

Fall
2021

System Design and Implementation

PROJECT PART 3

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Systems Design

Customer Interactions

The primary interaction customers will have with our system is placing an order for coffee beans. Once the customer has either logged into their account or created a new account, they are directed to our homepage where they can select their desired beans and add their desired quantities to their cart. Once the customer is satisfied with their selections, they can view their cart and either make updates to it or navigate to our payment and order confirmation page. After providing the necessary shipping and billing information, they can place their order and will, upon verification within the system, receive a confirmation email that their order was successfully placed. Once the order has shipped from Portland Milling Company, the customer will automatically be sent shipment tracking information which they can also access through our shipment tracking screen.

Inventory Staff Interactions

Our inventory staff will interact the most with this new system and their role within it is crucial. Like all users in the system, they will first login. Once logged in, they will be able to monitor inventory levels through two screens, either viewing all at once or viewing a specific type of bean Portland Milling Company sells. When the quantity of any bean type drops below the reorder point set in the system, an alert will be sent to staff and an order request will be created for each supplier needed to replenish that stock. Inventory management will confirm the request for beans and the order(s) will be sent to the appropriate supplier(s). Once the orders are placed, the inventory staff will receive an order number and, once the orders have been shipped, a tracking number. Upon receiving each of the previously mentioned numbers, the inventory

staff will update the inventory and orders pending screens to ensure all pending orders are properly tracked. Managers in the department will prepare billing reports and send them to the billing department. Once an order from a supplier is received, the inventory staff will ensure the inventory levels are updated accordingly.

Billing Department Interactions

The billing department receives reports from inventory staff once an order has been placed with a supplier. Upon receipt, the billing department staff will input reports and data into the system and are able to view details in these reports when needed. This department also ensures that each pending payment due to suppliers is paid off accordingly and keeps track of each receipt and invoice the company receives. The billing department staff also inputs data into the system when customers place orders. They are responsible for receipts being sent to customers and the collection of payment from customers.

Implementation

Prototype

Customers can view our general e-commerce site and select items they wish to purchase from us and add these items to their cart. Once satisfied, they can view their cart and then proceed to our secure checkout to finish placing their order. Once their order has been shipped, they will receive tracking information and be able to view their shipment tracking screen to see an estimate of when their order will be delivered and what items are in their delivery.

The inventory staff can view screens with information about each item we have, either individually or as a collective whole, which allows them to monitor the levels of our stock and

ensure that we replenish the coffee beans when necessary. They also have access to screens to view our suppliers which allows them to see basic information about each supplier individually and what orders are currently pending from those suppliers. There is a screen that allows them to view all the currently pending orders, regardless of the supplier from which they are coming.

The inventory report lists each of the products Portland Milling Company carries with descriptions, set prices, current available stock, estimated restock time once order is placed and indicates which stock has hit their re-order points. Re-order points are essential to our system since it is critical we reduce shelf time as much as possible but never run out of product. This is to ensure freshness of our product and company viability.

The billing detailed invoice demonstrates the information included on the invoices we send. This invoice is connected to the open invoice report. Each separate invoice on the open invoice report has a detailed invoice attached to them. These reports are necessary for our billing office to balance accounts.

Testing Plan

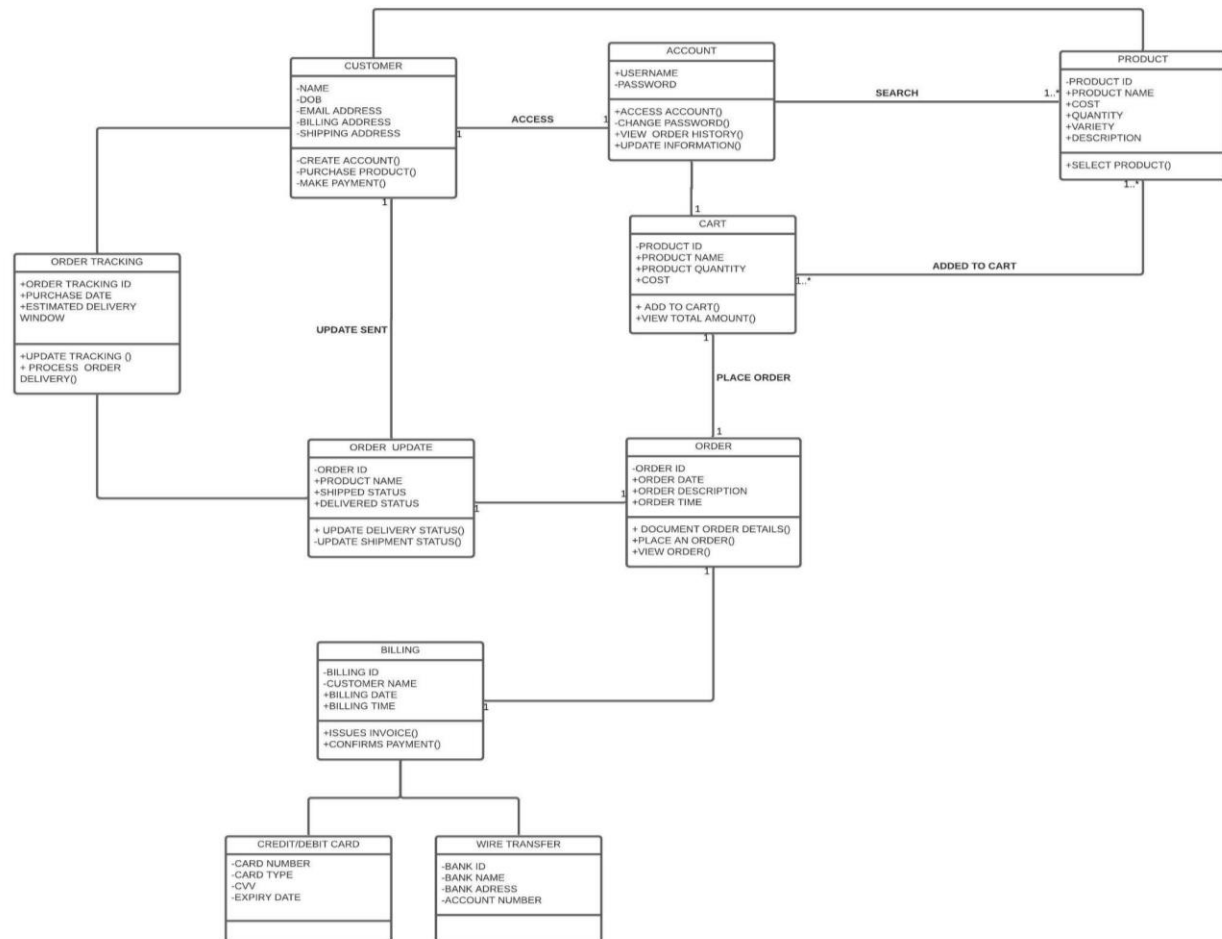
We will run and test the new system in parallel with the manual system we are replacing. There may be a brief period where our employees are asked to input information in both systems, to validate the integrity of the new system. This is with the intent to provide sufficient safeguards for customers to test the functionality. This will also allow us the opportunity to provide training prior to the cutover. Once the training is completed, and any identified bugs have been resolved we prelude to the final update. There will be a final update, to ensure the data in the new system is synchronized with the current manual system. The intention is to provide hands-on training to use the system.

Installation Strategies

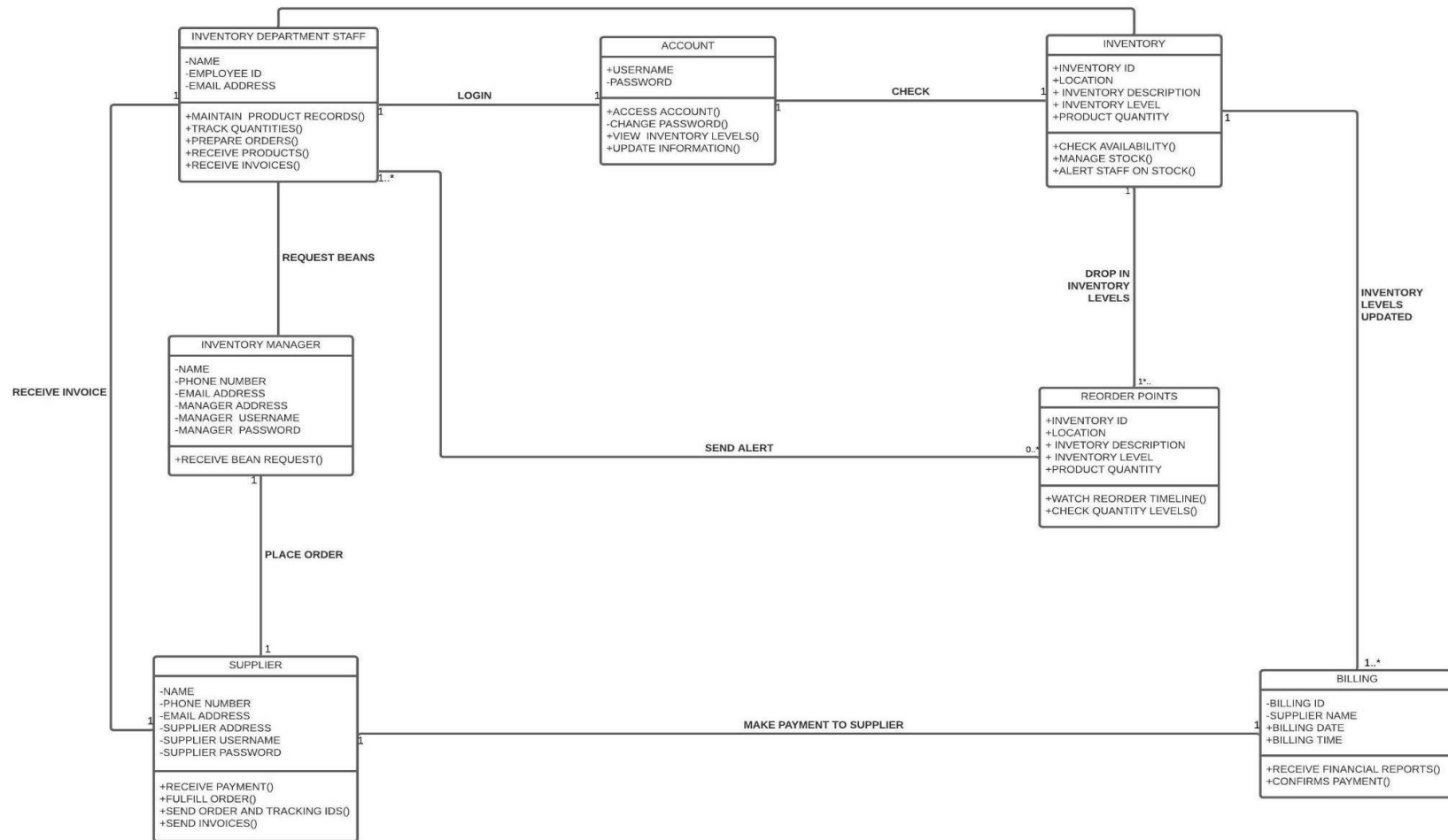
Installation strategy is to build the system to operate concurrently with the manual system so we are not stressed with a hard cutover and can ease into the new system. A hard cutover would be difficult for the technical staff and the company's employees. This will also ensure customers are not negatively affected by the new system. Staff will be able to review screens and reports to ensure it meets their expectations. We will plan the cutover for a Thursday so we will have a Friday to review and a full weekend to make any changes if required. The intention is to provide hands-on training to use the system. When adequate training has been provided, tests have been completed, it will be time to begin the full implementation of the automated system. It is our objective that our system will not have to run concurrently with the manual system for longer than a few months.

Appendix

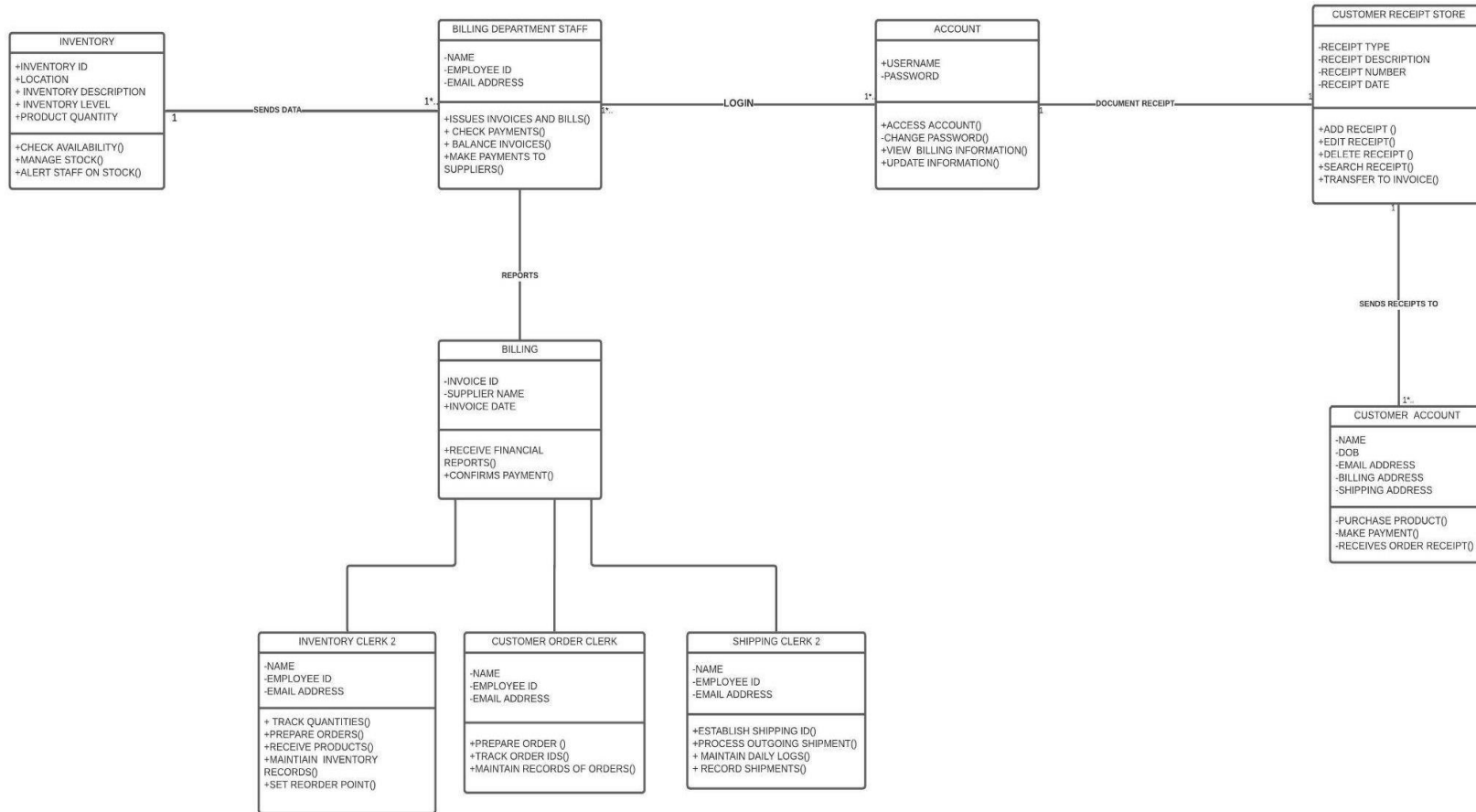
Class Diagram - Customer System



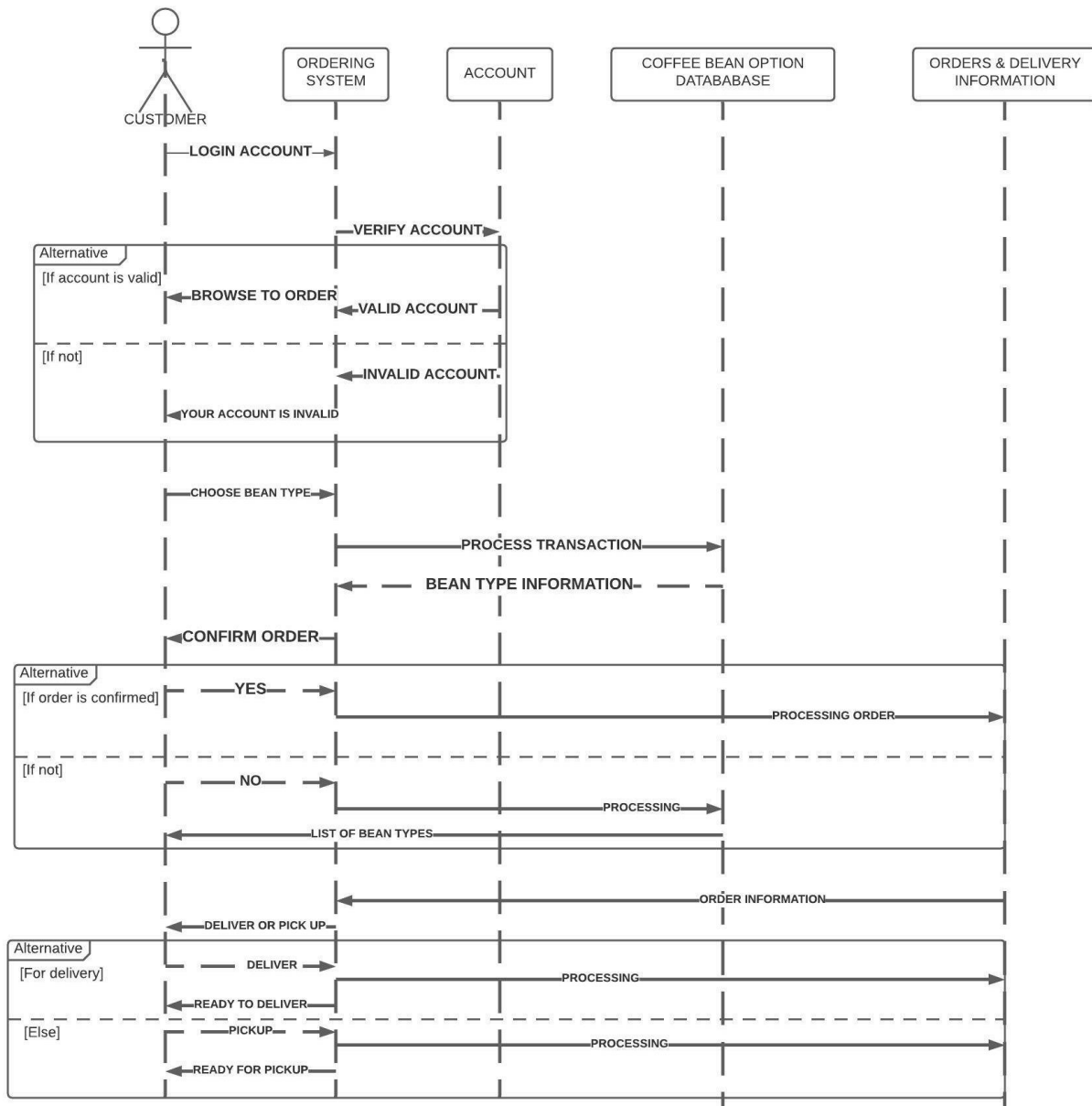
Class Diagram – Inventory System



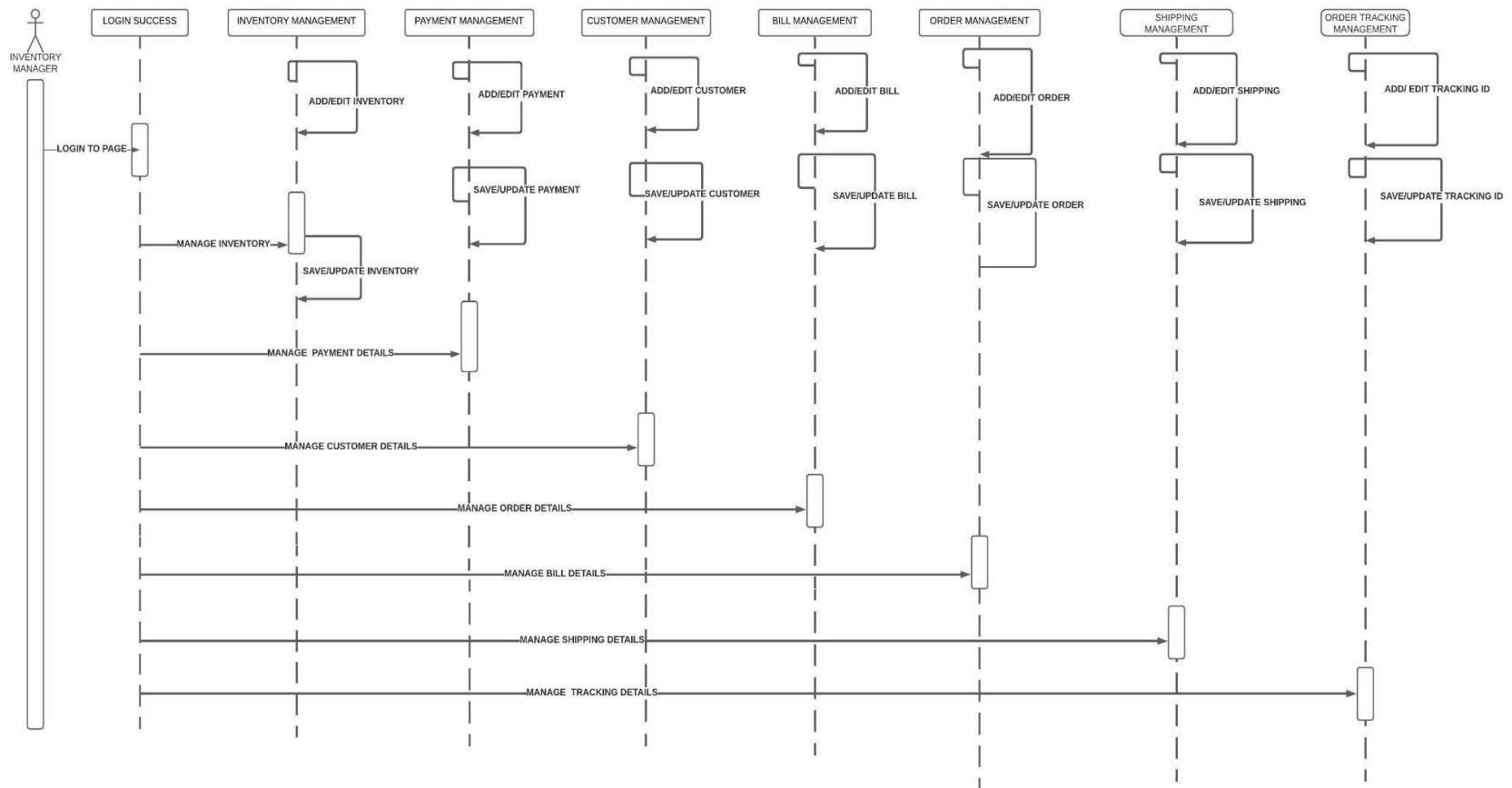
Class Diagram – Billing System



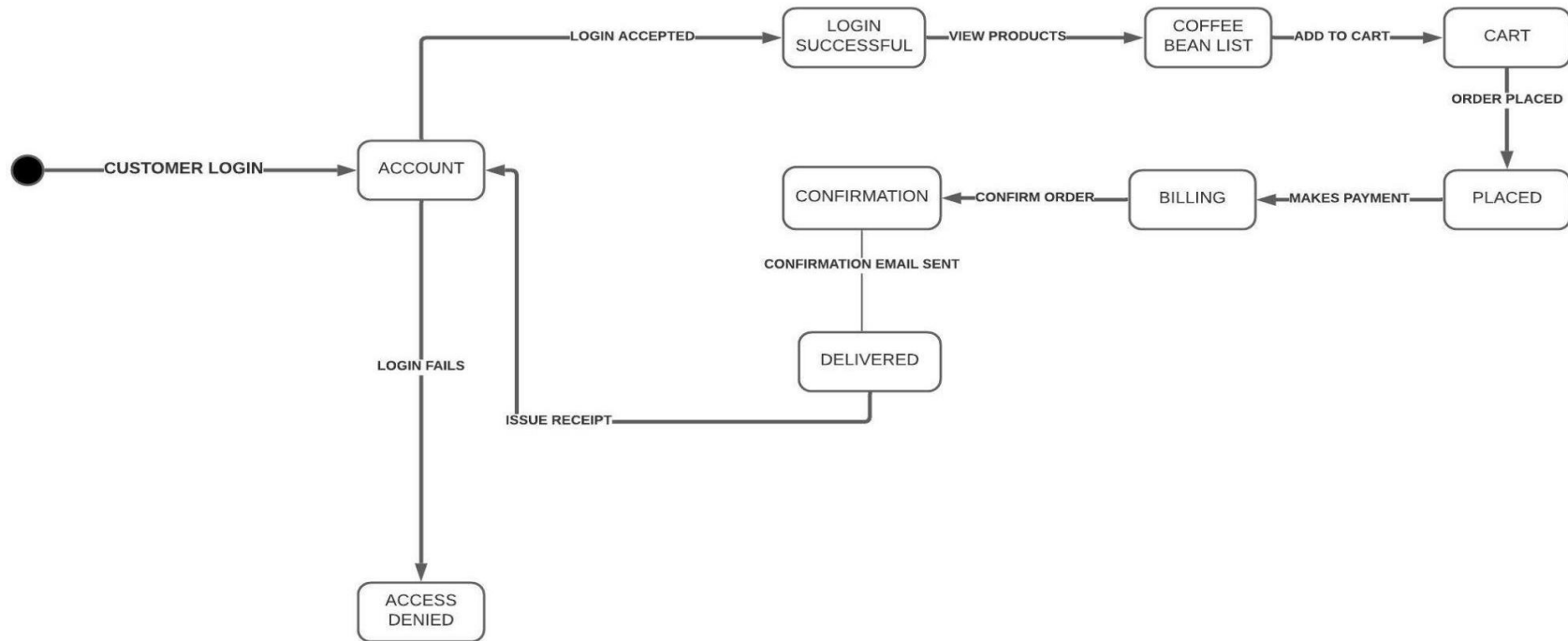
Sequence Diagram – Customer



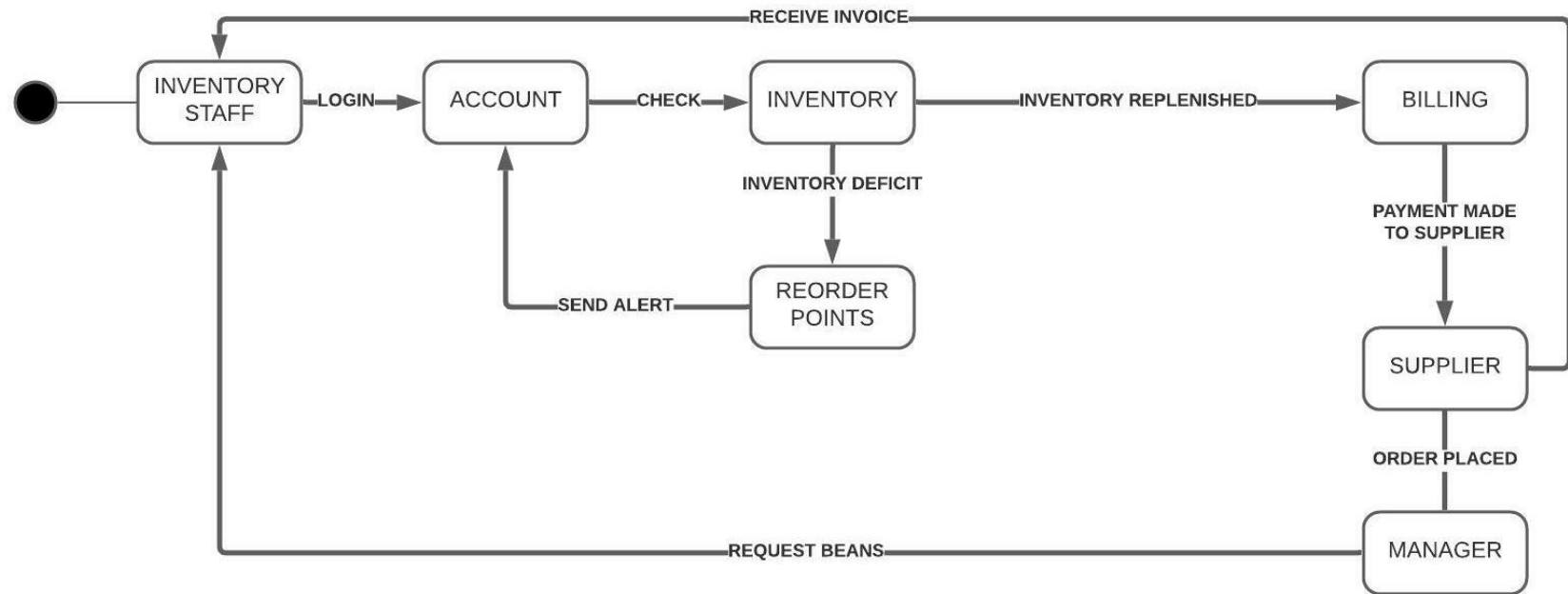
Sequence Diagram – Inventory System



State Diagram – Customer System




State Diagram – Inventory System



Customer's E-Commerce Site Screen













Customer's Shopping Cart Screen




Portland Milling Company

Your Cart

	French Vanilla Double Roasted 1 pound bag Hints of Vanilla, HoneySuckle	7 	\$87.50 7 @ \$12.50
	Hazelnut Light Roast 1 pound bag Smooth and Creamy, Hints of Hazelnut	5 	\$62.50 5 @ \$12.50
	Sumatra Light Roast 1 pound bag Hints of Jasmine and Cereal	5 	\$67.50 5 @ \$13.50
	Yellowstone Blend Medium-Dark Roast 1 pound bag Warm, Maple and Spice Notes	6 	\$75.00 6 @ \$12.50
	Gotham Dark Roast 1 pound bag Robust, Black Currant	10 	\$130.00 10 @ \$13.00

Proceed to Checkout


Add Coupon Code 

Order Summary

Items	\$422.50
Shipping	TBD
Taxes	\$36.97
Estimated Total	\$459.47

Proceed to Checkout

Customer's Payment Screen



Portland Milling Company

Secure Checkout

Shipping

Shipping Method

Payment and Billing

☒ Credit Card☐ Electronic Check

☐ Billing Address Same as Shipping

Order Summary

Items	\$422.50
Shipping	\$20.00
Taxes	\$36.97
Total	\$479.47

Place Order

Portland Milling Company

Customer’s Shipment Tracking Screen



Portland Milling Company



Arrives: Monday, Dec. 6

Shipment Tracking Information
Status: In Transit
Tracking #627104903561033678
Carrier: FedEx
Mark as Delivered

Order Summary	
French Vanilla	7 @ \$12.50
Hazelnut	5 @ \$12.50
Sumatra	5 @ \$13.50
Yellowstone Blend	6 @ \$12.50
Gotham	10 @ \$13.00
Items	\$422.50
Shipping	\$20.00
Taxes	\$36.97
Total	\$479.47

Inventory Staff View of All Items Screen

PMC Inventory

Select Item:

All Items



Inventory ID	Product Name	Bean Type	Quantity	Reorder Level	Order Placed	Order #	Shipment Status
IN0001	Colombian Supremo	Robusta, Liberica	125	29	No		
IN0002	Costa Rican Tarrazu	Liberica	48	231	Yes	OL-2314	In Transit
IN0003	Ethiopian	Excelsa	105	114	Yes	OM-259C	Not Shipped Yet
IN0004	Sumatra	Excelsa	45	158	Yes	OM-213B	In Transit
IN0005	Kenya AA	Robusta	60	39	No		
IN0006	Arabica	Arabica	5	9	Yes	OA-82-34	Not Shipped Yet
IN0008	Mocca (Mocha)	Arabica	35	162	Yes	OA-23-14	In Transit
IN0009	Italian Roast	Robusta	130	82	No		
IN0010	French Roast	Robusta	75	283	Yes	OA-23-14	In Transit
IN0011	New England Blend	Excelsa	39	229	Yes	OP-X2301	Arriving Soon
IN0012	Seattle Blend	Arabica, Robusta	22	36	Yes	OA-23-14	In Transit
IN0013	Yellowstone Blend	Robusta, Liberica	37	102	Yes	OL-2314 OP-X3145	In Transit
IN0014	Gotham	Robusta	22	83	Yes	OP-X2301	Arriving Soon
IN0015	French Vanilla	Arabica	66	23	No		
IN0016	Hazelnut	Excelsa	76	180	Yes	OP-X2301	Arriving Soon
IN0018	Christmas Edition	Robusta	106	7	No		
IN0019	Italian Espresso	Arabica	33	164	Yes	OA-23-14	In Transit

Inventory Staff View of Select Item Screen

PMC Inventory

Select Item: New England Blend



Inventory ID	Product Name	Bean Type	Quantity	Reorder Level	Order Placed	Order #	Shipment Status
IN0011	New England Blend	Excelsa	39	229	Yes	OP-X2301	Arriving Soon

Screen of All Pending Orders

Orders in Progress

Supplier Name	Order #	Order Items	Quantity	Date Placed	Shipment Status	Tracking Number
Brasilia Co.	OP-X2301	Excelsa Robusta	150 lbs. 100 lbs.	11/19/2021	Arriving Soon	<u>8910049032310</u> <u>33678</u>
Brazilian Beans	OA-23-14	Arabica Robusta	275 lbs. 75 lbs.	11/23/2021	In Transit	<u>6271049032310</u> <u>33678</u>
Rostaria	OL-2314	Liberica	100 lbs.	11/24/2021	In Transit	<u>2301049032310</u> <u>34012</u>
KaffeeCoffee	OM-213B	Excelsa	50 lbs.	11/27/2021	In Transit	<u>5367049032670</u> <u>64012</u>
Brasilia Co.	OP-X3145	Robusta	50 lbs.	11/29/2021	In Transit	<u>8910049030540</u> <u>33698</u>
KaffeeCoffee	OM-259C	Excelsa	50 lbs.	12/1/2021	Not Shipped Yet	
Brazilian Beans	OA-82-34	Arabica	50 lbs.	12/3/2021	Not Shipped Yet	

Supplier Information Screen

Supplier Information

Supplier: Brazilian Beans



Supplier Information

Name: Brazilian Beans

Contact Name: Sr. Marco Aurelio Fortunato

Address: Avenida Afonso Sampaio e Sousa,
2328 - 08270 - 001
Sao Paulo / SP Brazil

Phone: 55 11 99471278 x 347

Email: marcofort@brazilbeans.com

Phone: 55 11 99471278

Products

Arabica Beans

Robusta Beans

Orders in Progress

Order #	Order Items	Quantity	Date Placed	Shipment Status	Tracking Number
OA-23-14	Arabica Robusta	275 lbs. 75 lbs.	11/26/2021	In Transit	627104903231033678
OA-82-34	Arabica	50 lbs.	12/1/2021	Not Shipped Yet	

Billing Report – Customer Accounts

Portland Milling Company

Customers

Customer Account	Company (if applicable)	Contact Name	Address	City	State	ZIP Code	Phone	Email	Fax
1	Corner Café	Robert Lyon	345 Cherry Street	Albany	SD	123456	432-555-0178	rlyon@cornercafe.com	432-555-0187
2	Seattle Café	Sanjay Patel	567 Walnut Lane	Seattle	WA	98101	206-554-4001	orders@seattlecafe.com	206-554-4000
3		Tiffany Kay	175 Maple Lane	Denver	CO		720-541-0010	tiffanyk@gmail.com	
4		Reese Witherspoon	200 Hollywood Blvd.	Los Angeles	CA	90012	213-400-3890	rwitherspoon@gmail.com	
5		Jennifer Guiterriez	60 Apple Court	Bethesda	MD	20810	240-442-4554	guiterriezj@gmail.com	
6	The Coffee Haven	Lenord Rick	125 Essex St.	Salem	MA	1970	978-667-8212	coffeehaven@gmail.com	
7		Ryan Renyolds	460 Star Drive	Malibu	CA	90263	310-334-5664	deathpool@gmail.com	310-334-5000
8		Jeff Bezos	350 Bezos Ave.	New York City	NY	10001	718-940-5455	iluvamazon@amazon.com	
9		Johnson Clark	664 Worchester Drive	Newport	RI	12840	401-676-5789	ClarkJ@yahoo.com	
10		Kendra Blake	700 Sussex Drive	Bridgeport	CT	6601	203-221-2929	kendrablake@icloud.com	
11		Janice Frazier	28 Dunby Lane	Marthasville	MO	63357	636-009-7456	frazierjan@yahoo.com	
12	Wisteria Café	Claire Kaur	320 Main Street	Portland	ME	4101	207-941-0101	orders@wisteria.com	207-941-0000
13		Ahmed Saidi	450 Willow Lane	Leesburg	VA	20175	703-664-5781	saidi@yahoo.com	
14		Brad Pitt	85 Beechnut Drive	Los Angeles	CA	90012	213-669-8145	pittB@gmail.com	
15	Down East Coffee	William Hawthorne	98 Kingston Road	Booth Bay	ME	4537	207-665-7898	contact@downeast.com	207-665-7000
Total Customers: 15									

Billing Report – Sample Detail Invoice

Portland Milling Company					
235 North King Street Portland, ME 04101		P: 207-988-9991 F: 207-988-9000		support@portlandmilling.com	
Bill To:	Seattle Café	Phone:	206-554-4001	Invoice #:	3-456-2
Address:	567 Walnut Lane Seattle, WA, 98101	Fax:	206-554-4000	Invoice Date:	11/2/21
			orders@seattlecafe.com		
Invoice For: December Order					
Item #	Description	Qty.	Unit Price	Discount	Price
IN0001	Invoice 3-456-2 Data 1	20	\$12.50	\$ -	\$ 250.00
IN0002	Invoice 3-456-2 Data 2	25	\$12.50	5.00	307.50
IN0003	Invoice 3-456-2 Data 3	15	\$12.50	7.00	180.50
IN0012	Invoice 3-456-2 Data 4	12	\$10.50	-	126.00
				Invoice Subtotal	\$ 864.00
				Tax Rate	6.50%
				Sales Tax	56.16
				Other	25,30,20
				Deposit Received	100.00
Make all checks payable to Portland Milling Company. Total due in 15 days. Overdue accounts subject to a service charge of 20 % per month.				TOTAL	\$ 808.16

Billing Report – Open Invoices

Portland Milling Company

OPEN INVOICES

NOVEMBER

Open Invoices

Invoice #	Customer	Invoice Date	Product Description	Tax Rate	Qty.	Deposit	Detail Total	Invoice Total	Notes
3-456-1	1 - Corner Café	11/2/21	IN0001,IN0019,IN0014	4.50%	25,30,20	\$500.00	\$835.00	\$1,335.00	
3-456-2	2 - Seattle Café	11/2/21	IN0001,IN0002,IN0003, IN0012	6.50%	20,25,15,12	\$100.00	\$764.00	\$864.00	
3-456-3	3- Tiffany Kay	11/4/21	IN0008, IN0002, IN0009	2.90%	1, 1, 2	\$0.00	\$36.75	\$36.75	
3-456-4	4 - Reese Witherspoon	11/5/21	IN0014, IN0001, IN0008	7.25%	2, 1, 1	\$0.00	\$36.75	\$36.75	
3-456-5	5 - Jennifer Guiterriez	11/5/21	IN0009, IN0011,	6.00%	1,1	\$0.00	\$23.00	\$23.00	
3-456-6	6 - The Coffee Haven	11/8/21	IN00008, IN0018, IN0001	6.25%	20,22,12	\$100.00	\$604.00	\$704.00	
3-456-7	7 - Ryan Renyolds	11/8/21	IN0018, IN0019,	7.25%	2,4	\$0.00	\$89.00	\$89.00	
3-456-8	8 - Jeff Bezos	11/8/21	IN0014, IN0003, IN0010	8.00%	2,3,2	\$0.00	\$78.00	\$78.00	
3-456-9	9 - Johnson Clark	11/15/21	IN0004, IN0013	7.00%	2,1	\$0.00	\$39.50	\$39.50	
3-456-10	10 - Kendra Blake	11/17/21	IN0011, IN0019	6.35%	1,1	\$0.00	\$25.50	\$25.50	
3-456-11	11 - Janice Frazier	11/21/21	IN0013, IN0001	4.23%	2,3	\$0.00	\$62.50	\$62.50	
3-456-12	12 - Wisteria Café	11/21/21	IN0004, IN0019, IN0018	5.50%	25,20,10	\$0.00	\$62.50	\$62.50	
3-456-13	13 - Ahmed Saidi	11/25/21	IN0001, IN0003, IN0015	5.30%	1,3,1	\$0.00	\$62.50	\$62.50	
3-456-14	14 - Brad Pitt	11/25/21	IN0014, IN0016,IN0006	7.25%	1,3,2	\$0.00	\$79.50	\$79.50	
3-456-15	15 - Down East Coffee	11/28/21	IN0011,IN0018, IN0019	5.50%	25,20,15	\$100.00	\$677.50	\$777.50	
Totals	Total Invoices: 15					\$800.00	\$3,476.00	\$4,276.00	

Inventory Report

Portland Milling Company

Inventory List

Highlight to reorder(set re-order points)? Yes

	Inventory	Product Name	Description	Unit Price (\$)	Quantity in Stock	Inventory Value	Reorder Level	Reorder Time (Days)	Quantity in Reorder	Discontinued?
	IN0001	Colombian Supremo	Dark Roast, Tinged with Honeydew and Black	\$12.50	125	\$1,562.50	29	13	50	
🚩	IN0002	Costa Rican Tarrazu	Medium Roast, Brown Sugar, Apricot, Citrusy	\$12.50	48	\$600.00	231	4	50	
🚩	IN0003	Ethiopian	Light Roast, Delicate, Jasmine, Bergamont	\$12.50	105	\$1,312.50	114	11	50	
🚩	IN0004	Sumatra	Light Roast, Hints of Jasmine and Cereal	\$13.50	45	\$607.50	158	6	50	
	IN0005	Kenya AA	Dark Roast, Intense, Berry, Citrusy	\$14.00	60	\$840.00	39	12	50	
🚩	IN0006	Arabica	Medium Roast, Citrusy, Berry, Fruity Notes	\$14.50	5	\$72.50	9	13	50	
	IN0007	Gastou	Light Roast, Citrusy, Floral Notes	\$12.50	12	\$150.00	100	7	100	yes
🚩	IN0008	Mocca (Mocha)	Medium Roast, Chocolate and Cereal	\$11.75	35	\$411.25	162	3	100	
	IN0009	Italian Roast	Dark Roast, Carmel Notes,	\$12.50	130	\$1,625.00	82	3	50	
🚩	IN0010	French Roast	Double Roasted, Smoky, Hint of Sweetness	\$13.50	75	\$1,012.50	283	8	50	
🚩	IN0011	New England Blend	Light Roast, Citrusy, Lemon Tone	\$10.50	39	\$409.50	229	1	100	
🚩	IN0012	Seattle Blend	Medium Roast, Flavorful, Traditional Style	\$10.50	22	\$231.00	36	12	50	
🚩	IN0013	Yellowstone Blend	Medium-Dark Roast, Warm, Maple and Spice	\$12.50	37	\$462.50	102	9	100	
🚩	IN0014	Gotham	Dark Roast, Robust, Black Currant	\$13.00	22	\$286.00	83	2	100	
	IN0015	French Vanilla	Double Roasted, Hints of Vanilla, HoneySuckle	\$12.50	66	\$825.00	23	15	50	
🚩	IN0016	Hazelnut	Light Roast, Smooth and Creamy, Hints of	\$12.50	76	\$950.00	180	3	50	
	IN0017	Bella Vista	Dark Chocolate, Honey Notes	\$13.50	57	\$769.50	98	12	50	Yes
	IN0018	Christmas Edition	Dark Roast, Hints of Peppermint and Cocoa	\$14.50	106	\$1,537.00	7	13	50	
🚩	IN0019	Italian Espresso	Double-Roasted, Rich, Crema, Tinge of	\$15.00	33	\$495.00	164	12	150	

**There are 4 types of beans we order from suppliers to create these flavor profiles: Arabica, Robusta, Liberica, and Excelsa.

Each of these roasted blends require re-orders from various suppliers for different beans, and required ingredients for the blend. This is calculated from unit price, inventory value, and reorder time. Therefore there are differences for the different roast blends reorder time in days.**