

PROJECT ASSIGNMENT 2

COSC612/AIT624: Software Engineering Fundamentals
2023 Fall Semester

Formula 1 LLC

- Oladiran Apra
- Cara Galingana
- Devere Weaver
- Swadha Bhatt
- Victoria George

October 9, 2023

Table of Contents

Section 1. Project Planning and Scheduling	3
Section 2. Revised Problem Statement	4
I. Background.....	4
II. Business Need.....	4
Section 3. Requirements	5
I. User Requirements.....	5
II. System Requirements	5
A. Use Case Diagram	5
B. Use Cases.....	5
C. Software Requirements Specification	9
Section 4. System Modeling	16
I. Class Diagram.....	16
II. Database Specification and Analysis	17
A. Entity-Relationship Diagram.....	17
B. Entities and Tables Summary	18
Section 5. Appendix	20

Section 1. Project Planning and Scheduling

Assignee Name/ Email (@students.towson.edu)	Task	Duration (hours)	Dependency	Due Date	Note / Evaluation
Oladiran Apra / oapara1	– Revise problem statement	– 0.5	– A1 prob statement	– 10/07	–
	– Compile user requirements	– 1	– Group consensus	– 10/07	–
* Cara Galingana / cgaling1	– Formatting of Report Document	– 2	– Completed tasks	– 10/09	–
	– Write-up of Use Cases	– 3	– Group consensus	– 10/06	–
	– Use Case Diagram	– 0.5	– Use Cases	– 10/06	–
Devere Weaver / dweave8	– Database table specification	– 1	– Group consensus	– 10/08	–
	– Implementation of PostgreSQL database tables with sample data	– 1.5			
Swadha Bhatt / sbhatt8	– Creation of UML diagram	– 2.5	– Use Cases	– 10/08	–
Victoria George / vgeorg2	– Software Requirements Specification	– 3	– Use Cases	– 10/08	–

* Group coordinator for Assignment 2

Section 2. Revised Problem Statement

I. Background

Formula 1 LLC aims to alleviate the burden of micro to small-scale business in managing ordering workflows without a system that can track inventory status alongside customer demands. The manual processes currently in practice by such businesses lack efficiency, wastes resources, and are not responsive to dynamic customer demands.

These businesses require appropriate software development, system administration and business stakeholders' collaboration to evaluate solutions that can help accomplish its business goals and grow market share.

II. Business Need

F1 Coffee Roasters is a company that sells coffee beans in packages to commercial clients. This small-scale business needs an inventory management system to efficiently manage stock levels, streamline ordering processes, improve customer service, maintain business-supplier connections, and generate reports for informed business decision-making.

If the inefficiencies are not resolved, F1 Coffee Roaster may be unable to retain customer and supplier relationships. Moreover, its market value can be at-risk and may have a difficult existence in a very competitive business environment.

Top-level objectives:

F1 LLC aims to create a system that automatically sends an order to a supplier whenever the minimum threshold of the inventory stock is reached. By integrating to a point-of-sale system, it enables accurate tracking of stock consumption. Achieving these objectives will improve supply chain management and reduce errors from manual stocking processes.

Who is it for: The product is for micro to small-scale business, such as the F1 Coffee Roasters.

What problem does it solve: This system will improve inventory accuracy, reduce operational costs, and enhance overall business productivity. Inefficient inventory management practices plague businesses, leading to overstocking, understocking, operational inefficiencies, and increased costs. Manual record-keeping and disjointed inventory processes hinder the ability to make data-driven decisions. The absence of a centralized, interactive inventory system limits businesses from optimizing stock levels, responding to market demands, and reducing operational complexities. The need for an innovative solution that seamlessly tracks, manages, and reports on inventory data in real-time is paramount for businesses striving to enhance accuracy, reduce operational expenses, and elevate overall productivity.

Differentiators: The biggest differentiator of our inventory management system is it automates supplier ordering workflows through efficient tracking of stock inventory status and client order consumption.

Scope of product: The scope of the inventory management system includes streamlining the inventory managing workflows of micro to small-scale businesses. These workflows include real-time inventory tracking for all products, generating reports and maintaining a list of approved suppliers with contact information.

Section 3. Requirements

I. User Requirements

1. The system shall maintain a list of products.
2. The system shall generate inventory reports.
3. The system shall generate supplier reports
4. The system shall generate customer reports.
5. The system shall generate stock consumption reports.
6. The system shall track the quantity of products in stock.
7. The system shall alert when any stock item falls below the set threshold.
8. The system shall track stock product consumption.
9. The system shall be compatible with a point-of-sale system.
10. The system shall integrate seamlessly with a point-of-sale (POS) system.
11. The system shall be accessible to distributed network devices.
12. The user interface shall be intuitive to enable quick adoption.

II. System Requirements

A. Use Case Diagram

The figure below shows the use case diagram for the Use Case No 1.4 Update Stock Product.

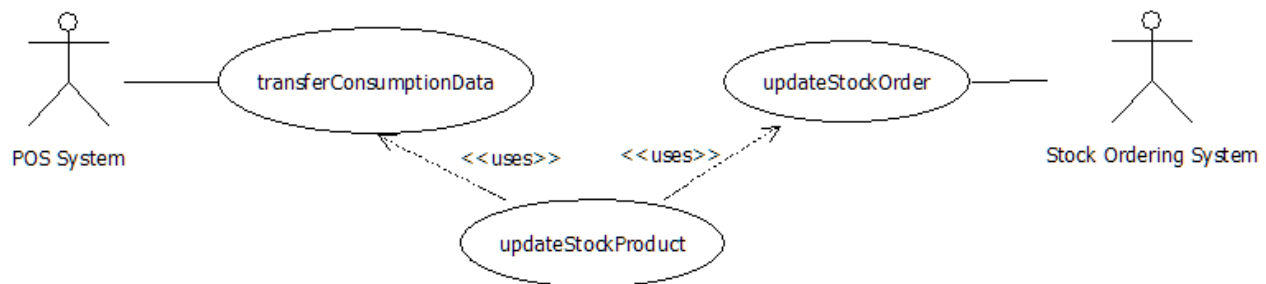


Figure 1. Use Case Diagram for UC No. 1.4 Update Stock Product

B. Use Cases

The table below shows the use cases for the F1 Inventory Management System.

Table 2. Use Cases for F1 Inventory Management System

<i>Use Case</i>	<i>No. 1.1</i>	<i>Add Stock Product</i>
<i>Actor</i>	Employee	
<i>Description</i>	Add Stock Product allows the owner to add a product to be stored in the inventory stock. When the user selects the Add Product from the menu, a form	

<i>Alternate Path</i>	will be displayed on the screen for the user to enter information about the product. The new product will be listed in the stock inventory items. If the user enters a duplicate product on the form, an error message should appear indicating that an existing product with duplicate information has already been stored. The user cannot submit the form and is prompted to re-enter the information.
<i>Pre-Condition</i>	The user must be logged in to the integrated POS system.
<i>Use Case</i>	<i>No. 1.2 View Stock Products</i>
<i>Actor</i>	Employee
<i>Description</i>	View Stock Products allows the users to view and monitor the stock products in the system. The user is presented with a search bar and a view all button. The user may choose to view the stock products in a gallery view or search for a product.
<i>Alternate Path</i>	A. If a user chooses View All, products will be shown in gallery view. The user may then choose to see a detailed view of a product by clicking on the product icon, showing all specifications of the product. B. If a user chooses to enter text on the search bar, the system shows a list of products matching the characters entered by the user. The user may then choose to see a detailed view of a product by clicking on the product icon. C. If a user enters text that does not match any of the stock products, a message will be displayed indicating that the searched text does not match any available stock products. The user will be prompted to search again or view all.
<i>Pre-Condition</i>	The user must be logged in to the integrated POS system.
<i>Use Case</i>	<i>No. 1.3 Set Stock Product Threshold</i>
<i>Actor</i>	Employee
<i>Description</i>	Set Stock Threshold allows the user to set the minimum and maximum stock threshold of each item. The user chooses to view the detailed product information and selects set threshold. The system will prompt the user to enter the minimum and maximum stock units. The user will enter the desired amounts and confirm.
<i>Alternate Path</i>	A. For new products, the default threshold is set to 0. The user may choose to keep the default minimum threshold to 0. The system will specifically prompt the user “Do you wish to keep the minimum threshold set to 0?”. The user may choose yes to keep the setting to 0. If the user chooses no, the system will prompt the user to enter the desired amounts and confirm. B. If the user sets a minimum threshold amount (ex. 2) greater than the current stock (ex. 1), a stock order will be placed automatically. C. If the user sets a minimum threshold amount (ex. 1) equal to the current stock (ex. 1), a stock order will be placed automatically.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system. B. The product to be set must have been listed in the stock products.
<i>Use Case</i>	<i>No. 1.4 Update Current Stock</i>
<i>Actor</i>	POS System, Stock Ordering System
<i>Description</i>	Update Stock Product allows the POS System and Stock Ordering System to update the current stock of a product. Using the data received from the POS System, the amount of current stock will be depleted accordingly (UC 4.0).

<i>Alternate Path</i>	Using the data received from the Stock Ordering System, the amount of ordered units will be added to the current stock units (UC 2.3). A. If the POS system cancels an order, the depleted amount will be voided from the database and previous amount will be restored. B. If the Stock Ordering System cancels an order, the added amount will be voided from the database and previous amount will be restored.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system. B. The product to be inactivated must have been listed in the stock products.
<i>Use Case</i>	<i>No. 1.5 Inactivate Stock Product</i>
<i>Actor</i>	Employee
<i>Description</i>	Inactivate Stock Product allows user to inactivate products that will no longer be stored in the inventory. On the detailed view of the product, a 'Mark as unavailable' button can be selected by the user. The product will be labelled as unavailable.
<i>Alternate Path</i>	If the user wants to reactivate the stock product, the user can select the 'Mark as available' button on the inactivated product's detailed view.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system. B. The product to be inactivated must have been listed in the stock products.
<i>Use Case</i>	<i>No. 2.1 Place Stock Order</i>
<i>Actor</i>	Stock Ordering System
<i>Description</i>	Place Stock Order enables the stock ordering system to place an order according to the thresholds set by the employee. When the current stock unit amount reaches less than or equal to the set minimum threshold, the system places an order to the supplier. A product's pending order will be listed in the Orders report with a "Pending" status.
<i>Alternate Path</i>	If the current stock has not reached the set minimum threshold, no stock order will be placed.
<i>Pre-Condition</i>	A. The product must have a set threshold. B. The product to be ordered must have a corresponding supplier.
<i>Use Case</i>	<i>No. 2.2 View Stock Order</i>
<i>Actor</i>	Employee
<i>Description</i>	View Stock Order allows the employee to view the order history and pending orders of each product. The user will select 'Orders' from the navigation bar. The screen will show a table report including completed orders and pending orders. The user may be able to sort and filter the table according to its specific attributes.
<i>Alternate Path</i>	The user chooses to go back to previous screen by clicking the browser's back button.
<i>Pre-Condition</i>	The user must be logged in to the system and authenticated by the system.
<i>Use Case</i>	<i>No. 2.3 Update Stock Order</i>
<i>Actor</i>	Stock Ordering System
<i>Description</i>	Fulfill Stock Order enables the stock ordering system to indicate that an order has been fulfilled and a product has been delivered. The system should indicate whether an order has been shipped from the supplier and when it has been delivered through a tracking number provided by the supplier. The current

	stock amount of the product will also be automatically updated accordingly (sum of ordered units + current units) (UC 1.4).
<i>Alternate Path</i>	A. If the order has been shipped from the supplier, status will be updated as “Shipped.” Its corresponding track number will be stored in the system.
	B. If the order has been delivered, status will be updated as “Completed.”
<i>Pre-Condition</i>	A. The product must have a “Pending” status prior to an update.
	B. All shipped products must have a corresponding tracking number.
<i>Use Case</i>	<i>No. 2.4 Cancel Stock Order</i>
<i>Actor</i>	Employee
<i>Description</i>	Cancel Stock Order allows the user to cancel pending orders. A “Cancel Order” button will be visible next to the “Pending” status of an order. When the user selects this button, the system prompts the user to confirm cancellation.
<i>Alternate Path</i>	If the order has a “Shipped” or “Completed” status, the cancel order button will no longer be visible to the user.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system.
	B. The order to be cancelled must have a “Pending” status.
<i>Use Case</i>	<i>No. 3.1 Add Supplier</i>
<i>Actor</i>	Employee
<i>Description</i>	Add Supplier allows the user to add a supplier for each stock product. When the user selects the Add Supplier button on the product’s detailed view, a form will be displayed on the screen for the user to enter information about the supplier. The system prompts the user for confirmation, then the supplier information will be stored in the system.
<i>Alternate Path</i>	If the user enters any information similar to an existing supplier, the other information on the form may be pre-filled.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system.
	B. A product must be listed prior to adding a corresponding supplier.
<i>Use Case</i>	<i>No. 3.2 View Suppliers</i>
<i>Actor</i>	Employee
<i>Description</i>	View Suppliers allows the user to view the supplier information of each product. The user will select ‘Suppliers’ from the navigation bar. The screen will show a table report including all attributes. The user may sort and filter the table according to the specified fields.
<i>Alternate Path</i>	The user chooses to go back to previous screen by clicking the browser’s back button.
<i>Pre-Condition</i>	The user must be logged in to the integrated POS system.
<i>Use Case</i>	<i>No. 3.3 Update Supplier</i>
<i>Actor</i>	Employee
<i>Description</i>	Update Supplier allows the user to update supplier information on the system. The user may select an “Edit” button on the screen and select the supplier to update. The user will be prompted to edit the information about the supplier by showing a pre-filled form on the supplier. The system will prompt the user to confirm/save any changes made. The updated information will be stored in the system.

<i>Alternate Path</i>	If no changes were made to the pre-filled form, no information would be updated on the system.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system. B. The supplier to be updated must have been listed in the supplier table.
<i>Use Case</i>	<i>No. 3.4 Inactivate Supplier</i>
<i>Actor</i>	Employee
<i>Description</i>	Inactivate Stock Product allows user to inactivate suppliers that will no longer be stored in the system. On the suppliers table, an 'Inactivate' button can be selected by the user. The supplier will be labelled as "Inactive," then the user will be prompted to add a new supplier.
<i>Alternate Path</i>	If the user is unable to provide a new supplier, the minimum threshold of the product will automatically set to 0 and will be marked as unavailable once its stock is depleted.
<i>Pre-Condition</i>	A. The user must be logged in to the integrated POS system. B. The supplier to be inactivated must have been listed in the supplier table.
<i>Use Case</i>	<i>No. 4.0 Transfer Consumption Data</i>
<i>Actor</i>	POS System
<i>Description</i>	Transfer Consumption Data allows the POS System to transfer the data of consumption amounts from fulfilled customer orders. The POS System updates the IMS Database real-time. This also assumes that 1 customer order is equal to 1 stock unit.
<i>Alternate Path</i>	A. If the POS system has not fulfilled an order, no data of that order will be transferred to the database. B. If the POS system cancels an order, the consumption data is voided from the database and will be updated real-time.
<i>Pre-Condition</i>	A. The POS system API is integrated to the database.

C. Software Requirements Specification

The table below shows the software requirements specifications for the F1 IMS.

Table 3. Software Requirements Specifications for the F1 IMS

<i>Addstockproduct/SRS/ 1.1</i>	<i>UC1.1</i>
<i>Introduction</i>	The "Add Stock Product" feature allows the owner to add new items to the inventory stock. This feature involves creating a form for entering product information that gets validated against existing records and ensuring the user is logged in and authenticated.
<i>Inputs</i>	The user inputs the product information form. The product information form includes: product ID, barcode, category, retail price, wholesale price, quantity, supplier ID
<i>Requirements description</i>	The system authenticates, validates, checks for duplicate products in inventory and then adds products to inventory if no error message is displayed.
<i>Outputs</i>	System Responses:

	<p>1.1.1 Successful product addition: upon successful submission of the form, the system updates the inventory stock and displays a confirmation message.</p> <p>1.1.2 Duplicate product error: if a duplicate product is detected, an error message is displayed, and the user is prompted to correct the information.</p>
<hr/>	
<i>Viewstockproducts/SRS/1.2 UC1.2</i>	
<i>Introduction</i>	“View stock products” feature provides users with the capability to efficiently view and monitor the stock products within the system. This feature includes the option to view all products in a gallery format, search for specific products and view detailed information about each product.
<i>Inputs</i>	Search bar input; user-entered text for product search
<i>Requirements description</i>	<p>“View All Product” prompt: when the user selects “view all”, all stock products are displayed in a gallery view; the user is then allowed to click on a product icon for detailed specifications.</p> <p>“Search for products” prompt: when the user enters text in the search bar, the system shows a list of products matching the entering characters; the system retrieves and displays products matching the entered text and allows the user to click on a product icon for detailed specifications.</p> <p>“No match found” prompt: if the user enters text that does not match any stock products, a message is displayed user is prompted to search again or view all.</p>
<i>Outputs</i>	<p>System responses:</p> <p>1.2.1 Gallery view: upon selecting “View All,” the system shall display stock products in a gallery format.</p> <p>1.2.2 Detailed product view: clicking on a product icon leads to a detailed view, presenting all specifications of that selected product</p> <p>1.2.3 No match feedback: if no matching products are found during a search, the system shall display a message guiding the user to refine their search of view all products.</p>
<hr/>	
<i>Setstockthreshold/SRS/1.3 UC1.3</i>	
<i>Introduction</i>	The purpose of the “Set Stock Threshold” feature is to empower users to define the minimum and maximum stock thresholds for each item in our inventory. This feature includes the ability to set default thresholds for new products and automatic stock thresholds.
<i>Inputs</i>	User inputs the minimum and maximum stock units for each units.
<i>Requirements description</i>	<p>“Set Threshold for existing products” prompt: when the user views detailed product information and selects “set threshold,” the System prompts the user to enter minimum and maximum stock units. After this, the system prompts user to confirm the entered users and a confirmation message is displayed upon successful setting of stock thresholds.</p> <p>“Default threshold for new products”: for new products, the default threshold is set to 0. the user may choose to keep the default threshold to 0. next, prompt the user specifically, asking “do you wish to keep the minimum threshold set to 0”?, if the user chooses yes, keep the setting to 0. if the user chooses no, prompt the user to enter desired amounts and confirm. Confirmation message is received upon confirmation.</p>

<i>Outputs</i>	<p>“Automatic stock order placement”: if the user sets a minimum threshold greater than the current stock, a stock order will be placed automatically.</p> <p>1.3.1 Threshold confirmation: the system shall confirm the set thresholds for each item after confirmation.</p> <p>1.3.2 Stock order initiation: if applicable, the system shall initiate a stock order and confirm the action</p>
<hr/>	
<i>Updatestockproduct/SRS/1.4 UC1.4</i>	
<i>Introduction</i>	The purpose of the “update stock product” feature is to update current stock of product in the IMS database. The update occurs in response to customer orders fulfilled by the POS system and incoming data from the stock ordering system. The system also handles the voiding of stock depletion if the POS cancels an order.
<i>Inputs</i>	<p>Data from POS system: information about fulfilled customer order (subtracted units from stock)</p> <p>Data from stock ordering system: information about ordered units from supplier for stock replenishment (added units to stack)</p>
<i>Requirements description</i>	<p>Order fulfillment from POS system: deplete the current stock of a product based on data and update to reflect depleted stock levels.</p> <p>Stock Replenishment from stock ordering: for this, add ordered units to the current stock of a product based on data received from the stock ordering system. After verifying user authentication, add the ordered units to the current stock of the corresponding product, the output is updated stock information reflecting the increased stock levels.</p> <p>Void stock depletion on POS order cancellations: if the POS system cancels an order, void the depleted from the database and restore the previous stock level based on canceled orders.</p>
<i>Outputs</i>	<p>1.4.1 Updated stock information: current stock levels adjusted based on fulfilled orders and stock replenishment</p> <p>1.4.2 Voided stock depletion: restoration of previous stock levels if a client order is canceled</p>
<hr/>	
<i>Inactivatestockproduct/SRS/1.5 UC1.5</i>	
<i>Introduction</i>	The purpose of this feature is to allow users to mark products as unavailable in inventory. The feature is triggered through the “mark as unavailable” button on the detailed view of a product. The feature also provides an option to reactivate an inactivated product using the “mark as available button”.
<i>Inputs</i>	<p>Mark as unavailable button: triggered by the user to inactivate a product.</p> <p>Mark as available button: triggered by the user to reactivate an inactivated product.</p>
<i>Requirements description</i>	<p>Mark product as unavailable: After user authentication, select the ‘mark as unavailable’ button on the detailed view of a product. The result is the updated product status indicating it is now unavailable.</p> <p>Reactivate inactivated product: after user authentication, selection of the ‘mark as available’ button on the detailed view of inactivated product. This reactivates the selected product in the inventory. The result is the updated product status indicating it is now available.</p>
<i>Outputs</i>	The status of the product marked as unavailable or available.

<i>Placestockorder/SRS/2.1</i>		<i>UC2.1</i>
<i>Introduction</i>	The “place stock order” feature enables the stock ordering system to automatic place orders for products when their current stock levels fall below or equal to the set minimum threshold.	
<i>Inputs</i>	Current stock levels: information about the stock levels of products Threshold settings: minimum and maximum stock threshold values set by employees Corresponding supplier: Selected product supplier	
<i>Requirements description</i>	Automatic order placement: when the current stock amount of a product falls below or equal to the set minimum threshold, the system places an order to the supplier. No order placement: if the current stock has not reached the minimum threshold, no stock order will be placed.	
<i>Outputs</i>	2.1.1 Order placement: automatic placement of orders for products that fall below or equal to the set threshold. 2.1.2 Orders report: listing of pending orders with a “pending” status.	
<i>Viewstockorder/SRS/2.2</i>		<i>UC2.2</i>
<i>Introduction</i>	The purpose of the “view stock order” feature is to allow employees to view the order history and pending orders for each product in the inventory. This feature also gives the ability to access an orders table report with sorting and filtering options based on various parameters such as Order ID, Date ordered, status, product, date completed and supplier.	
<i>Inputs</i>	Navigation selection: the user selects ‘orders’ from the navigation bar. Sorting and filtering preferences: user preferences for sorting and filtering the orders table.	
<i>Requirements description</i>	Access Order Table: the user selects ‘orders’ from the navigation bar, and the system displays a table report including completed orders and pending orders. Sorting and filtering: this feature allows the user to sort and filter the table report based on parameters such as order ID, date ordered, status, product, date completed and supplier. The result is a table report displaying orders sorted and filtered according to user preferences.	
<i>Outputs</i>	Table report displaying completed and pending orders.	
<i>Fulfillorderstock/SRS/2.3</i>		<i>UC2.3</i>
<i>Introduction</i>	This feature enables the stock ordering system to indicate when an order has been fulfilled and a product has been delivered. The feature addresses the conditions for updating the order status, storing tracking numbers, and ensuring accurate updates to the current stock amount.	
<i>Inputs</i>	Order status information: information about the status of the order ‘shipped’ or ‘completed’. Tracking numbers: tracking numbers provided by the supplier for shipped orders.	
<i>Requirements description</i>	Update status to shipped: if the order has been shipped from the supplier, the status will be updated to ‘shipped’, and the corresponding tracking number will be stored in the system	

<i>Outputs</i>	Update status to completed: if the order has been delivered, the status will be updated to “completed”.
	2.3.1 Updated order status: the status of the order updated to ‘shipped’ or ‘completed’
	2.3.2 Stored tracking numbers: tracking numbers stored in the system
	2.3.3 Automatically updated current stock: the current stock amount.
<hr/> <i>Cancelstockorder/SRS/2.4</i> <i>UC2.4</i> <hr/>	
<i>Introduction</i>	The purpose of this feature is to allow users to cancel pending orders. The feature involves providing a “cancel order” button next to orders with a “pending” status and prompting the user to confirm and ensuring that the button is not visible for orders with a “shipped” or “completed” status.
<i>Inputs</i>	Cancellation confirmation: confirmation provided by the user when prompted to cancel an order.
<i>Requirements description</i>	Display cancel order button displays a “cancel order” button next to orders with a “pending” status.
	Confirm order cancellation: when the user selects the “cancel order” button, prompt the user to confirm the cancellation.
<i>Outputs</i>	Cancel order: if the order has a “pending” status and the user confirms the cancellation, mark the order as cancelled and update its status accordingly.
	Cancelled order: the order is marked as cancelled and its status updated accordingly.
<hr/> <i>Addsupplier/SRS/3.1</i> <i>UC3.1</i> <hr/>	
<i>Introduction</i>	The purpose of this software is to implement the “add supplier” feature allowing users to associate a supplier with each stock product. This feature is displayed by a form for entering supplier information, prompting the user for confirmation, and storing the supplier information in the system. The system should also pre-fill information if a similar supplier already exists.
<i>Inputs</i>	Supplier information: information entered by the user, including supplier name, contact details and other relevant information
<i>Requirements description</i>	Confirmation: confirmation provided by the user when prompted
	Display supplier form displays a form for entering supplier information when the user selects the “add supplier” button on the product’s detailed view. After user authentication, the form for entering supplier information is displayed.
	Confirm supplier information: after the user enters supplier information, the user is prompted for confirmation.
<i>Outputs</i>	Store supplier information: after user authentication, store the entered supplier information in the system.
	Stored supplier information: the supplier information is stored in the system.
<hr/> <i>Viewsupplier/SRS/3.2</i> <i>UC3.2</i> <hr/>	
<i>Introduction</i>	This feature works by allowing users to view the supplier information associated with each product this functionality includes displaying a table report with supplier information including Supplier ID, name, contact number, address, website, and product. Also, the system should provide sorting and filtering options for better user experience.

<i>Inputs</i>	Navigation selection: the user selects ‘suppliers’ from the navigation bar Sorting and filtering preferences: displays user preferences for sorting and filtering the supplier's table.
<i>Requirements description</i>	Access suppliers table: the user selects ‘suppliers’ front the navigation bar, and the system displays a table report including supplier ID, name, contact number, address, website and product. Sorting and filtering: the user may sort and filter the table report based on specified, including supplier ID, name, contact number, address, website and product. This allows the user to display sorting and filtering preferences to the suppliers table.
<i>Outputs</i>	Supplier table report: this is a table displaying supplier information Sorted and filtered suppliers: this table report can be sorted and filtered according to specified field.
<hr/> <i>Updatesupplier/SRS/3.3 UC3.3</i> <hr/>	
<i>Introduction</i>	This feature allows users to update supplier information in the system. It includes providing an “edit” button on the screen, prompting the user to edit information by displaying a pre-filled form, and storing the updated information in the system. Additionally, the system should prompt the user to confirm/save any changes made and ensure that no information is updated if no changes are made to the pre-filled form.
<i>Inputs</i>	Edit selection: the user selects an “edit” button on the screen Edit information: information entered or modified by the user Confirmation: confirmation provided by the user when prompted to confirm/save changes.
<i>Requirements description</i>	Display edit form: the user selects an “edit” button on the screen, and the system displays a pre-filled form for editing supplier information. After user authentication, a pre-filled form for editing supplier information is displayed. Edit supplier information: the user edits the information about the supplier on the pre-filled form. Confirm/save changes: the system prompts the user to confirm/save any changes made to the supplier information. Store updated information: if the changes are confirmed, store the updated supplier information in the system.
<i>Outputs</i>	Updated supplier information: the updated supplier information is stored in the system.
<hr/> <i>Inactivesupplier/SRS/3.4 UC3.4</i> <hr/>	
<i>Introduction</i>	This feature allows the users to inactivate suppliers that will no longer be stored in the system. This feature provides an “inactivate” button on the suppliers table, labeling the supplier as “inactive” and prompting the user to add a new supplier. Additionally, the system should handle cases where the user is unable to provide a new supplier, automatically setting the minimum threshold of the product to 0 and marking it as unavailable once its stock is depleted.
<i>Inputs</i>	Inactivate selection: the user selects an “inactivate” button on the supplier's table

<i>Requirements description</i>	New supplier information: information entered by the user for a new supplier.
	Display inactivate button: the user can select an “inactivate” button on the supplier's table.
	Inactivate supplier: the user selects the “inactivate” button, and the supplier is labeled as “inactive”.
	Prompt for new supplier: after inactivating a supplier, prompt the user to add a new supplier
	Handle no new supplier: if the user is unable to provide a new supplier, automatically set the minimum threshold of the product to 0 and mark it as unavailable once its stock is depleted
<i>Outputs</i>	3.4.1 Inactive supplier label: the supplier is labeled as “inactive”.
	3.4.2 New supplier information: information for a new supplier, if provided, is stored in the system
	3.4.3 Minimum threshold adjustment: the minimum threshold of the product is adjusted, and the product is marked as unavailable if no new supplier is provided.
<hr/> <i>Transferconsumptiondata/SRS/4.0 UC4.0</i> <hr/>	
<i>Introduction</i>	The purpose of this software is to implement the “the transfer consumption data” functionality, allowing the POS system to transfer consumption data (amounts) from fulfilled customer orders to the IMS (inventory management system) database in real-time. This functionality assumes that 1 customer order is equal to 1 stock unit.
<i>Inputs</i>	Fulfilled order information: information about fulfilled customer orders, including consumption amounts.
<i>Requirements description</i>	Real time data transfer: the POS system transfers consumption data from fulfilled customer orders to the IMS database in real-time
	Void consumption data on order cancellations: if the POS system cancels an order, void the consumption data from the database and update it in real time.
<i>Outputs</i>	Updated consumption data: the IMS database is updated with real-time consumption data.

Section 4. System Modeling

I. Class Diagram

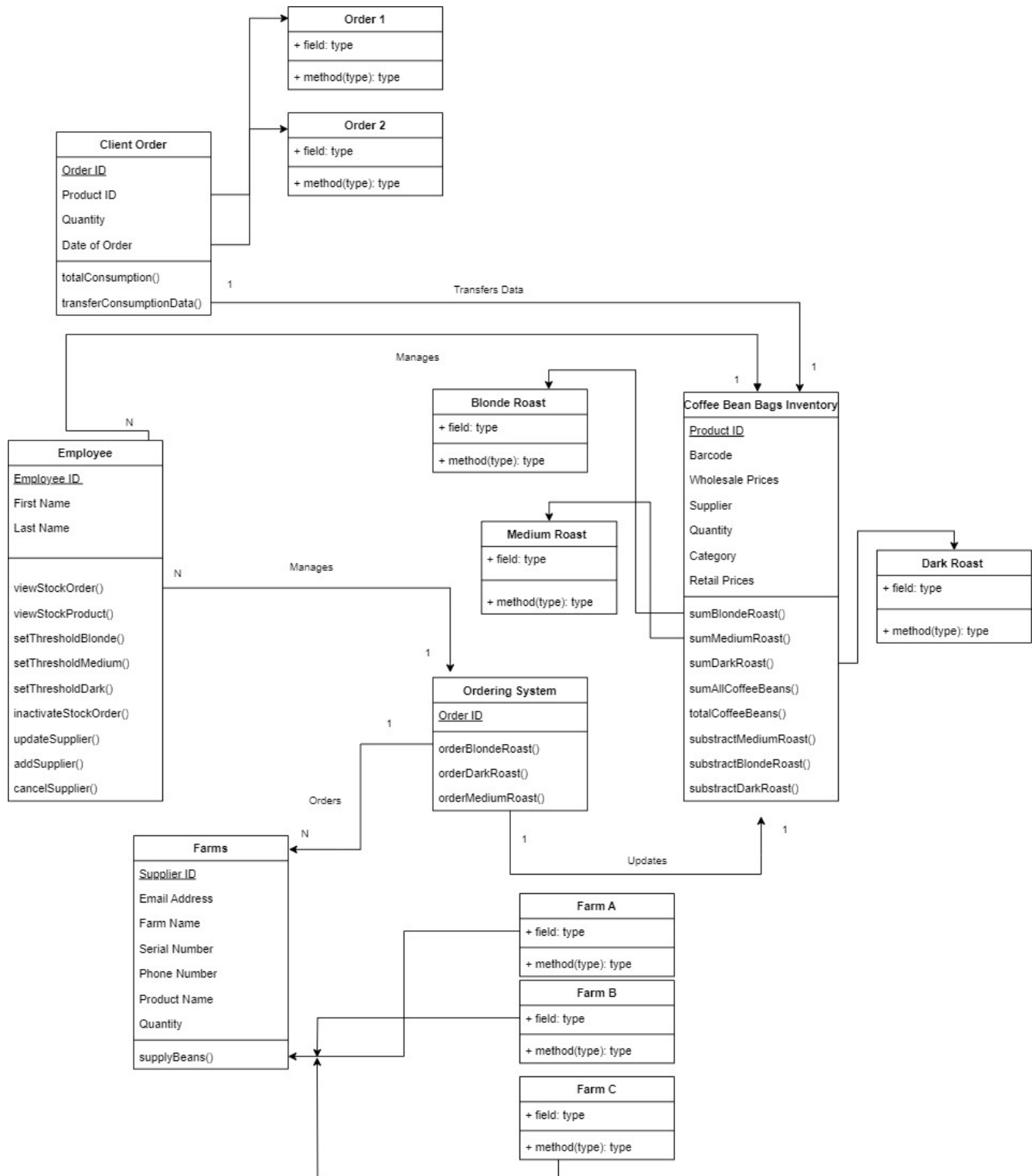


Figure 2. Class Diagram for F1 IMS

II. Database Specification and Analysis

A. Entity-Relationship Diagram

The following is the Entity-Relationship diagram for the structure of the database implementation. The database will be implemented using the open-source PostgreSQL database management system software with the prescribed schema.

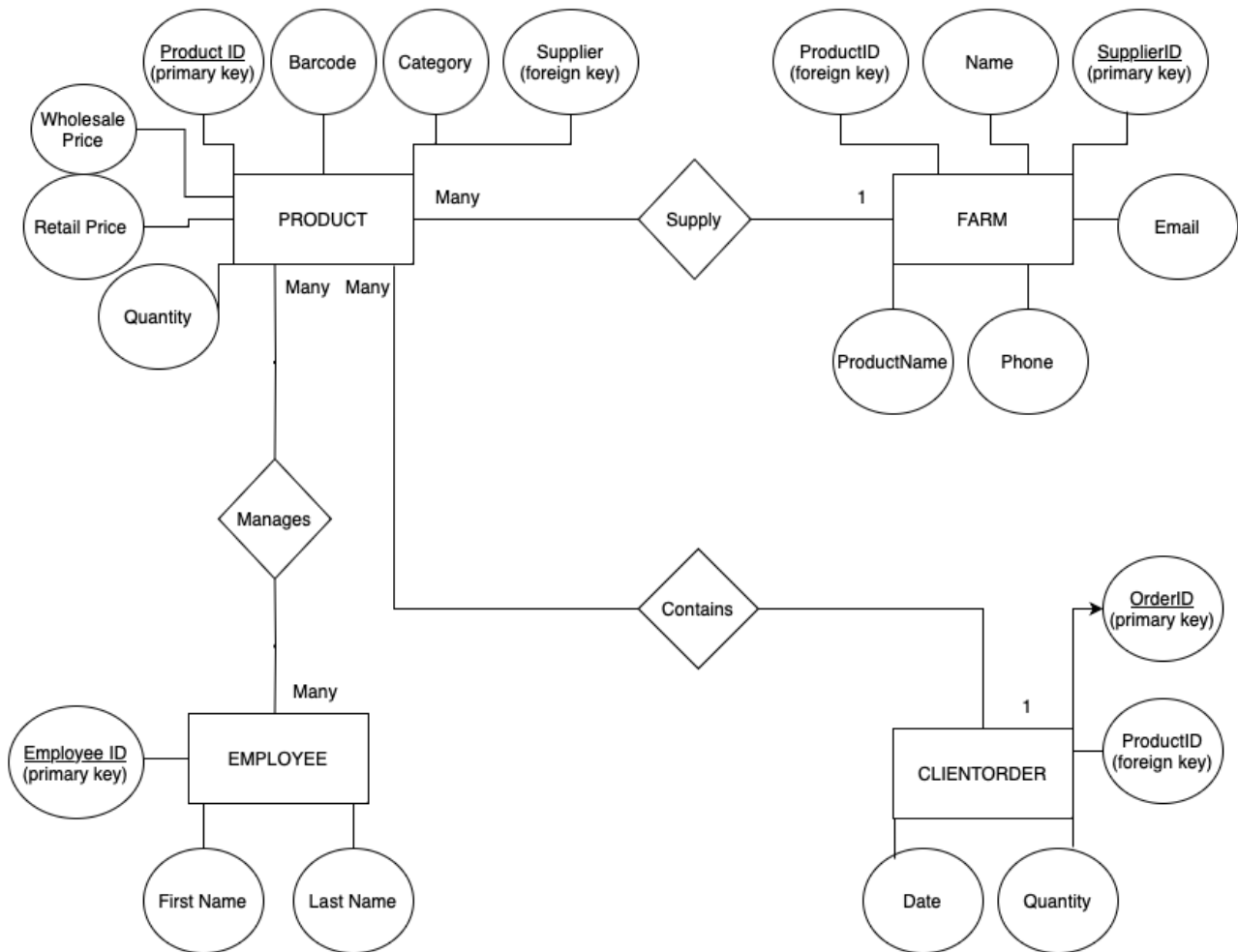


Figure 3. ER Diagram for database

B. Entities and Tables Summary

<i>Entity No.1</i>	<i>Product</i>
<i>Description</i>	Table that contains information on the products
<i>Attributes</i>	ProductID (primary key, serial) - a unique identifier for each individual product in the ITEM table Barcode (integer) - the barcode used for the item Category (varchar) - the category of products the item belongs to SupplierID (foreign key, integer) - unique identifier for the company that supplied the product, will be used as a foreign key to the FARM table Retail (decimal) - how much the product sells for Wholesale (decimal) - how much the product was purchased for Quantity (integer) - the amount of the item currently in stock

Example Data for Entity No.1:

PRODUCT						
ProductID	Barcode	Category	SupplierID	Retail	Wholesale	Quantity
1000	12345	Dark Roast	2222	17.99	15.00	21
2000	67890	Dark Roast	1111	2.99	1.00	0
3000	54321	Light Roast	2222	27.99	20.00	-4
4000	99999	Medium Roast	3333	25.99	13.00	100

<i>Entity No.2</i>	<i>Supplier/Farm</i>
<i>Description</i>	Table that contains information related to the suppliers of the raw coffee beans
<i>Attributes</i>	SupplierID (primary key, serial) - unique identifier for each individual supplier Name (varchar) - the name of the supplier ProductID (foreign key, integer) - foreign key that references products in the PRODUCT table ProductName - (varchar) - the name of the product supplied by the supplier Email (varchar) - the email of the supplier Phone (varchar) - the phone number of the supplier

Example data for Entity No.2:

FARM					
<u>SupplierID</u>	Name	ProductID	ProductName	Email	Phone
1111	Farm A	2000	Beans A	farma@email.com	555-5555
2222	Farm B	1000	Beans B	farmb@email.com	555-5555
3333	Farm C	4000	Beans C	farmc@email.com	555-5555

Entity No.3	Employee
<i>Description</i>	Table that contains information on employees that manage the inventory
<i>Attributes</i>	EmployeeID (primary key, serial) - unique employee identifier that acts as the primary key for the table
	FirstName (varchar) - first name of the employee
	LastName (varchar) - last name of the employee

Example data for Entity No.3:

EMPLOYEE			
<u>EmployeeID</u>	FirstName	LastName	
1	Mike	Jones	
2	Bob	George	
3	Sarah	Johnson	

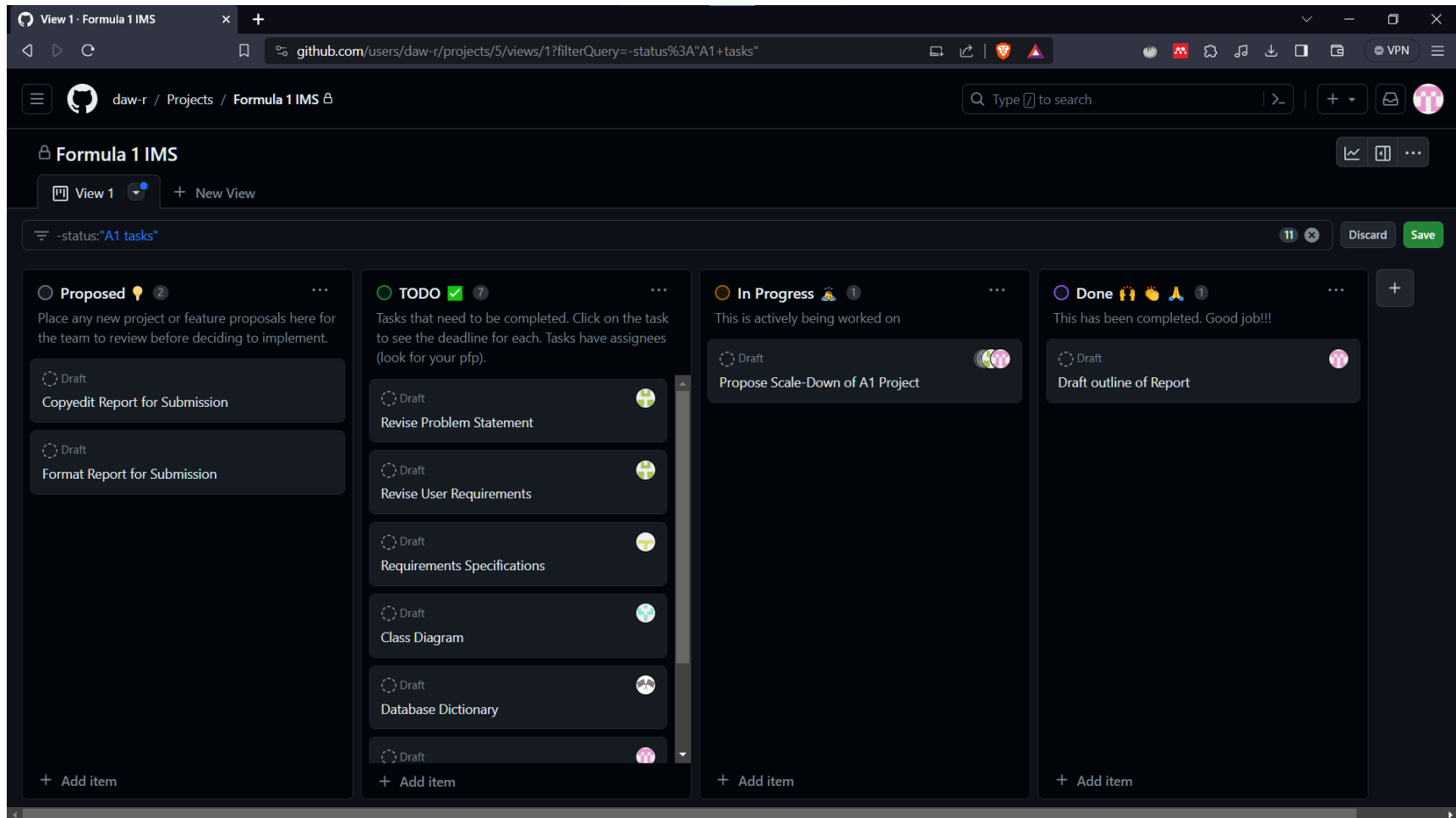
Entity No.4	Client Order
<i>Description</i>	Table that contains information on the orders placed by clients
<i>Attributes</i>	OrderID (primary key, serial)- unique order identifier to be used as primary key
	Quantity (integer) - the total number of products in the order
	ProductID (foreign key, integer) - the unique product identifier for each product in the order
	Date (timestamp) – Date and time when order was placed by client

Example Data for Entity No.4:

CLIENTORDER			
<u>OrderID</u>	ProductID	Quantity	Date
1	2000	25	2023-10-09 12:00:14
2	4000	59	2023-10-09 13:00:30
3	1000	4	2023-10-09 19:30:00

Section 5. Appendix

A. GitHub Kanban Board Week 1



B. Github Kanban Board Week 2

