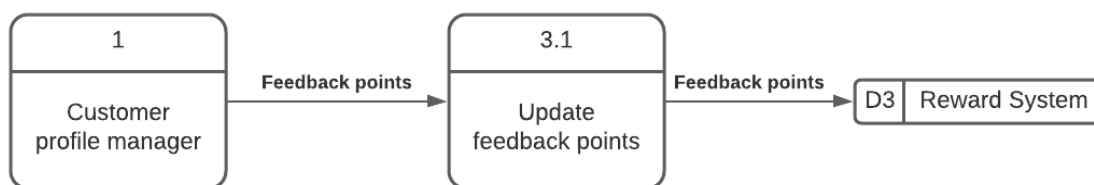
To Employee

- Pending orders: customer orders that the employee will now fulfill

To Sale

- Order fulfillment: mark order as fulfilled

Level 1: Rewards System



Process 3.1 - Update feed points: update for rewards points earned by customers from giving feedback

Process inputs:

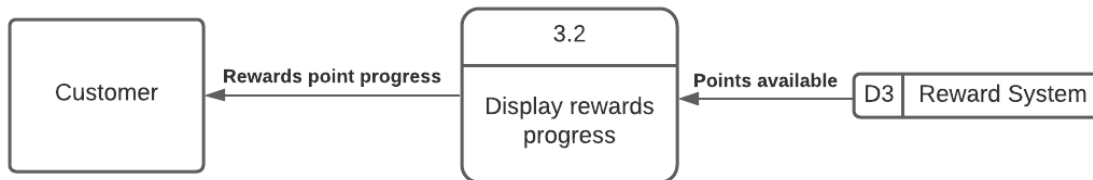
From Customer profile manager

- Feedback Points: points earned through submitting feedback

Process outputs:

To Reward System data store

- Feedback Points: update the new points balance for the customer



Process 3.2 - Display rewards progress: show the customer how many rewards points they earned

Process inputs:

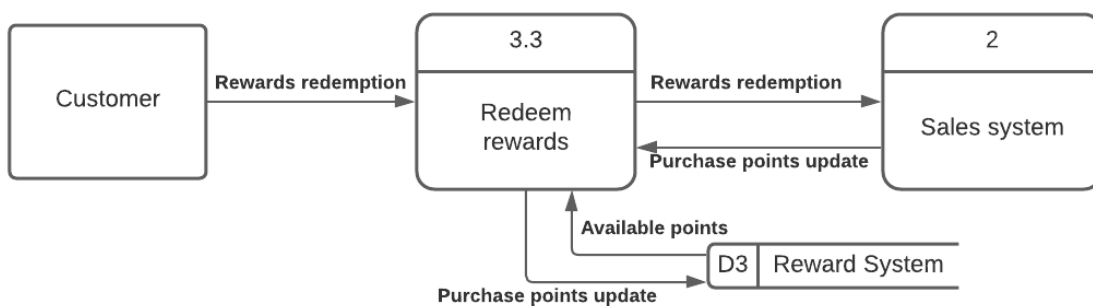
From Reward System data store

- Points available: current rewards point balance

Process outputs:

To Customer

- Rewards point progress: display points balance for the customer



Process 3.3 - Redeem rewards: used by the customer to select and redeem their rewards

Process inputs:

From Customer

- Rewards Redemption: customer request to redeem rewards

From Reward System

- Available points: amount of rewards points the customer currently have

From Sales System

- Purchase points update: rewards point earned by customers from making purchases
(equal to half the price of the order) or rewards point deduction from redeeming a reward

Process outputs:

To Sales System

- Rewards redemption: redeemed rewards discount to apply

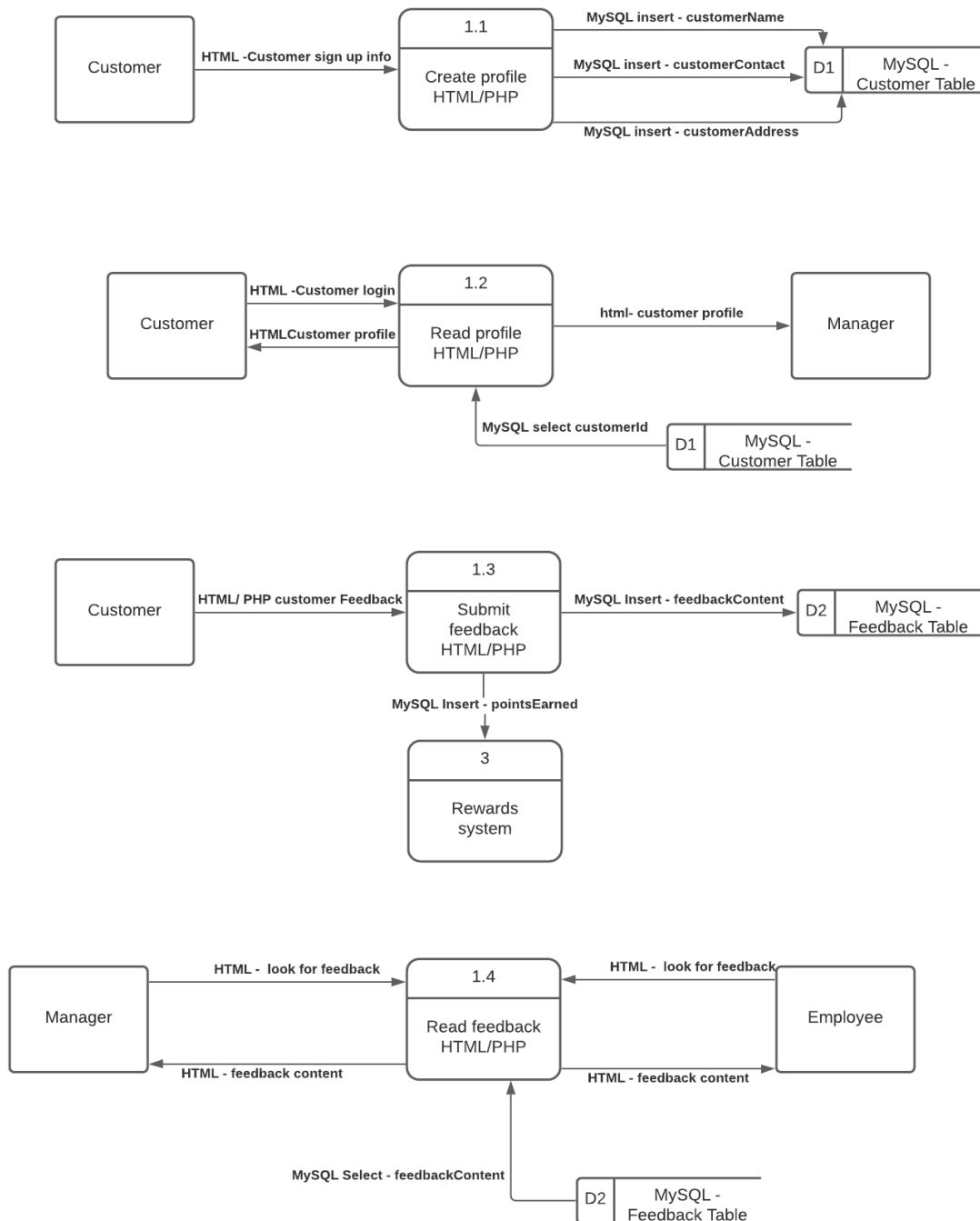
To Reward System

- Purchase points update: rewards point earned by customers from making purchases
(equal to half the price of the order) or rewards point deduction from redeeming a reward

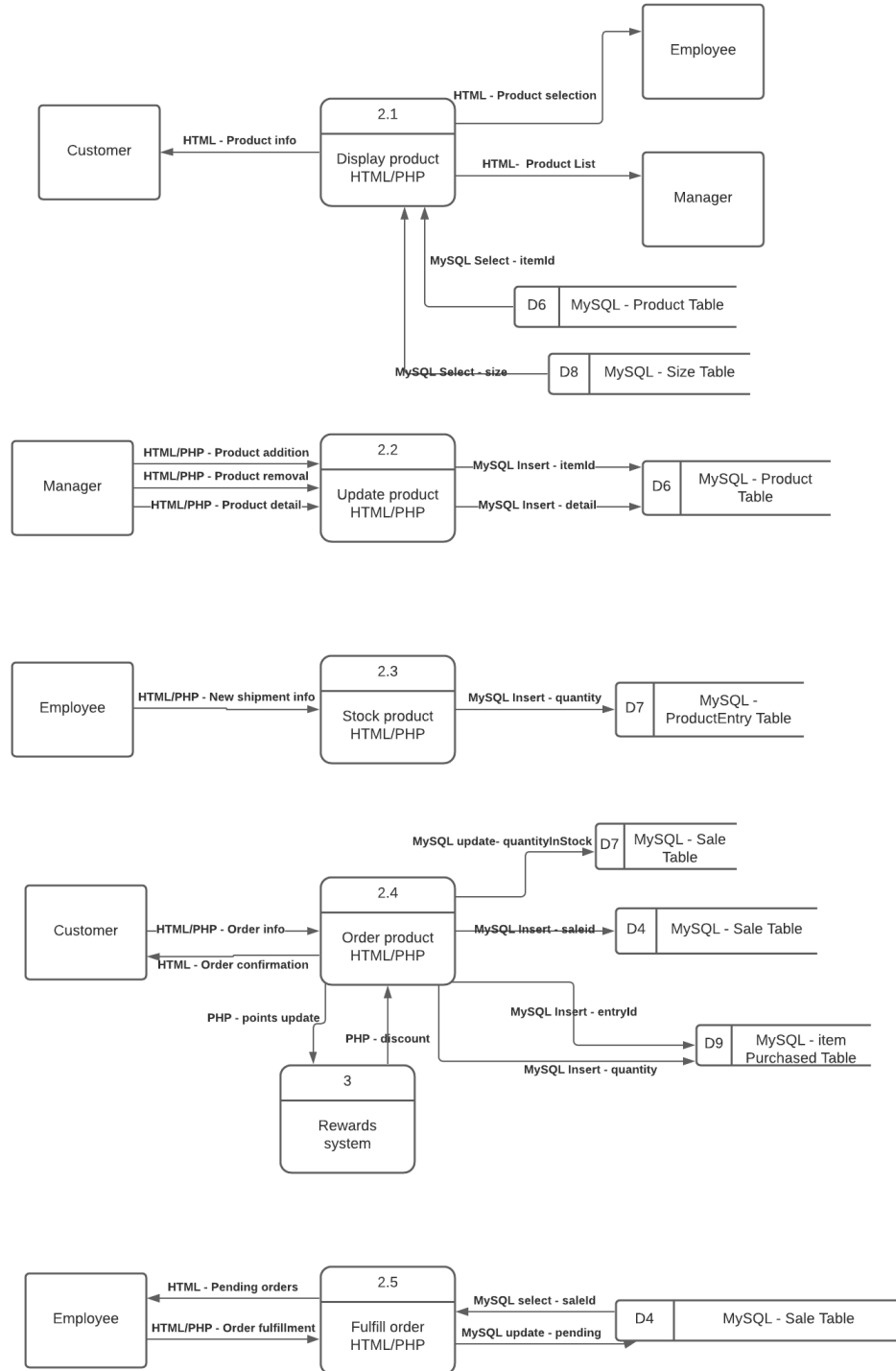
Physical DFD Level 1

With the Physical DFDs we analyzed any level that incorporated our new reward system and database. The following DFDs showcase areas where data flows through the system and is stored in the databases as well as any physical inputs and outputs made by other entities. The levels that are included in this analysis include Customer Profile Manager, Sales system, and Rewards System

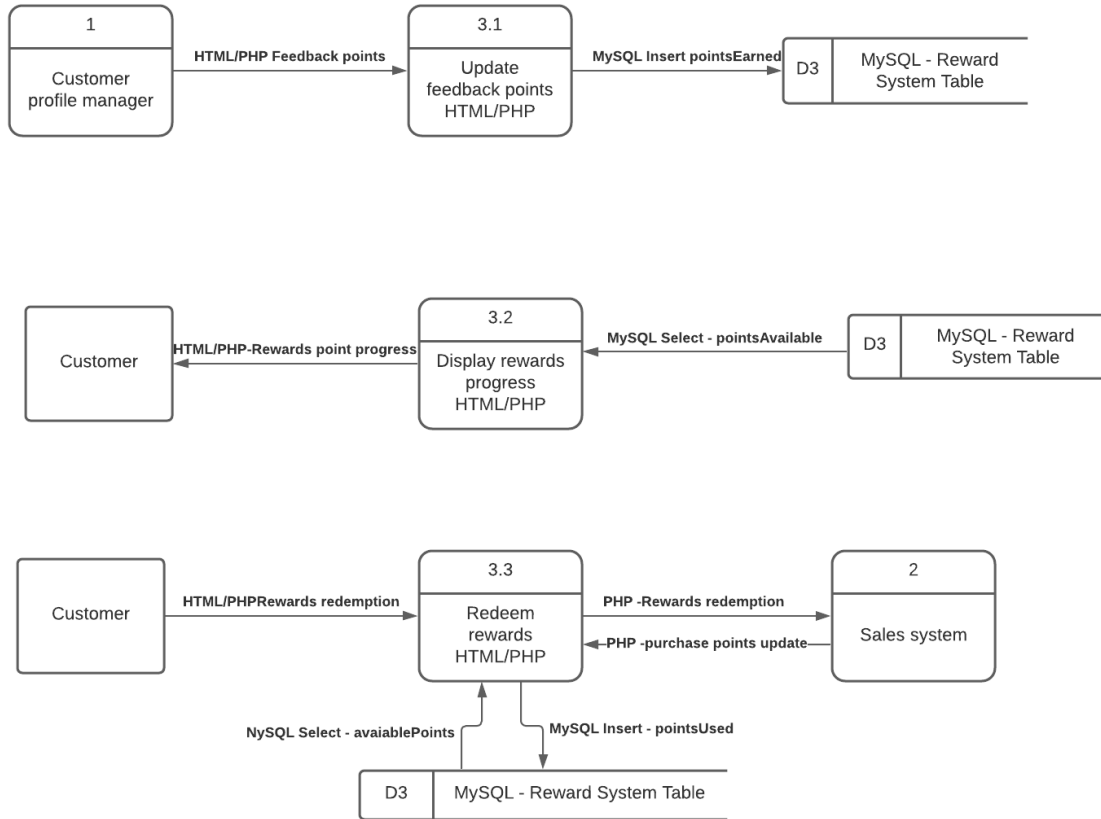
Level 1 Customer Profile Manager Physical DFD



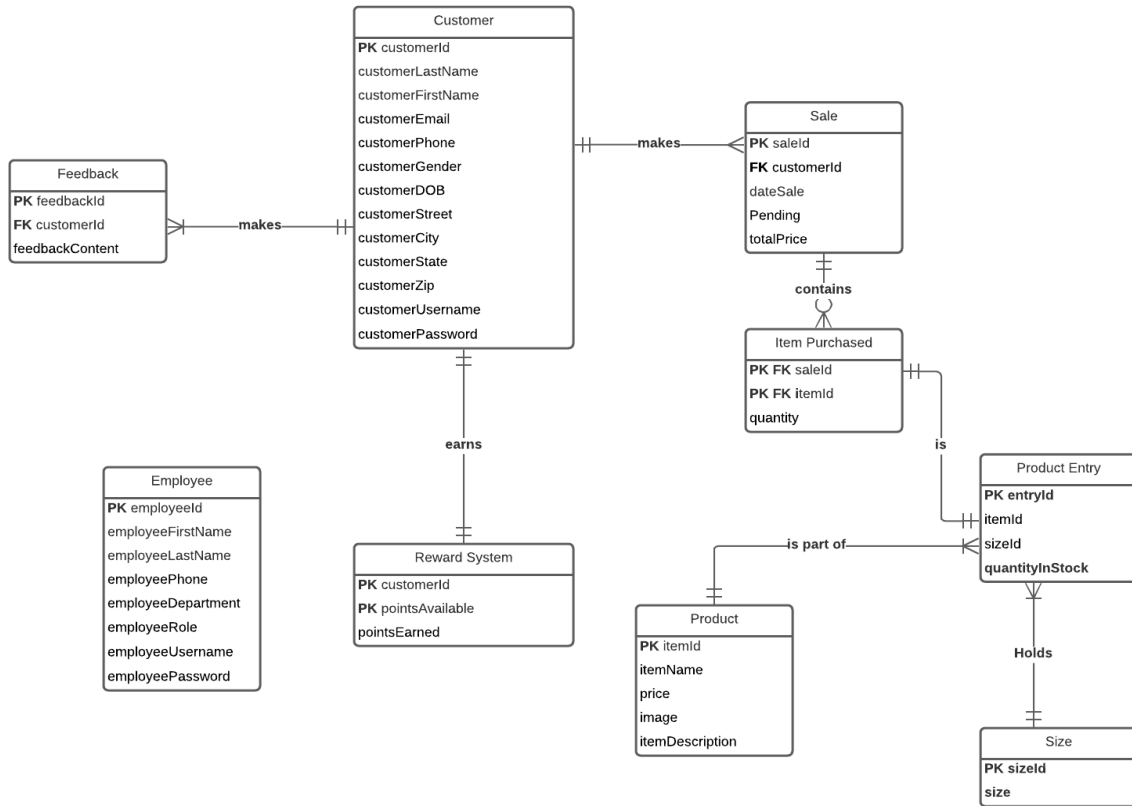
Level 1 Sales System Physical DFD



Level 1 Rewards Systems Physical DFD



ERD



CRUD Matrix

Entity, Attribute	Customer Profile Manager	Create Profile	Read Profile	Edit Profile	Submit Feedback	Read Feedback	Sales System	Display Product	Update Product	Stock Product	Order Product	Fulfill Order	Rewards System	Update Reward Points	Display Rewards progress	Redeem Rewards
Customer																
customerId	CRUD	C	R	U	R	R	R				R	R	R	R	R	R
customerLastName	CRUD	C	R	U			R				R	R				
customerFirstName	CRUD	C	R	U			R				R	R				
customerEmail	CRUD	C	R	U			R				R	R				
customerPhone	CRUD	C	R	U			R				R	R				
customerGender	CRUD	C	R	U			R				R	R				
customerDOB	CRUD	C	R	U			R				R	R				
customerStreet	CRUD	C	R	U			R				R	R				
customerCity	CRUD	C	R	U			R				R	R				
customerState	CRUD	C	R	U			R				R	R				
customerZip	CRUD	C	R	U			R				R	R				
customerUsername	CRUD	C	R	U												
customerPassword	CRUD	C	R	U												
Feedback																
feedbackId					C	R							R	R		
customerId					C	R							R	R		
feedbackContent					C	R										
Sale																
saleId							CRUD				CRUD	R	R			R
customerId							R				R	R	R			R
dateSale							CRUD				CRUD	R	R			R
Pending							CRUD				CRUD	CRUD	R			R
totalPrice							CRUD				CRUD	R	RU			RU
Product Entry																
itemId							CRUD	CR	RUD	CRUD	R	R				
itemName							CRUD	CR	RUD	CRUD	R	R				
price							CRUD	CR	RUD	CRUD	R	R				
image							CRUD	CR	RUD	CRUD	R	R				
itemDescription							CRUD	CR	RUD	CRUD	RU	RU				
Reward System																
customerId							R		R		R		R	R	R	R
pointsAvailable							RU		RU		RU		CRUD	CRUD	R	RU
pointsEarned							RU		RU		RU		CRUD	CRUD	R	R
Employee																
employeeId		C	R	U	CR	R	R			R		R				
employeeFirstName		C	R	U												
employeeLastName		C	R	U												
employeePhone		C	R	U												
employeeDepartment		C	R	U												
employeeRole		C	R	U												
employeeUsername		C	R	U												
employeePassword		C	R	U												
Item Purchased																
saleId							CRUD				CRUD					
itemId							CRUD				CRUD					
quantity							CRUD				CRUD					
Size																
sizeId							CRUD		CRUD							
size							CRUD		CRUD							

Sample Input/Output Screens

Login Screen:

Rockville Soccer Supplies

Login Portal

Username:

Password:

Customer Reward System Screen:

RSS Rewards

Points Redeemable:

Rockville Soccer Supplies

Welcome,

The following rewards can be redeemed using RSS points:

500 points

\$15 off coupon

20% off footwear

Pair of socks for \$5

Free pack of deodorizing balls

1,000 points

\$35 off coupon


Free soccer ball (under \$50 value)

25% off all athletic wear (excludes custom jerseys)

Free water bottle (under \$40 value)

Earn 25 points by providing feedback on your most recent purchase:


Customer Order Screen:




Rockville Soccer Supplies

Your Cart

Products

Search 

☐



White T-Shirt

Simple Design. 100% Organic Cotton.

Quantity


1

Size

XS

\$30.00

☐



Sweatshirt

Smooth Rainbow Colors.

Quantity

1

Color


Red

Size

XS

\$100.00

☐



Shoes

Fabric Shoes with Gray Squares.

Quantity

1

Shoe Size

8

\$125.00

Total

\$0.00

Credit Card

First Name

Last Name

Credit Card Number

Security Code

Expiration Date

Postal Code

Full Name

First Name

Last Name

E-mail *

example@example.com

Contact Number

Billing Address

Street Address

Street Address Line 2

City

State / Province

Postal / Zip Code

Please Select ▼

Country

Send Gift

☒ Yes

☐ No

Full Name

First Name

Last Name

Phone Number

Same as the Billing Address? ☐ Yes

Shipping Address

Street Address

Street Address Line 2

City

State / Province

Postal / Zip Code

Please Select ▼

Country

Place Order

Manager Customer Input/Output Screen

The image displays two side-by-side screenshots of a web application interface for a Manager. Both screenshots show a tabbed interface with three tabs: 'Customer', 'Feedback', and 'Recommendation'. The left screenshot is titled 'RSS Customer Profile' and the right is titled 'RSS Customer Feedback'. Both screens feature a 'Customer ID:' label followed by a text input field, and 'Search' and 'Clear' buttons. Below the input fields is a large, empty rectangular area with a vertical scrollbar on the right, intended for displaying results.

Employee Customer Input/Output Screen

The image shows a single screenshot of a web application window titled 'UserForm3' with a close button (X) in the top right corner. The window contains a tabbed interface with two tabs: 'Feedback' and 'Recommendations'. The 'Feedback' tab is selected and active, displaying the title 'RSS Customer Feedback'. Below the title, there is a 'Customer ID:' label, a text input field, and 'Search' and 'Clear' buttons. At the bottom of the active tab is a large, empty rectangular area with a vertical scrollbar on the right, intended for displaying results.

Sales System (Manager view)

UserForm1

Products | Product Information

Product List

Item ID:

UserForm1

Products | Product Information

Product Information

Item ID

Item Name

Item Type

☐ Reward Merchandise

Quantity

Price

Sales System (Employee Perspective)

Products | Orders

RSS Products

Item ID:

Products | Orders

RSS Orders

Order ID: