



WMS Implementation Project

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System Implementation INFO C-451

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## Customer Problem Statements and System Requirements

**Problem Statement:** A warehouse management system is a system that is designed to keep track of inventory quantities, inventory values, customer information, customer orders, and product information and is found in all modern businesses today. With each order from a customer that is outgoing the quantity ordered, the value of that inventory as well as the customer it is going to need to be kept track of. The system can also increase inventory with adjustment when stock arrives from outside suppliers. Once the inventory, the inventory value, the customer information, and the product information are entered into the system an order can be placed, deducting from the inventory, and shipped to the customer.

### Glossary:

App - an application, especially as downloaded by a user to a mobile device.

User - a person who uses or operates something, especially a computer or other machine.

Admin - the administration of a business, organization, etc.

Product ID – Unique Product Identification Number

User ID – Unique User Identification

Customer ID – Unique Customer Identification

Inventory – A complete list of items such as property, goods in stock, or the contents of a building.

**Commented [AP1]:** Added at recommendation

| No.  | Priority Ranking  | Description   |
|--|---|---|
| Requirement – 1 (show the unique requirement that must be met by the system) | The priority of the requirement based on a High, Medium, and Low ranking. | Description of the requirement  |
| Requirement-1  | High  | Ability to house customer information (Name, Phone, Customer ID)                            |
| Requirement-2  | High  | Ability to house Product Information (Product ID, Name, Quantity, Description and Category) |
| Requirement-3  | High  | Ability for a User to Log In  |
| Requirement-4  | High  | Ability to place an order (deducting inventory)   |
| Requirement-5  | High  | Ability to Edit and Delete Customer Info  |
| Requirement-6  | High  | Ability to Edit and Delete Product Information  |
| Requirement-7  | Medium  | Ability to provide order number   |

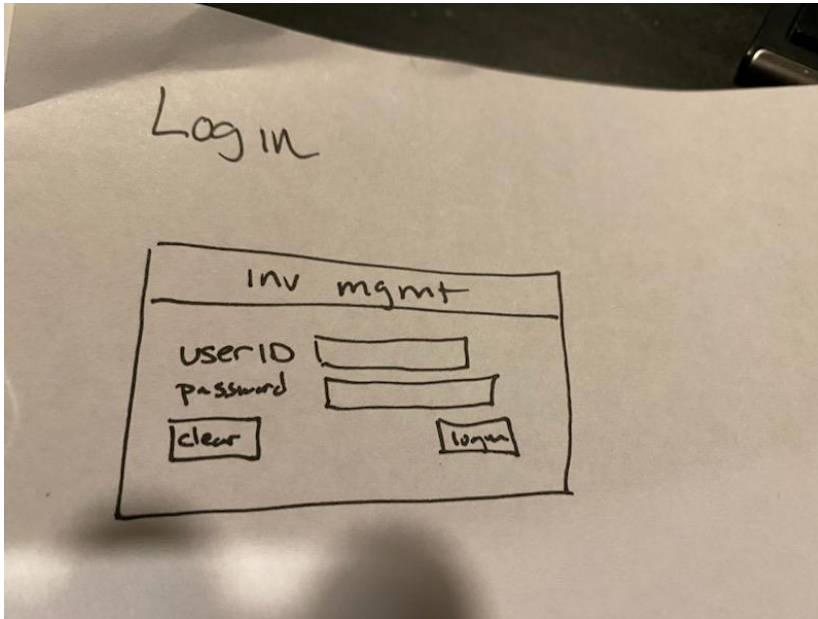
|                 |        |                                       |
|-----------------|--------|---------------------------------------|
| Requirement-8   | Medium | Ability to provide order amount       |
| Requirement-9   | High   | Ability to have product category      |
| Requirment-10   | Medium | Ability to Edit and Delete Category   |
| Requirement-11  | High   | Ability to Add/Remove Users           |
| Requiriement-12 | High   | Ability for edits to be made by admin |

### Nonfunctional Requirements (FURPS)

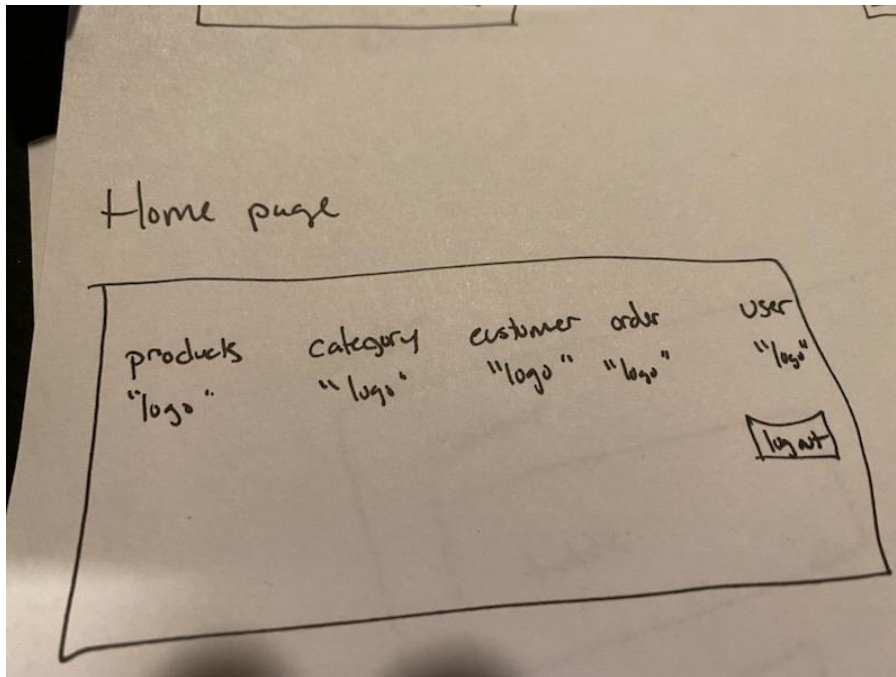
|                |   |
|----------------|---|
| Usability      | This encompasses how the app looks, consistency of look throughout, documentation of the app and responsiveness to the user actions   |
| Reliability    | This encompasses the general availability of the app, and if it often goes down due to failure. If failure does occur, the length of time and extent of the failure affect reliability. Accuracy is an important aspect of reliability as well. |
| Functionality  | This encompasses how capable the app is, if it can be reused and technologically portable, and security of the app  |
| Performance    | This encompasses the overall speed, efficiency, consumption (resources such as power etc.), overall capacity and scalability of the app   |
| Supportability | This encompasses the overall maintainability and serviceability of the app, as well as testability, flexibility and installability.   |

The user interface must include a splash page during loading, design can be developers' choice.

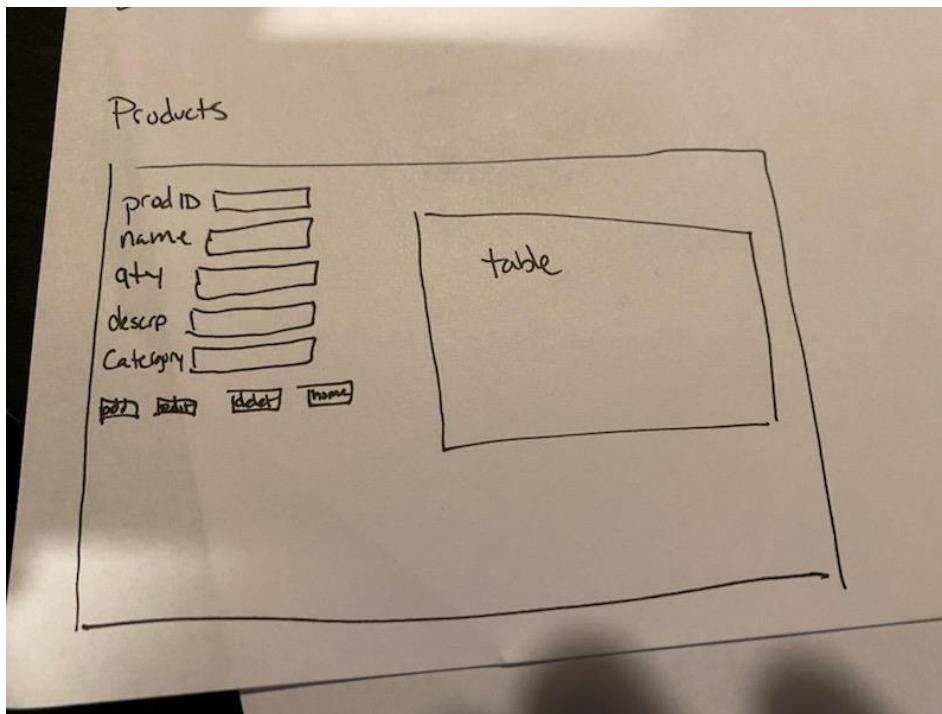
A [Login Page](#) that requires a user ID and a Password with a button that will clear information and a button for logging in.



A [Home Page](#) for the user to select an option. Options need to include Products, Category, Customer, Order and User and a button for logging out.

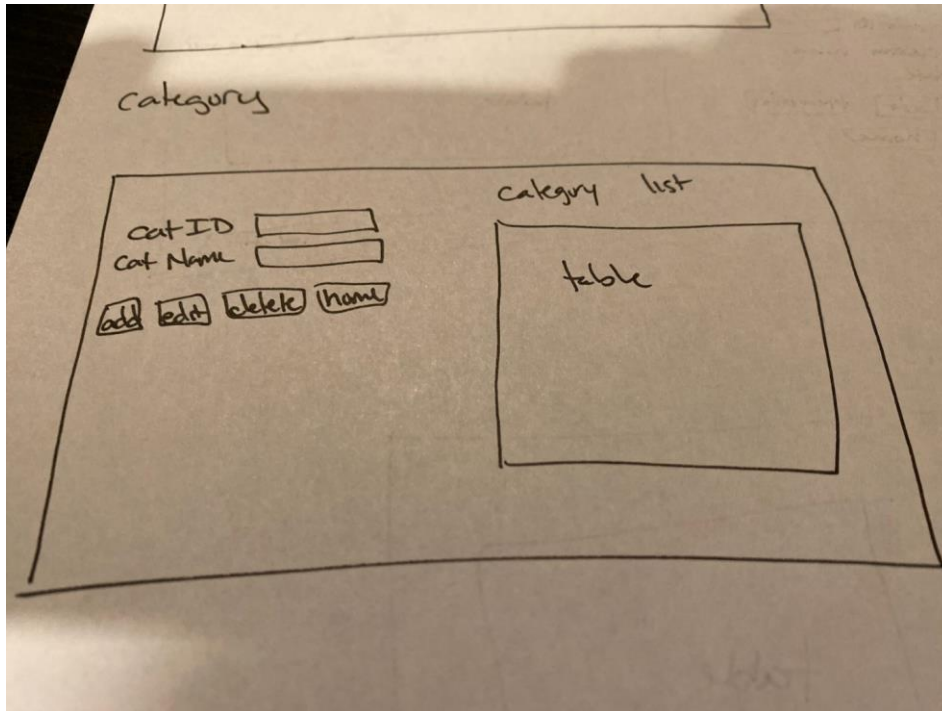


A [Product Page](#) that must include field for the product ID, Name, Quantity, Description, and Category with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home' that will function respectively.



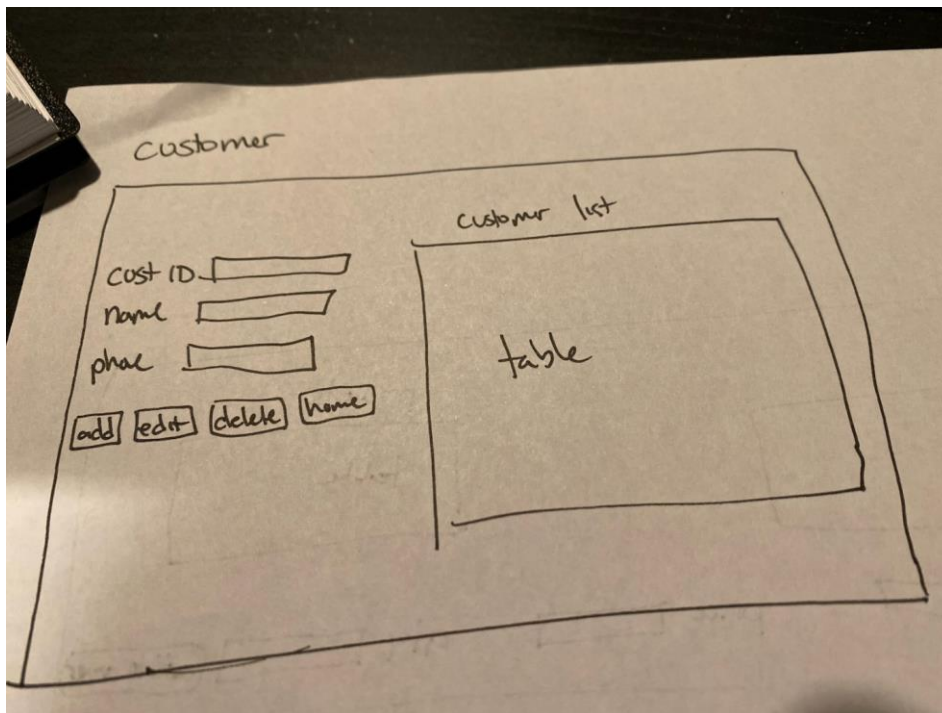


A [Category Page](#) that must include field for the Category ID, and Name with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home' that will function respectively.

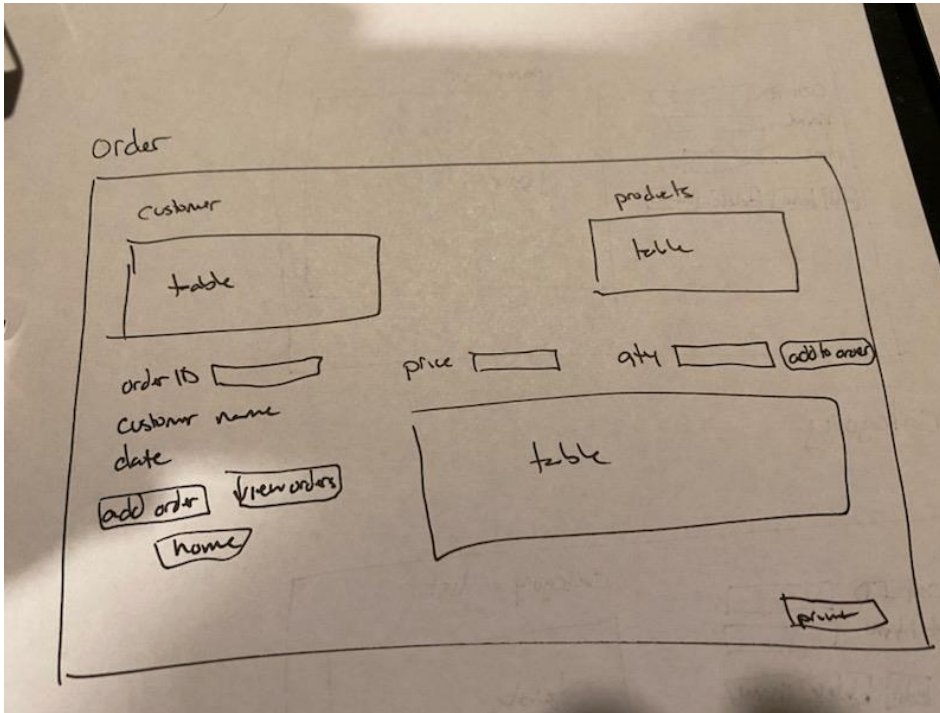


A [Customer Page](#) that must include field for the Customer ID, Name, and Phone number with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home' that will function respectively. A customer can be a user, however not all users are customers.

**Commented [AP2]:** Definition added at request



An [Order Page](#) will show a table of the customer list (table: all customer info), a product list (table: all product info) a field for the order ID, a field for the price, and a field for the Quantity. Buttons will need to be added to 'Add Order', 'View Order' 'Add to Order' 'Print' and take the user "Home" that will function respectively.



A [User Page](#) that must include field for the User ID, Password, and Phone number with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home.' that will function respectively. A User can be a Customer, however not all Customers are Users.

**Commented [AP3]:** Definition added at request

## Plan of Work:

### Timeline:

#### Weeks 1-2:

- Framework verification and structure development of the system

This has been completed, Netbeans and mySQL have been installed

#### Weeks 3-4:

- Create the system interface, connect to the mySQL

Complete

#### Weeks 5-7

- Create base functionality of inventory quantity, inventory value, and inventory level adjustment communicating with the database.

Complete

#### Week 8

- Record initial demo for the Test Company

Complete

#### Weeks 9-11

- Rely on user feedback to adjust the overall implementation.

#### Weeks 12-14

- Develop tests cases and SOP for client testing and acceptance purposes.

#### Week 15

- Product demo delivery

## Functional Requirement Specification

### Stakeholders:

- Business Leads – Project participants that are in charge of the project success and ensuring requirements are met.
- Customers – Individuals that patronize the business, voice of the customer is important in the implementation.
- Customer Service Representatives – Employees of the business that are responsible for Order Entry to fulfill Customer requests.
- Warehouse Employees – Employees of the business that are working in the warehouse and need product information.
- IT Admin – Person responsible for the maintainability and technical side of the software.

Commented [AP4]: Added at request

### Primary Actors:

- Customer – This actor can log in and edit their user and customer information as they are tied together. This actor is also able to place an order by selecting the product they wish to purchase, entering the agreed upon contractual price and the qty they will be adding to their order. This actor can also print their order.
- User – This actor can log in and add, edit and update information for: Customers, Products, Categories, Users and complete all tasks a Customer can perform.

### Secondary Actors:

- Database - This actor is responsible for housing all information that is input into the system and keeping an up-to-date count of the inventory quantity.
- Admin – This actor can perform all tasks a User can, plus has the ability to add users, alter code and maintain the database.

### Use Cases:

#### Admin

- Connect Database to Front End (.5 Day)
- Update User Information - Add, Edit and Delete User Information, including Username, User ID, and Phone Number (1 Day)
- Login / Logout Information – Maintain user Id and Password in database, delete users from database. (1 Day)
- View Users – View all users in the database. (.5 Day)

#### User

- Update Customer Information - Add, Edit and Delete Customer Information, including Customer ID, Customer Name and Phone number. (1 Day)
- Update Product Information - Add, Edit and Delete Product Information including product ID, Product Name, Product Description, Quantity, and Category (1 Day)

- Update Category Information - Add, Edit and Delete Category Information, including category name and description. (1 Day)
- Update User Information - Add, Edit and Delete User Information, including username, user ID, Use Phone number. (1 day)
- Place an Order - Select a product, qty and price and add to the order. (.5 Day)

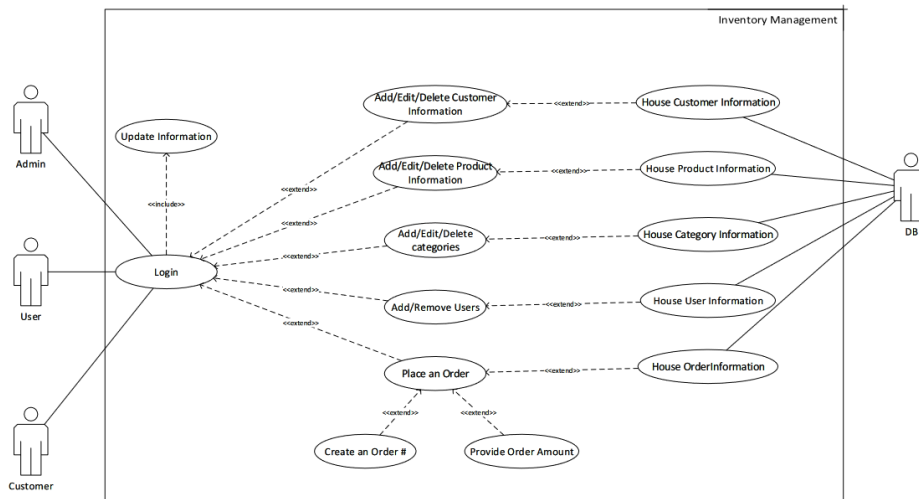
#### Customer

- Place and Order – Select a product, qty and price and add to the order. (.5 Day)
- Update Customer Information – Add, Edit and Delete Customer Information (1 day)
- View History – view the total history of order qty and value. (.5 day)

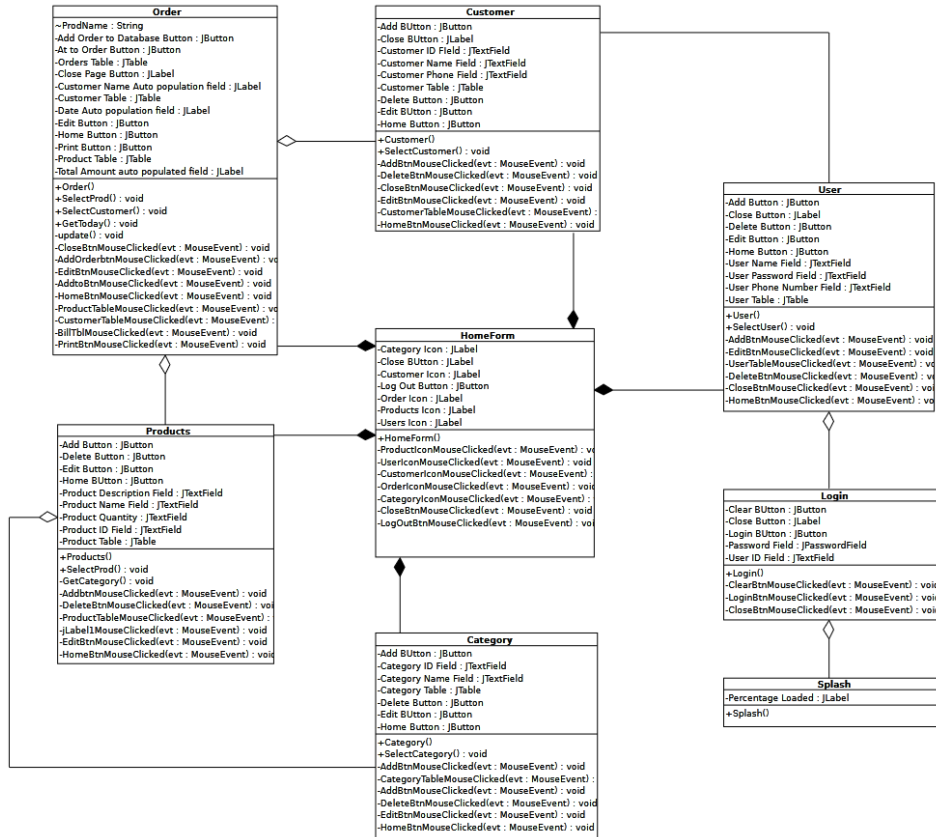
#### System

- Update Product Quantity – automatically deduct inventory quantity when orders are placed. (2 days)
- Prompt Incorrect Information – Display a pop up when information in the form is incorrect. (1 day)
- Prompt Missing Information – Display a pop up when any necessary information is missing on a form. (1 day)
- Prompt Successful Transaction – Display a pop up when a transaction occurs successfully (ie, add, edit, delete) (1 day)

## Use Case Diagram



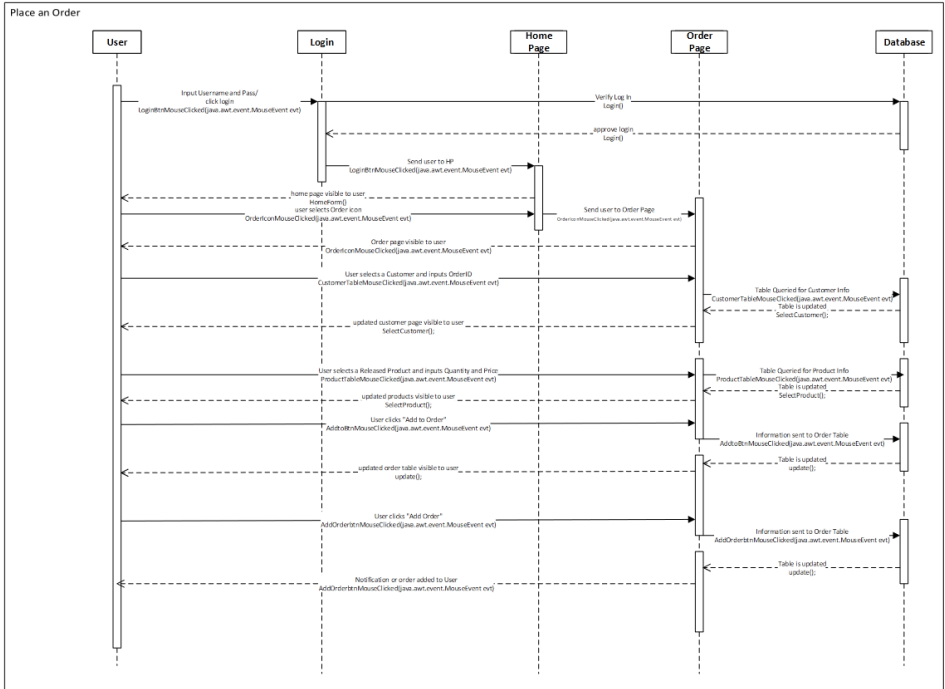
## Class Diagram



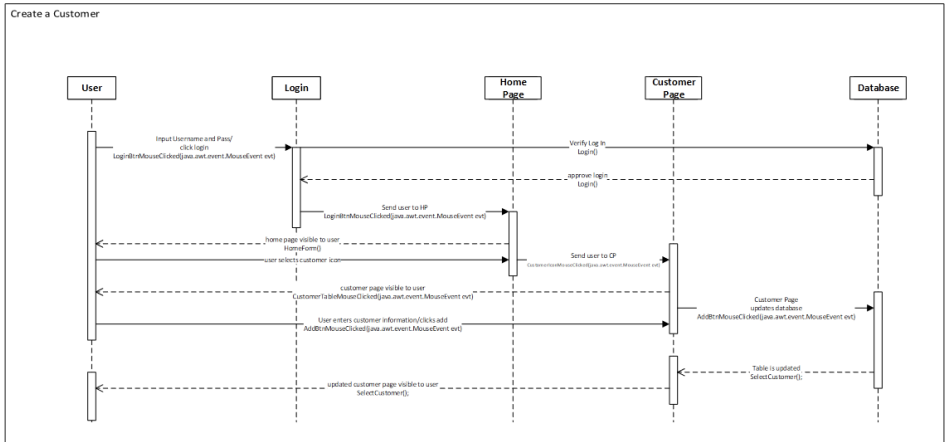


# System Sequence Diagrams

## Place an Order Sequence Diagram



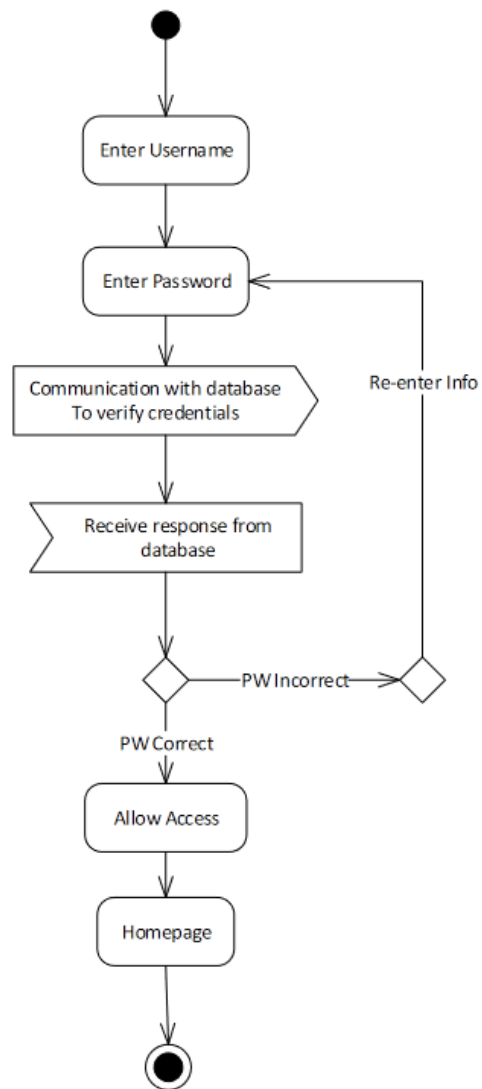
## Create a Customer Sequence Diagram



## Activity Diagrams

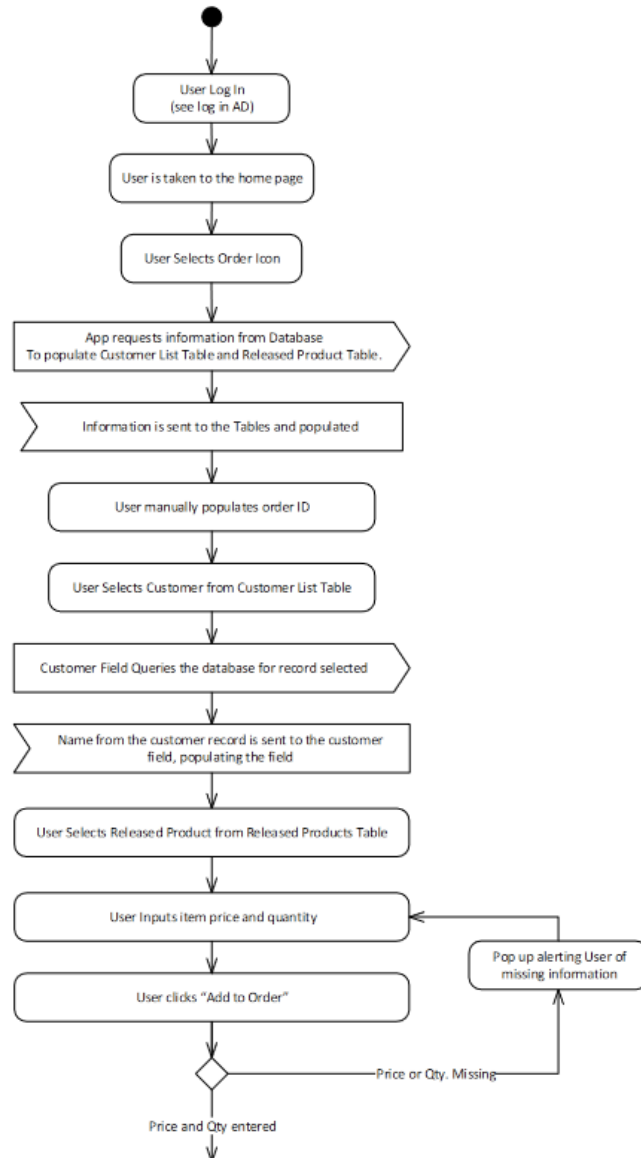
### Log in Activity Diagram

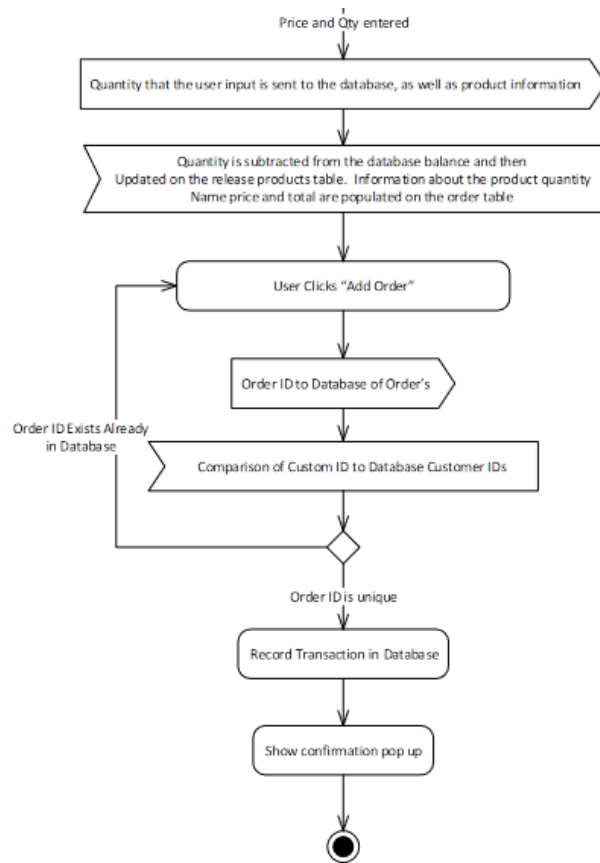
#### Log In



## Place an Order Activity Diagram

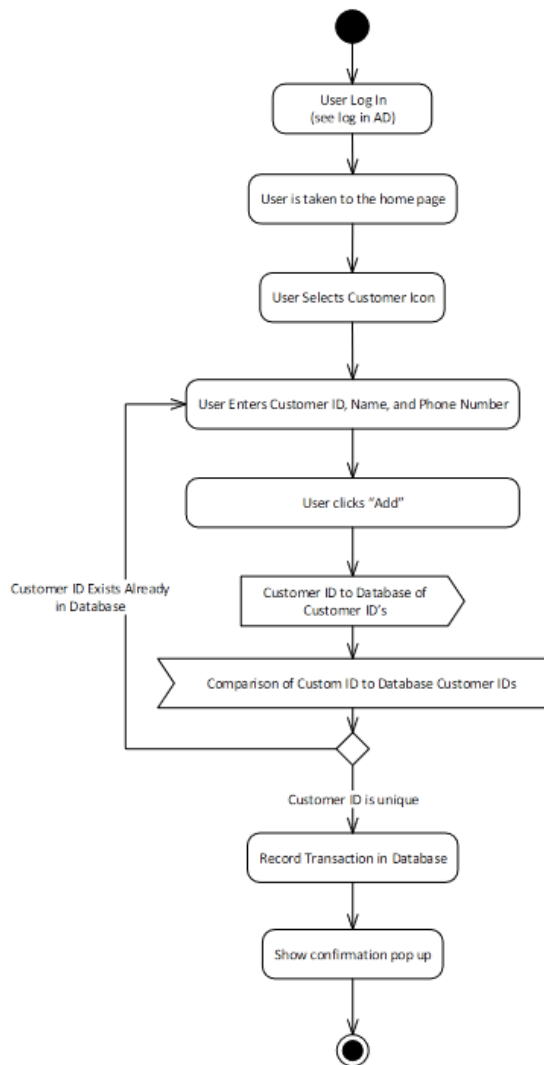
### Place and Order





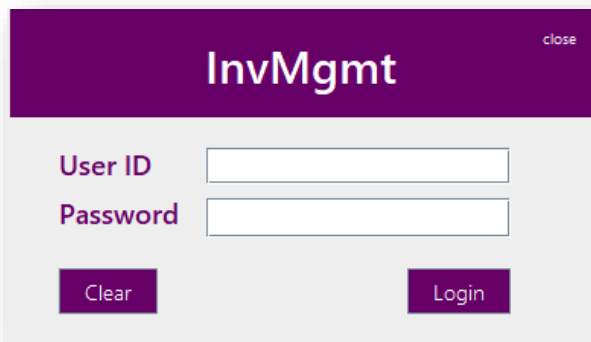
## Create a Customer Activity Diagram

### Create a Customer



## User Interface Specification

### Log in User Interface



The login form is titled "InvMgmt" and features a purple header bar. Below the header, there are two input fields: "User ID" and "Password". At the bottom, there are two buttons: "Clear" and "Login".

The User will input their User ID into the User ID field (1 click)

The User will then click into the password field and enter their password (1 click)

The User will then click the "Login" button to Login. (1 click)

The user will be automatically redirected to the Home Form upon successful login.

If the Login fails a pop up will appear and the user must click to acknowledge the failed log in.

Effort:

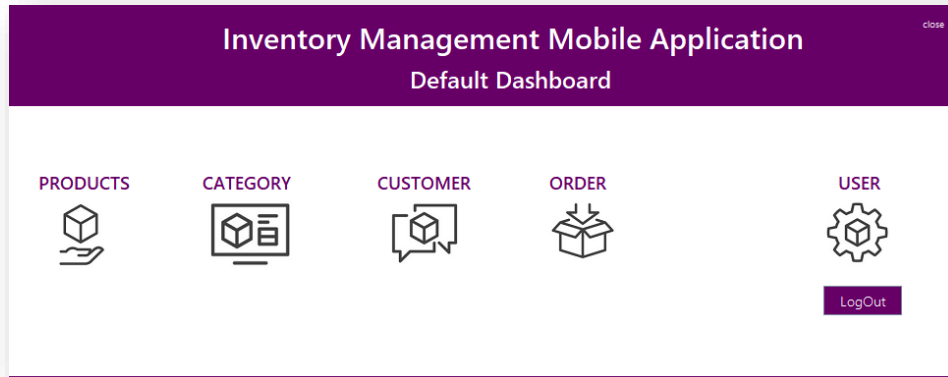
Best Case: 3 clicks

Worst Case: 4 clicks per login attempt (-1) when successful

successful login =  $4x-1$

unsuccessful login =  $4x + 1$  (assumption of clicking close)

## Home Form User Interface



The user may select an icon to enter (1 click)

The user may select to log out (1 click)

The user may select to close the application (1 click)

Effort: 1 click

## Manage Categories User Interface

Inventory Management Mobile Application  
Manage Categories

CategoryID

CategoryName

Add Edit Delete Home

Category List

| CategoryID | CategoryName |
|------------|--------------|
|------------|--------------|

The User can "Add" a Category by:

Entering the desired Category ID into the "CategoryID" field (1 click)

Entering the desired Category Name into the "CategoryName" field. (1 click)

Clicking the "Add" Button (1 click)

Acknowledging the successful addition of the Category by Clicking "OK" (1 click)

Effort: 4 Clicks

The User can "Edit" a Category by:

Selecting the desired record from the Category table (1 click)

Entering the desired edited Category ID into the "CategoryID" field (1 click)

Entering the desired edited Category Name into the "CategoryName" field. (1 click)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the Category by Clicking "OK" (1 click)

Effort: Edit on one field 5 Clicks, Edit on both fields 6 Clicks

The User can "Delete" a Category by:

Selecting the desired record from the Category table (1 click)

Clicking the "Delete" Button (1 click)



Acknowledging the successful deletion of the Category by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the Category page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

## Manage Customers User Interface

The screenshot shows the 'Manage Customers' interface of the 'Inventory Management Mobile Application'. The interface is divided into a header, a form area, and a table area. The header is purple with white text. The form area is white with purple labels and buttons. The table area is white with a purple border. The table has three columns: 'CustomerID', 'Name', and 'Phone'. Below the table, there are two buttons labeled '# of Orders' and 'Order Amount', both with an 'X' icon.

The User can "Add" a Customer by:

Entering the desired Customer ID into the "CustomerID" field (1 click)

Entering the desired Name into the "Name" field. (1 click)

Entering the phone number into the "Phone" field. (1 click)

Clicking the "Add" Button (1 click)

Acknowledging the successful addition of the Customer by Clicking "OK" (1 click)

Effort: 5 Clicks

The User can "Edit" a Customer by:

Selecting the desired record from the Customers table (1 click)

Entering the desired edited Customer ID into the "CustomerID" field (1 click)

Entering the desired edited Name into the "Name" field. (1 click)

Entering the desired edited phone number into the "Phone" field. (1 click)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the Customer by Clicking "OK" (1 click)

Effort: Edit on one field 4 Clicks, Edit on all fields 6 Clicks

The User can "Delete" a Customer by:

Selecting the desired record from the Customer table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the Customer by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the Customer page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

## Manage Orders User Interface

The screenshot shows a mobile application interface for managing orders. The header is purple with the text "Inventory Management Mobile Application" and "Manage Orders". Below the header, there are two main sections: "Customer List" and "Released Products".

**Customer List**

| CustomerID | Name | Phone |
|------------|------|-------|
|------------|------|-------|

**Released Products**

| ProductID | Name | Quantity | Description | Category |
|-----------|------|----------|-------------|----------|
|-----------|------|----------|-------------|----------|

Price:  Quantity:

Order ID:

Customer:

Date:

| # | Product | Quantity | Price | Total |
|---|---------|----------|-------|-------|
|---|---------|----------|-------|-------|

Total: \$

The User can "Add Order" an Order by:

- Selecting the Customer from the Customer table (1 click)
  - Enter a Unique Order ID into the "Order ID" field. (1 click)
  - Selecting the Product(s) from the Products table. (1 click)
  - Entering the price of the product. (1 click)
  - Entering the quantity of the product to apply to the order (1 click)
  - Click the "Add to Order" button. (1 click)
  - Click the "Add Order" Button (1 click)
  - Acknowledging the successful addition of the Order by Clicking "OK" (1 click)
- Effort: Best Case: 8 Clicks Worst Case: Infinite

The User can "Print" an Order by:

- Clicking the "Print" button when products are in the Order table
  - Select the Print on the pop up. (1 click)(assumption of printer defaults being set)
- Effort: 2 Clicks

The User can go "Home" from the Order page by:

- Clicking the "Home" Button (1 click)

- User will be redirected to the Home Form

- Effort: 1 Click

## Manage Users User Interface

**Inventory Management Mobile Application**  
Manage Users

**User List**

Username

Password

Phone

| Name | Password | Phone |
|------|----------|-------|
|------|----------|-------|

The User can "Add" a User by:

- Entering the desired Username into the "Username" field (1 click)

- Entering the desired Password into the "Password" field. (1 click)

- Entering the phone number into the "Phone" field. (1 click)

- Clicking the "Add" Button (1 click)

- Acknowledging the successful addition of the User by Clicking "OK" (1 click)

- Effort: 5 Clicks

The User can "Edit" a User by:

- Selecting the desired record from the User table (1 click)

Entering the desired edited Username into the "Username" field (1 click)

Entering the desired edited Password into the "Password" field. (1 click)

Entering the desired edited phone number into the "Phone" field. (1 click)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the User by Clicking "OK" (1 click)

Effort: Edit on one field 4 Clicks, Edit on all fields 6 Clicks

The User can "Delete" a User by:

Selecting the desired record from the User table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the User by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the User page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

## Manage Products User Interface

**Inventory Management Mobile Application**  
Manage Products

**Released Products**

ProductID:   
Name:   
Quantity:   
Description:   
Category:

| ProductID | Name | Quantity | Description | Category |
|-----------|------|----------|-------------|----------|
|-----------|------|----------|-------------|----------|

The User can "Add" a Product by:

Entering the desired Product ID into the "ProductID" field (1 click)

Entering the desired Name into the "Name" field. (1 click)

Entering the quantity into the "Quantity" field. (1 click)

Entering the description into the "Description" field. (1 click)

Selecting the Category from the Drop Down. (2 clicks)

Clicking the "Add" Button (1 click)

Acknowledging the successful addition of the User by Clicking "OK" (1 click)

Effort: 8 Clicks

The User can "Edit" a Product by:

Selecting the desired record from the Products table (1 click)

Entering the desired Product ID into the "ProductID" field (1 click)

Entering the desired Name into the "Name" field. (1 click)

Entering the quantity into the "Quantity" field. (1 click)

Entering the description into the "Description" field. (1 click)

Selecting the Category from the Drop Down. (2 clicks)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the User by Clicking "OK" (1 click)

Effort: Edit on one field 4 Clicks, Edit on all fields 9 Clicks

The User can "Delete" a User by:

Selecting the desired record from the Products table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the User by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the User page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

### Traceability Matrix - System Requirements

| No.  | Priority Weight   | Description                                     |
|--|---|---|
| Requirement – (show the unique requirement that must be met by the system) | The priority of the requirement based on a 1-5 scale, 5 being the highest and 1 being the lowest. | Description of the requirement                  |
| Requirement-1  | 5   | Ability to house customer Name                  |
| Requirement-2  | 4   | Ability to house Customer Phone                 |
| Requirement-3  | 5   | Ability to house Customer ID                    |
| Requirement-4  | 5   | Ability to house Product ID                     |
| Requirement-5  | 4   | Ability to house Product Name                   |
| Requirement-6  | 5   | Ability to house Product Quantity               |
| Requirement-7  | 4   | Ability to house Product Description            |
| Requirement-8  | 5   | Ability to house Product Category               |
| Requirement-9  | 5   | Ability for a User to Log In                    |
| Requirement-10   | 5   | Ability to place an order (deducting inventory) |
| Requirement-11   | 5   | Ability to Edit Customer Info                   |
| Requirement-12   | 3   | Ability to Delete Customer Info                 |
| Requirement-13   | 5   | Ability to Edit Product Information             |
| Requirement-14   | 3   | Ability to Delete Product Information           |
| Requirement-15   | 3   | Ability to provide order number                 |
| Requirement-16   | 3   | Ability to provide order amount                 |
| Requirement-17   | 5   | Ability to have product category                |
| Requirement-18   | 3   | Ability to Edit Category                        |
| Requirement-19   | 2   | Ability to Delete Category                      |
| Requirement-20   | 4   | Ability to Add Users                            |
| Requirement-21   | 4   | Ability to Remove Users                         |
| Requirement-22   | 5   | Ability for edits to be made by admin           |



### Traceability Matrix - Use Cases

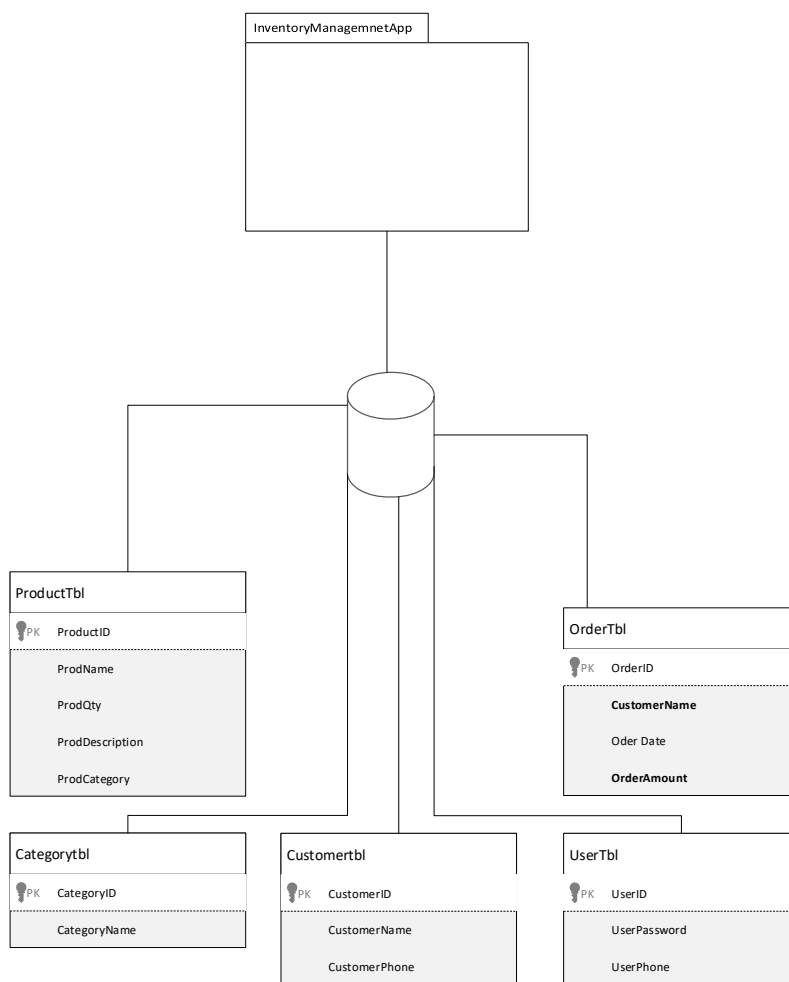
| Use Case Number | Description  |
|-----------------|--|
| UC1             | The business will need to be able to store Customer information such as names, phone number and the Customers Unique ID  |
| UC2             | The business will need to be able to store Product Information information such as the product name, quantity of the product, product ID, descriptions of the product and the category in which the product belongs. |
| UC3             | Any user when using the application should be able to log into the app, verifying they are an active user  |
| UC4             | When an Order is entered into the app, the inventory on the order should deduct from the overall inventory on hand quantity  |
| UC5             | Customer Information can be edited or deleted where applicable   |
| UC6             | Product Information can be edited or deleted where applicable  |
| UC7             | An order should be able to take an order number and order amount   |
| UC8             | Category Information can be edited or deleted where applicable, and a category should be able to be created at a user's discretion   |
| UC9             | A user with appropriate permission will be able to add a new user or remove an existing user where applicable  |
| UC10            | A system administrator should be able to make edits or adjustments anywhere in the system  |

### Traceability Matrix

| Req't    | PW | UC1 | UC2 | UC3 | UC4 | UC5 | UC6 | UC7 | UC8 | UC9 | UC10 |
|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| REQ-1    | 5  | X   |     |     |     |     |     |     |     |     |      |
| REQ-2    | 4  | X   |     |     |     |     |     |     |     |     |      |
| REQ-3    | 5  | X   |     |     |     |     |     |     |     |     |      |
| REQ-4    | 5  |     | X   |     |     |     |     |     |     |     |      |
| REQ-5    | 4  |     | X   |     |     |     |     |     |     |     |      |
| REQ-6    | 5  |     | X   |     |     |     |     |     |     |     |      |
| REQ-7    | 4  |     | X   |     |     |     |     |     |     |     |      |
| REQ-8    | 5  |     | X   |     |     |     |     |     |     |     |      |
| REQ-9    | 5  |     |     | X   |     |     |     |     |     |     |      |
| REQ-10   | 5  |     |     |     | X   |     |     |     |     |     |      |
| REQ-11   | 5  |     |     |     |     | X   |     |     |     |     |      |
| REQ-12   | 3  |     |     |     |     | X   |     |     |     |     |      |
| REQ-13   | 5  |     |     |     |     |     | X   |     |     |     |      |
| REQ-14   | 3  |     |     |     |     |     | X   |     |     |     |      |
| REQ-15   | 3  |     |     |     |     |     |     | X   |     |     |      |
| REQ-16   | 3  |     |     |     |     |     |     | X   |     |     |      |
| REQ-17   | 5  |     |     |     |     |     |     |     | X   |     |      |
| REQ-18   | 3  |     |     |     |     |     |     |     | X   |     |      |
| REQ-19   | 2  |     |     |     |     |     |     |     | X   |     |      |
| REQ-20   | 4  |     |     |     |     |     |     |     |     | X   |      |
| REQ-21   | 4  |     |     |     |     |     |     |     |     |     | X    |
| REQ-22   | 5  |     |     |     |     |     |     |     |     |     | X    |
| Max PW   |    | 5   | 5   | 5   | 5   | 5   | 5   | 3   | 5   | 4   | 5    |
| Total PW |    | 14  | 23  | 5   | 5   | 8   | 8   | 6   | 10  | 4   | 9    |

## System Architecture and System Design

The Warehouse Management App has a relatively simple system architecture. It is a client server pattern type of architecture and will provide services to multiple users on client-side components. A client requests information from the server (database) and based on inputs the database is updated with related information.



This software will run on mobile devices that are on a secure Wi-Fi network with the business, but the database is housed in a central location within the organization. This is an event driven system; users can go in an order they see fit in order to execute what they need to do. However, products need to exist before orders can be placed etc. but this is all done with initial setup. This system does not time out as users may be logged on all day, they must choose to sign out.

This system will run on any mobile device that allows java programs to execute, once installed they can utilize the system as needed. A minimum resolution of 769px — 1024px is required. The device does not need to have a minimum hard drive size but must have 4gb of ram for processing. Minimum network bandwidth is 12-25 Mbps.

## User Interface Specification

The initial mockups were proven to work successfully with two things missing that I wanted to see changes to. I decided to add search functionality to the Categories, Products, and Customers screens, for ease of use with for the user. I also have added a log in screen for administrators separate from a normal user, the main difference here being that an admin is the only person that can add or remove a user, so we see that change on the home page where user is not an option for the regular user or worker but is an option when accessed from the admin screen. As I was somewhat ahead of the group my screenshots look similar with slight changes since I did not sue sketches originally.

### Design of Tests

Log in as an admin – checking button functionality and incorrect log in functionality.

Create a user – Verifying User populates in the User List (database)

Delete a user – Verifying User removed from User List (database)

Log in as a user - checking button functionality and incorrect log in functionality.

Create a Category – Verifying Category is populated in the Category List (database)

Edit A Category – Verifying Category is updated with edits made (database)

Delete a Category – Verifying Category is removed from the Category list (database)

Go Home

Create a Customer – Verifying Customer is populated in the Customer List (database)

Edit A Customer – Verifying Customer is updated with edits made (database)

Delete a Customer - Verifying Customer is removed from the Customer list (database)

Go Home

Create a Product - Verifying Products is populated in the Product List (database)

Edit A Product – Verifying Products is updated with edits made (database)

Delete a Product - Verifying Products is removed from the Products list (database)

Go Home

Enter an Order

Ensure Order number is auto generated

Print and Order (functional only, no SSRS report currently)

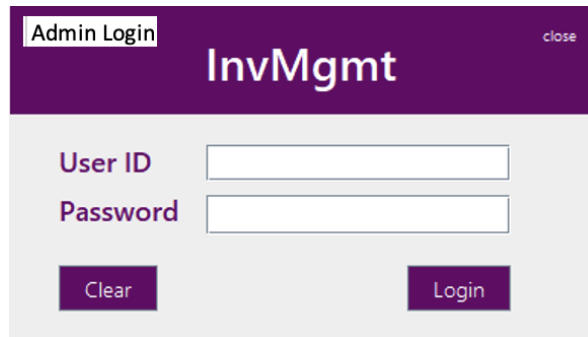
Add the Order – Ensure Order is updated to Orders List

Check Value on Customer – Ensure Order quantity and value of Order is applied to Customer Screen

Check Qty on hand for Products to Ensure qty, is deducted after order placed.

These tests will cover all functionality of the application to ensure all parts are working together. As this is a stand-alone application the only integration testing we will be performing is to ensure the printers on the local network can be seen when the print functionality is being used. With the tests above we also will prove out the functionality of the database update to ensure the code is properly communicating with the database to ensure accuracy of information.

## Updated Log in User Interface



The image shows a modal dialog box titled "Admin Login" with a "close" button in the top right corner. The dialog has a purple header bar with the text "InvMgmt" in white. Below the header, there are two input fields: "User ID" and "Password". At the bottom of the dialog, there are two buttons: "Clear" and "Login".

The User will input their User ID into the User ID field (1 click)

The User will then click into the password field and enter their password (1 click)

The User will then click the "Login" button to Login. (1 click)

The user will be automatically redirect to the Home Form upon successful login.

If the Login fails a pop up will appear and the user must click to acknowledge the failed log in.

Updated an Admin Login Button to the Log in Screen in a centrally located area on the page.

**Commented [AP5]:** Log in button has been changed to have similar visual appearance as the Login and Clear buttons

Effort:

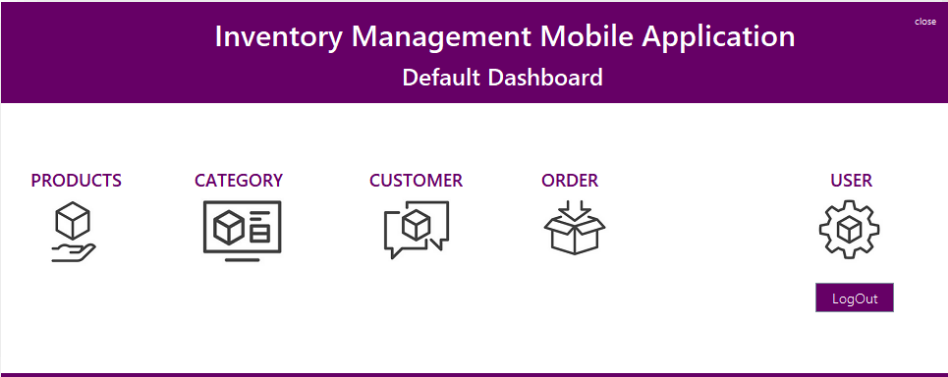
Best Case: 3 clicks

Worst Case: 4 clicks per login attempt (-1) when successful

successful login =  $4x-1$

unsuccessful login =  $4x + 1$  (assumption of clicking close)

Updated Home Form User Interface



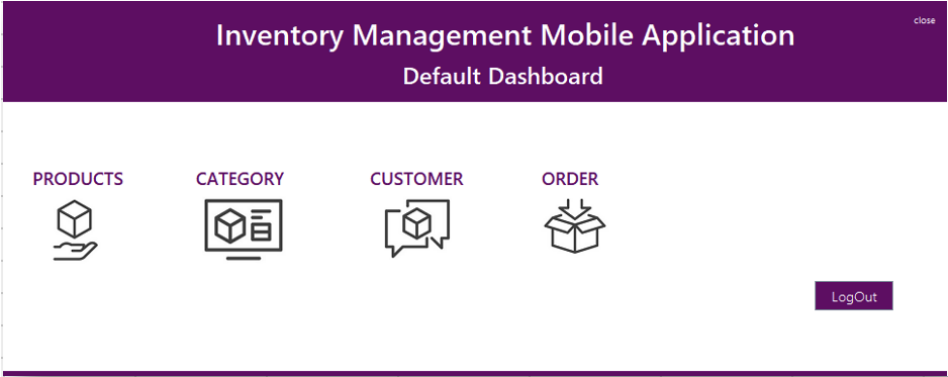
The user may select an icon to enter (1 click)

The user may select to log out (1 click)

The user may select to close the application (1 click)

Effort: 1 click

Screen when not an Admin





## Updated Manage Categories User Interface

Inventory Management Mobile Application  
Manage Categories

CategoryID

CategoryName

Add Edit Delete Home

search

Category List

| CategoryID | CategoryName |
|------------|--------------|
|------------|--------------|

The User can "Add" a Category by:

Entering the desired Category ID into the "CategoryID" field (1 click)

Entering the desired Category Name into the "CategoryName" field. (1 click)

Clicking the "Add" Button (1 click)

Acknowledging the successful addition of the Category by Clicking "OK" (1 click)

Effort: 4 Clicks

The User can "Edit" a Category by:

Selecting the desired record from the Category table (1 click)

Entering the desired edited Category ID into the "CategoryID" field (1 click)

Entering the desired edited Category Name into the "CategoryName" field. (1 click)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the Category by Clicking "OK" (1 click)

Effort: Edit on one field 5 Clicks, Edit on both fields 6 Clicks

The User can "Delete" a Category by:

Selecting the desired record from the Category table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the Category by Clicking "OK" (1 click)

The User can go "Home" from the Category page by:

- Clicking the "Home" Button (1 click)

- User will be redirected to the Home Form

- Effort: 1 Click

The User can Search the database for the Category they are looking for

- Click on Search (1 click)

- Enter the text and click submit (1 click)

- Effort: 2 Clicks

## Updated Manage Customers User Interface

Inventory Management Mobile Application

Manage Customers

CustomerID

Name

Phone

Add

Edit

Delete

Home

# of Orders

Order Amount

search

Customer List

| CustomerID | Name | Phone |
|------------|------|-------|
|------------|------|-------|

The User can "Add" a Customer by:

Entering the desired Customer ID into the "CustomerID" field (1 click)

Entering the desired Name into the "Name" field. (1 click)

Entering the phone number into the "Phone" field. (1 click)

Clicking the "Add" Button (1 click)

Acknowledging the successful addition of the Customer by Clicking "OK" (1 click)

Effort: 5 Clicks

The User can "Edit" a Customer by:

Selecting the desired record from the Customers table (1 click)

Entering the desired edited Customer ID into the "CustomerID" field (1 click)

Entering the desired edited Name into the "Name" field. (1 click)

Entering the desired edited phone number into the "Phone" field. (1 click)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the Customer by Clicking "OK" (1 click)

Effort: Edit on one field 4 Clicks, Edit on all fields 6 Clicks

The User can "Delete" a Customer by:

Selecting the desired record from the Customer table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the Customer by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the Customer page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

The User can Search the database for the Customer they are looking for

Click on Search (1 click)

Enter the text and click submit (1 click)

Effort: 2 Clicks

## Updated Manage Orders User Interface

**Inventory Management Mobile Application**  
Manage Orders

**Customer List**

| CustomerID | Name | Phone |
|------------|------|-------|
|------------|------|-------|

**Released Products**

| ProductID | Name | Quantity | Description | Category |
|-----------|------|----------|-------------|----------|
|-----------|------|----------|-------------|----------|

Price:  Quantity:  **Add to Order**

**Order ID:**   
**Customer:**   
**Date:**

**Add Order** **View Order** **Home**

| # | Product | Quantity | Price | Total |
|---|---------|----------|-------|-------|
|---|---------|----------|-------|-------|

**Total: \$** **Print**

The User can "Add Order" an Order by:

- Selecting the Customer from the Customer table (1 click)
  - Enter a Unique Order ID into the "Order ID" field. (1 click)
  - Selecting the Product(s) from the Products table. (1 click)
  - Entering the price of the product. (1 click)
  - Entering the quantity of the product to apply to the order (1 click)
  - Click the "Add to Order" button. (1 click)
  - Click the "Add Order" Button (1 click)
  - Acknowledging the successful addition of the Order by Clicking "OK" (1 click)
- Effort: Best Case: 8 Clicks Worst Case: Infinite

The User can "Print" an Order by:

- Clicking the "Print" button when products are in the Order table
  - Select the Print on the pop up. (1 click)(assumption of printer defaults being set)
- Effort: 2 Clicks

The User can go "Home" from the Order page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

## Updated Manage Users User Interface (Only accessible to Admin)

Inventory Management Mobile Application  
Manage Users

close

Username

Password

Phone

Add Edit Delete Home

User List

| Name | Password | Phone |
|------|----------|-------|
|------|----------|-------|

The Admin can "Add" a User by:

- Entering the desired Username into the "Username" field (1 click)
  - Entering the desired Password into the "Password" field. (1 click)
  - Entering the phone number into the "Phone" field. (1 click)
  - Clicking the "Add" Button (1 click)
  - Acknowledging the successful addition of the User by Clicking "OK" (1 click)
- Effort: 5 Clicks

**Commented [AP6]:** Updated as Admin can only make changes

The Admin can "Edit" a User by:

- Selecting the desired record from the User table (1 click)
  - Entering the desired edited Username into the "Username" field (1 click)
  - Entering the desired edited Password into the "Password" field. (1 click)
  - Entering the desired edited phone number into the "Phone" field. (1 click)
  - Clicking the "Edit" Button. (1 click)
  - Acknowledging the successful edit of the User by Clicking "OK" (1 click)
- Effort: Edit on one field 4 Clicks, Edit on all fields 6 Clicks

**Commented [AP7]:** Updated as Admin can only make changes

The **Admin** can "Delete" a User by:

Selecting the desired record from the User table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the User by Clicking "OK" (1 click)

Effort: 3 Clicks

**Commented [AP8]:** Updated as Admin can only make changes

The **Admin** can go "Home" from the User page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

**Commented [AP9]:** Updated as Admin can only make changes

The **Admin** can Search the database for the Product they are looking for

Click on Search (1 click)

Enter the text and click submit (1 click)

Effort: 2 Clicks

**Commented [AP10]:** Added search feature for Admin to search Users



Updated Manage Products User Interface

close

Inventory Management Mobile Application

Manage Products

ProductID

Name

Quantity

Description

Category

Add

Edit

Delete

Home

search

Released Products

| ProductID | Name | Quantity | Description | Category |
|-----------|------|----------|-------------|----------|
|-----------|------|----------|-------------|----------|

- The User can "Add" a Product by:
- Entering the desired Product ID into the "ProductID" field (1 click)
  - Entering the desired Name into the "Name" field. (1 click)
  - Entering the quantity into the "Quantity" field. (1 click)
  - Entering the description into the "Description" field. (1 click)
  - Selecting the Category from the Drop Down. (2 clicks)
  - Clicking the "Add" Button (1 click)
  - Acknowledging the successful addition of the User by Clicking "OK" (1 click)
- Effort: 8 Clicks

- The User can "Edit" a Product by:
- Selecting the desired record from the Products table (1 click)
  - Entering the desired Product ID into the "ProductID" field (1 click)
  - Entering the desired Name into the "Name" field. (1 click)
  - Entering the quantity into the "Quantity" field. (1 click)

Entering the description into the "Description" field. (1 click)

Selecting the Category from the Drop Down. (2 clicks)

Clicking the "Edit" Button. (1 click)

Acknowledging the successful edit of the User by Clicking "OK" (1 click)

Effort: Edit on one field 4 Clicks, Edit on all fields 9 Clicks

The User can "Delete" a User by:

Selecting the desired record from the Products table (1 click)

Clicking the "Delete" Button (1 click)

Acknowledging the successful deletion of the User by Clicking "OK" (1 click)

Effort: 3 Clicks

The User can go "Home" from the User page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

The User can Search the database for the Product they are looking for

Click on Search (1 click)

Enter the text and click submit (1 click)

Effort: 2 Clicks

## Project Plan

Timeline:

Weeks 1-2:

- Framework verification and structure development of the system

This has been completed, Netbeans and MySQL have been installed

Weeks 3-4:

- Create the system interface, connect to the MySQL

Complete

Weeks 5-7

- Create base functionality of inventory quantity, inventory value, and inventory level adjustment communicating with the database.

Complete

Week 8

- Record initial demo for the Test Company

Complete

Weeks 9-11

- Rely on user feedback to adjust the overall implementation.

Weeks 12-14

- Develop tests cases and SOP for client testing and acceptance purposes.

Week 15

- Product demo delivery

## References

Java T Point. (n.d.). *Java Swing Tutorial*. Retrieved from Java T Point: <https://www.javatpoint.com/java-swing>

Oracle. (n.d.). *Connecting to a MySQL Database*. Retrieved from Apache Netbeans: <https://netbeans.apache.org/kb/docs/ide/mysql.html>