



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

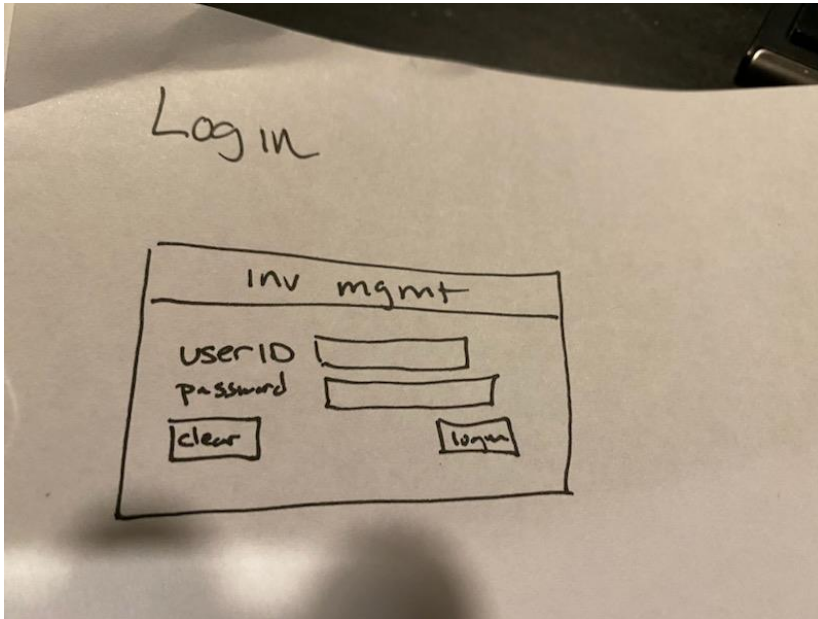
Requirement-8	Medium	Ability to provide order amount
Requirement-9	High	Ability to have product category
Requirment-10	Medium	Ability to Edit and Delete Category
Requirement-11	High	Ability to Add/Remove Users
Requiriement-12	High	Ability for edits to be made by admin

Nonfunctional Requirements (FURPS)

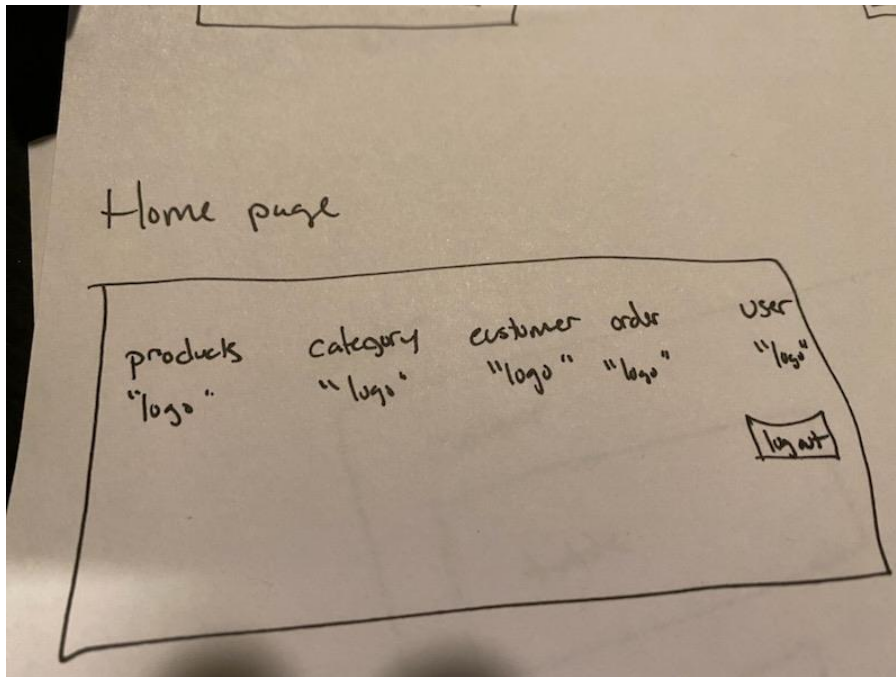
Usability	This encompasses how the app looks, consistency of look throughout, documentation of the app and responsiveness to the user actions
Reliability	This encompasses the general availability of the app, and if it often goes down due to failure. If failure does occur, the length of time and extent 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.

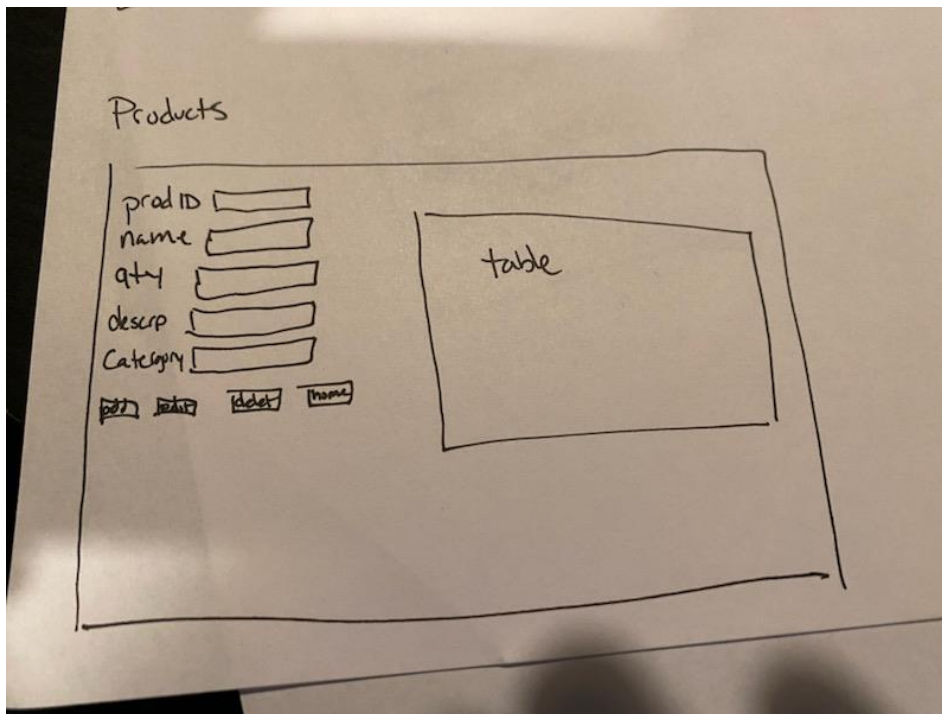
A [Login Page](#) that requires a user ID and a Password with a button that will clear information and a button for logging in.



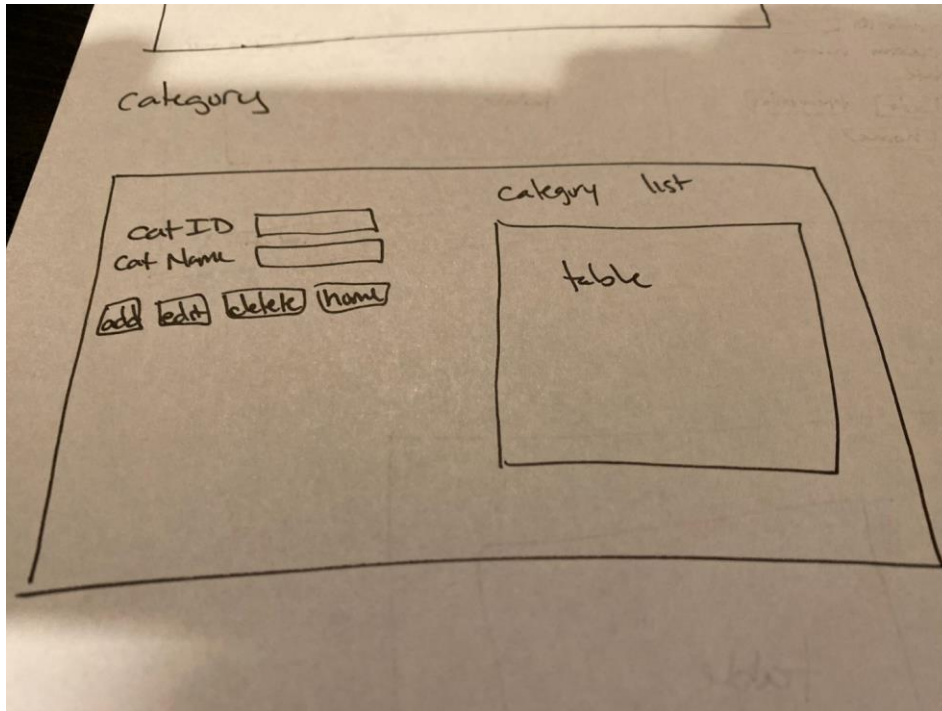
A [Home Page](#) for the user to select an option. Options need to include Products, Category, Customer, Order and User and a button for logging out.



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.

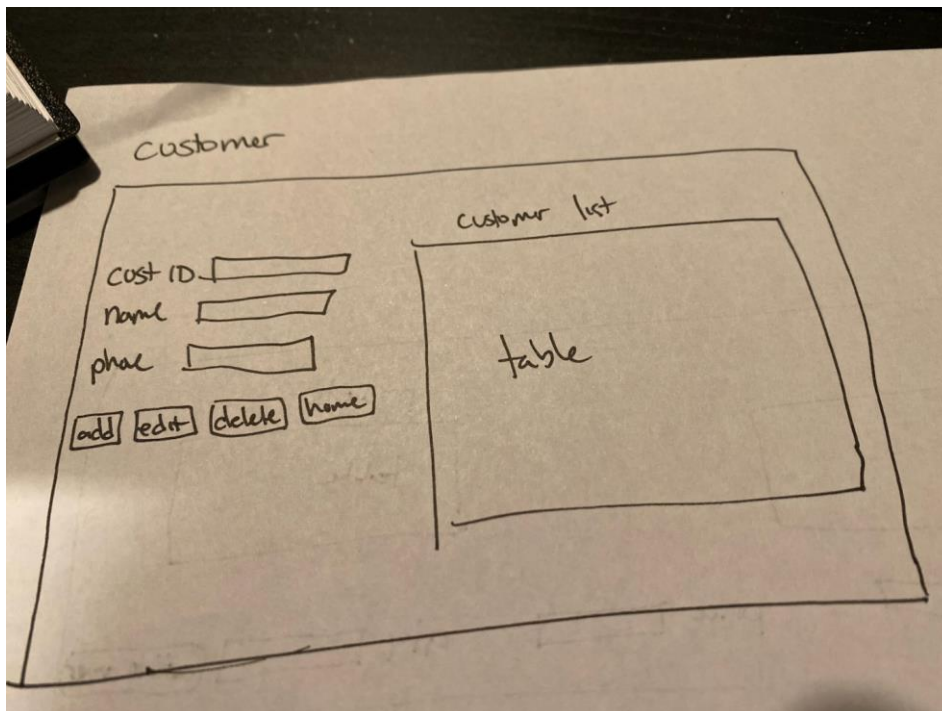


A [Category Page](#) that must include field for the Category ID, and Name with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home' that will function respectively.

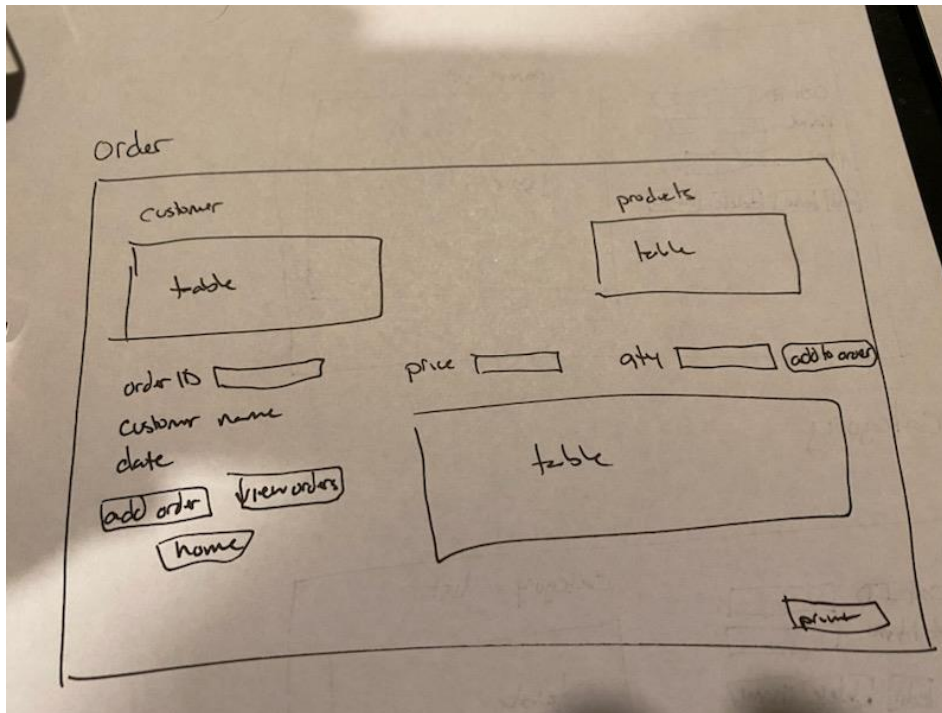


A [Customer Page](#) that must include field for the Customer ID, Name, and Phone number with a table displayed of this information as well. Buttons need to be available to 'Add', 'Edit', 'Delete', and take the user 'Home' that will function respectively. A customer can be a user, however not all users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

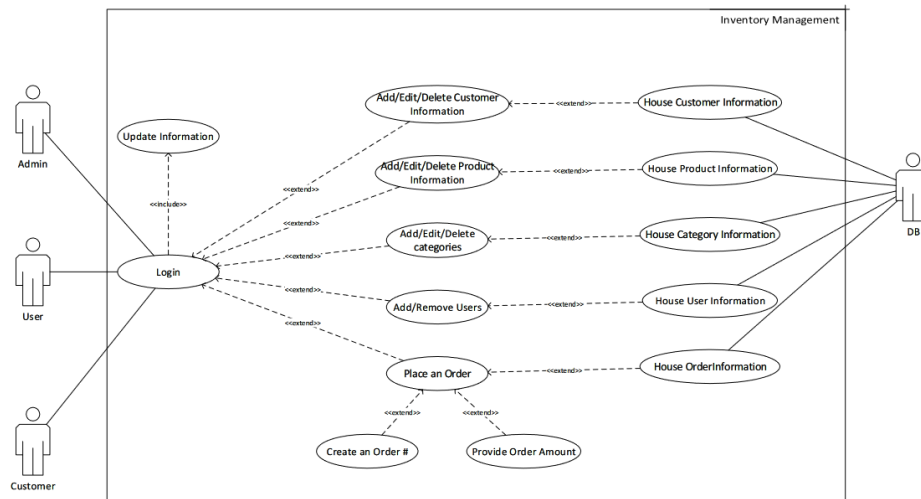
Customer

- 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)

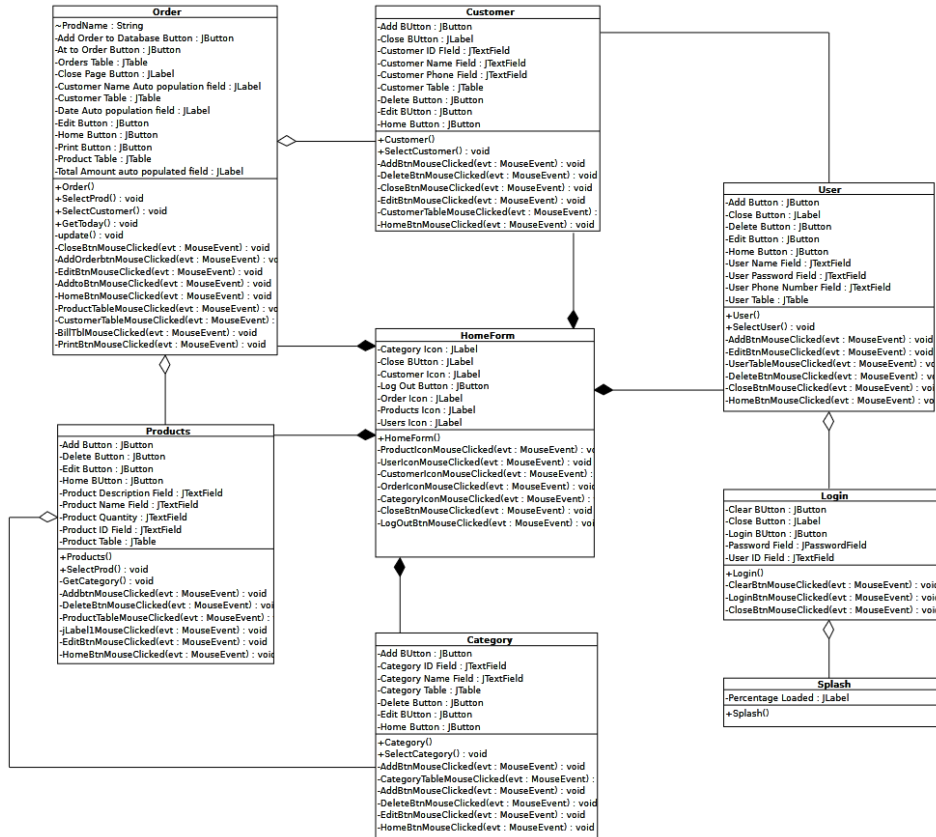
System

- 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

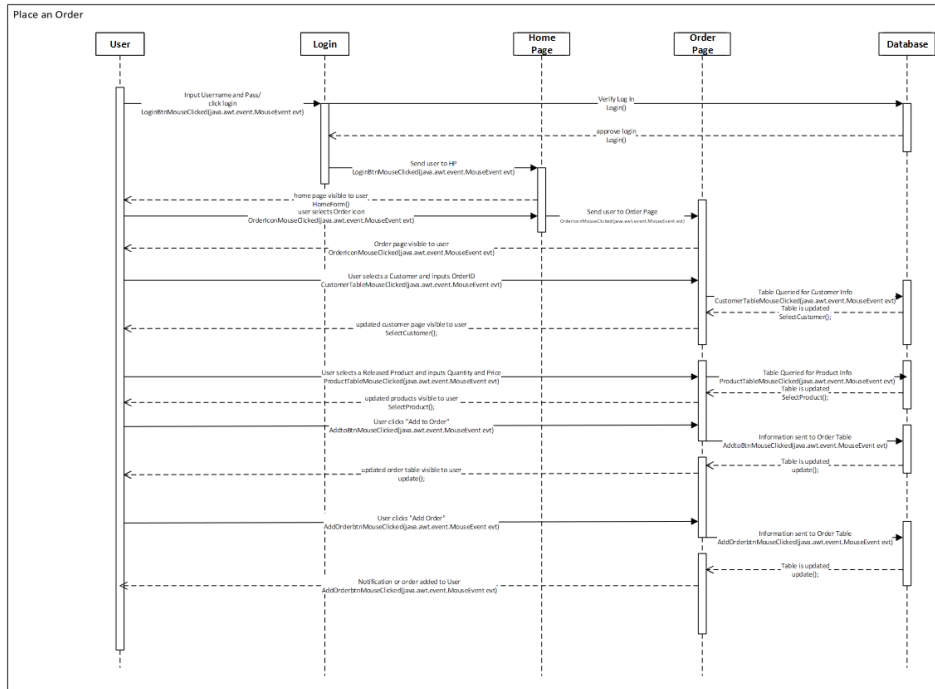


Class Diagram

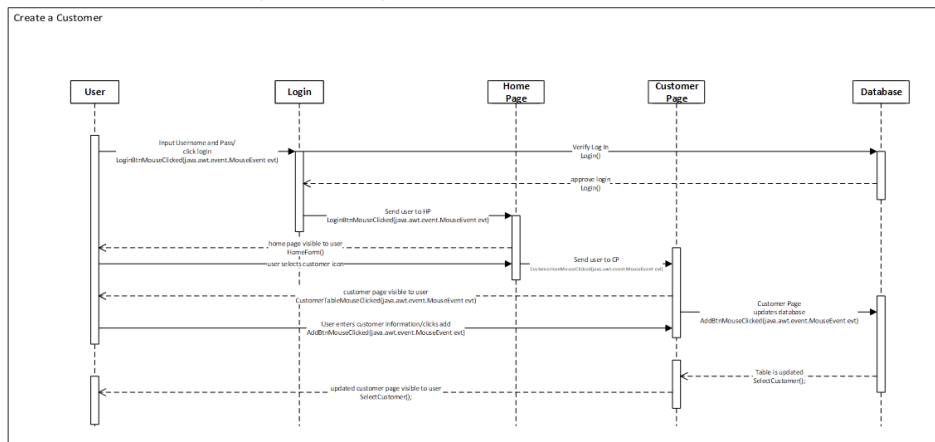


System Sequence Diagrams

Place an Order Sequence Diagram



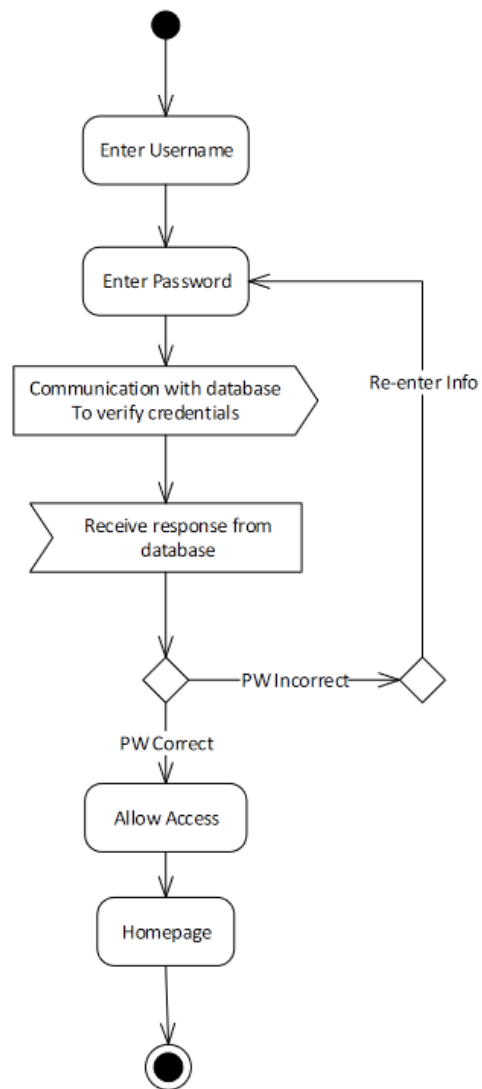
Create a Customer Sequence Diagram



Activity Diagrams

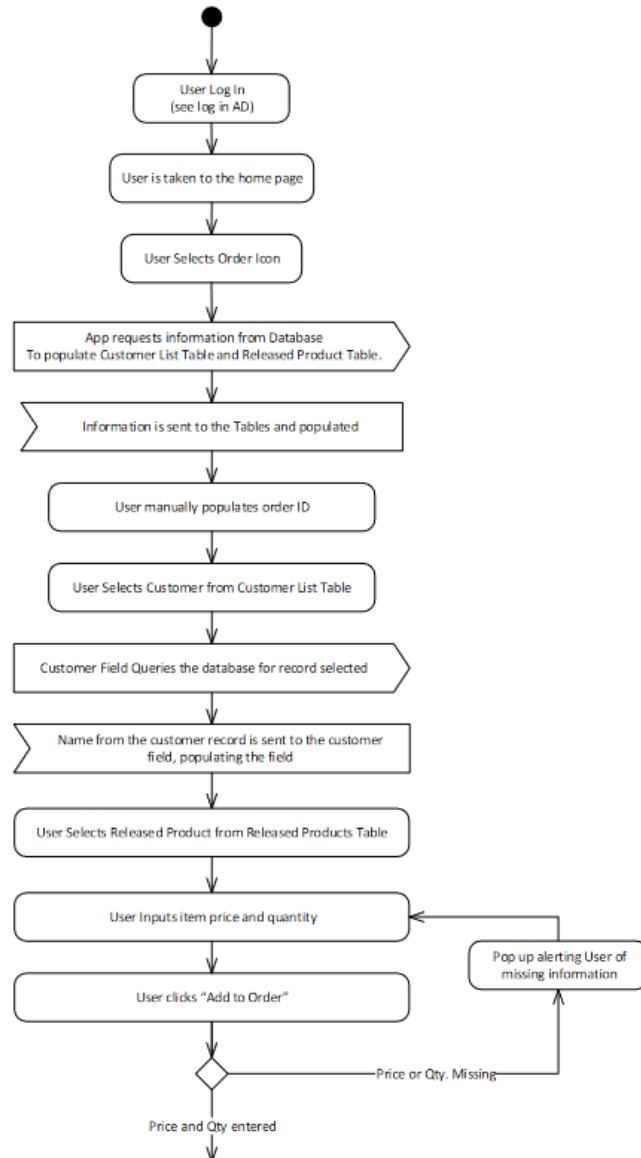
Log in Activity Diagram

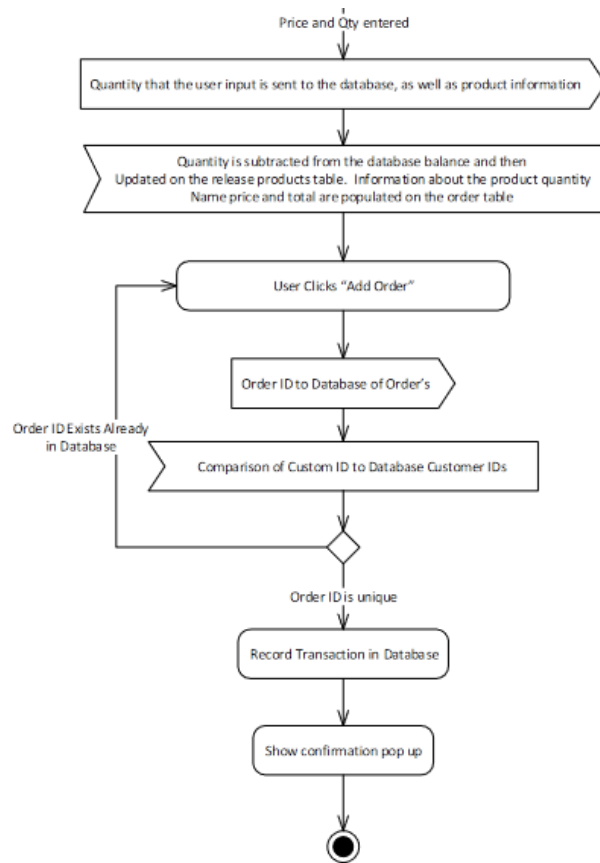
Log In



Place an Order Activity Diagram

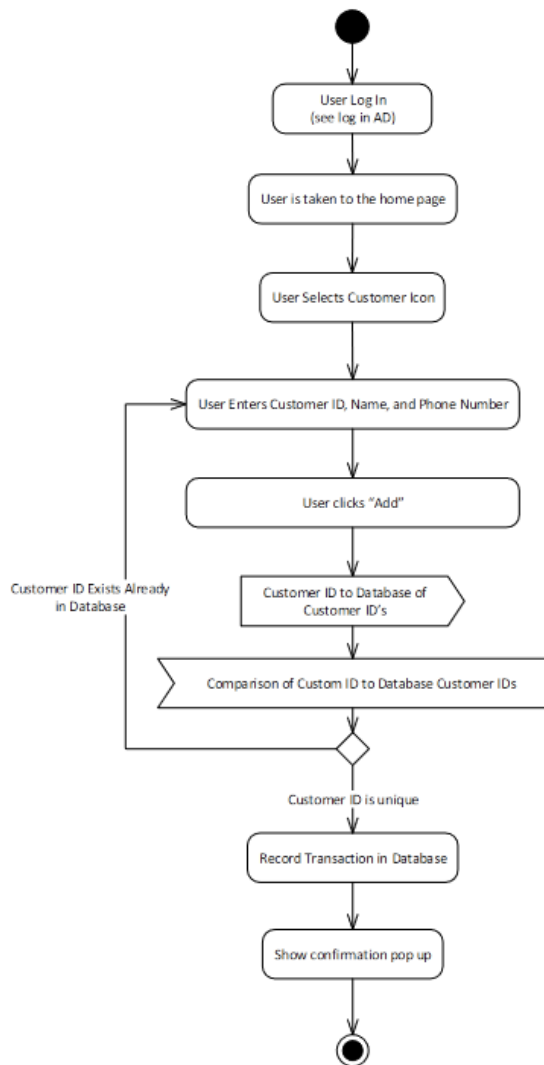
Place and Order





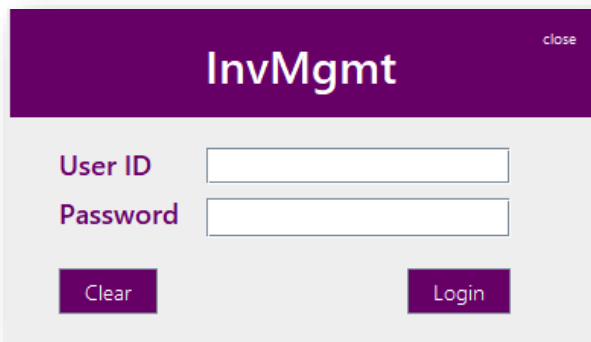
Create a Customer Activity Diagram

Create a Customer



User Interface Specification

Log in User Interface



The mockup shows a login window titled "InvMgmt" with a "close" button in the top right corner. Below the title bar, there are two input fields: "User ID" and "Password". Below the "Password" field, 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:

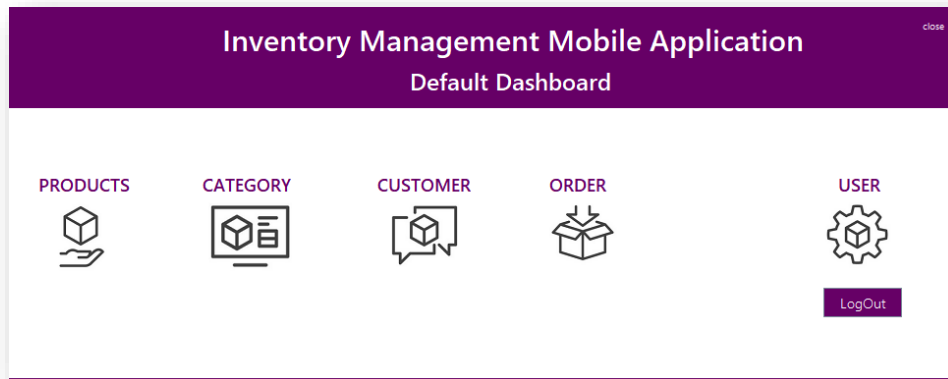
Best Case: 3 clicks

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 two main sections. On the left, there is a form for adding or editing customer information, with fields for 'CustomerID', 'Name', and 'Phone'. Below these fields are four buttons: 'Add', 'Edit', 'Delete', and 'Home'. On the right, there is a table titled 'Customer List' with columns for 'CustomerID', 'Name', and 'Phone'. Below the table, there are two buttons labeled '# of Orders' and 'Order Amount', each with a red '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

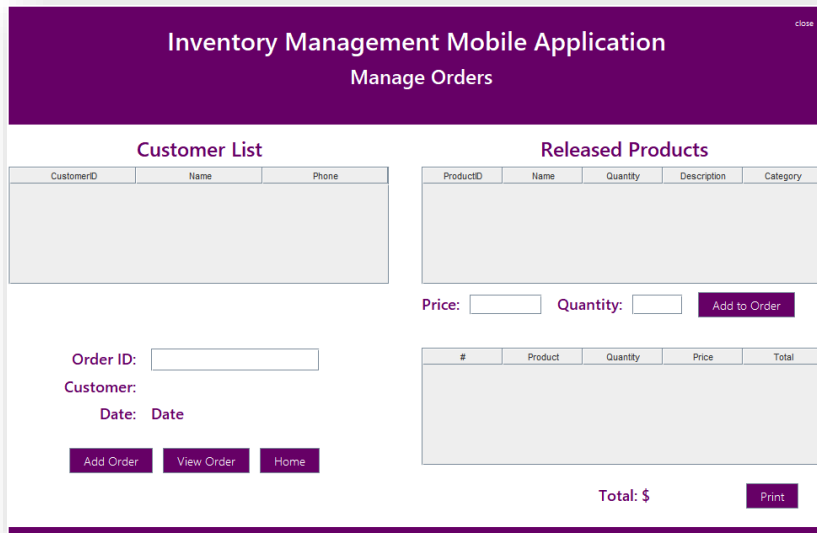
The User can go "Home" from the Customer page by:

Clicking the "Home" Button (1 click)

User will be redirected to the Home Form

Effort: 1 Click

Manage Orders User Interface



The interface is titled "Inventory Management Mobile Application" with a subtitle "Manage Orders". It features a purple header bar. Below the header, there are two main sections: "Customer List" and "Released Products".

Customer List

CustomerID	Name	Phone
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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

ProductID
Name
Quantity
Description
Category

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

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>

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