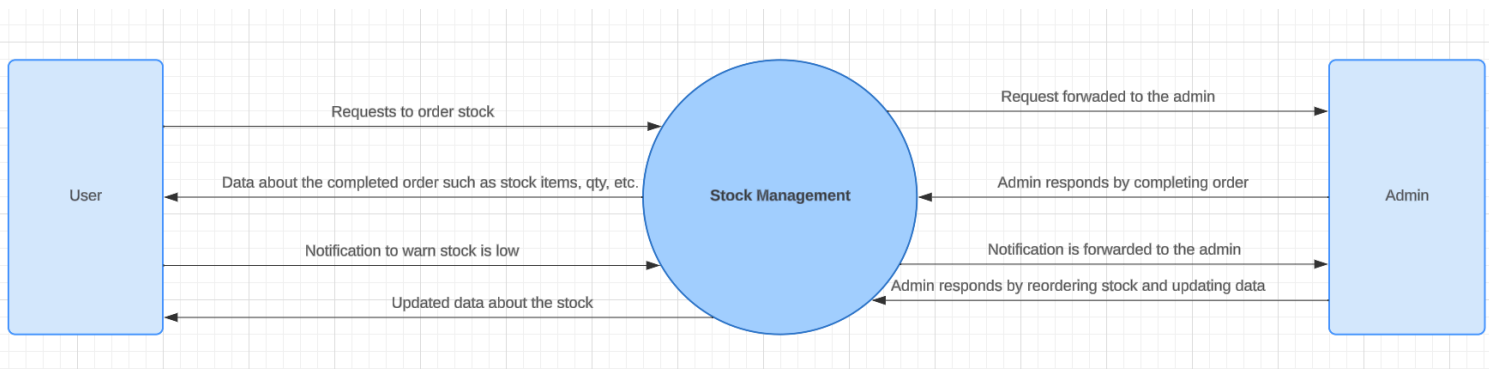## Criterion B: Design

This document has been divided into 3 sections:
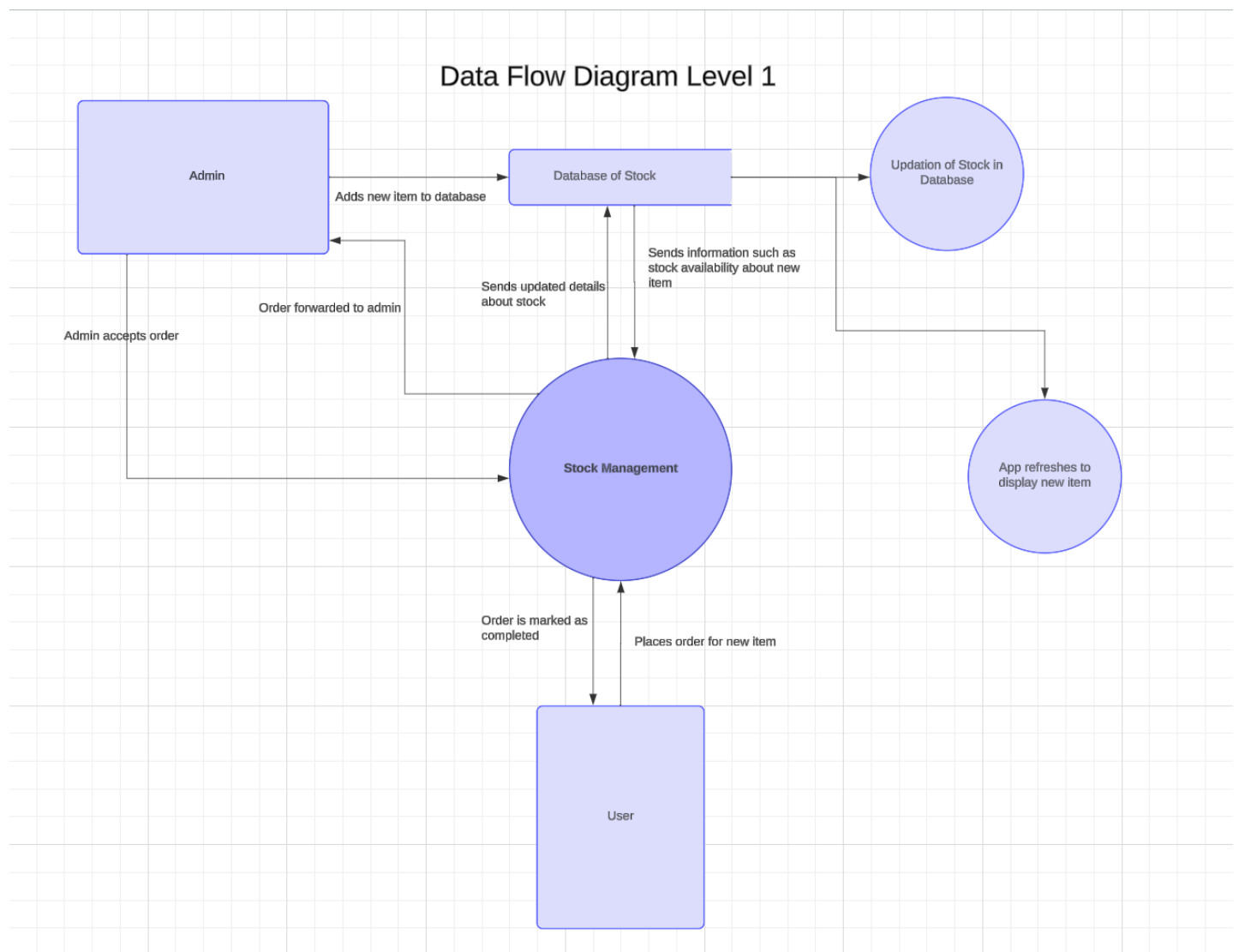
- Overall Structure

- Internal Structure

- Test Plan

Overall Structure:
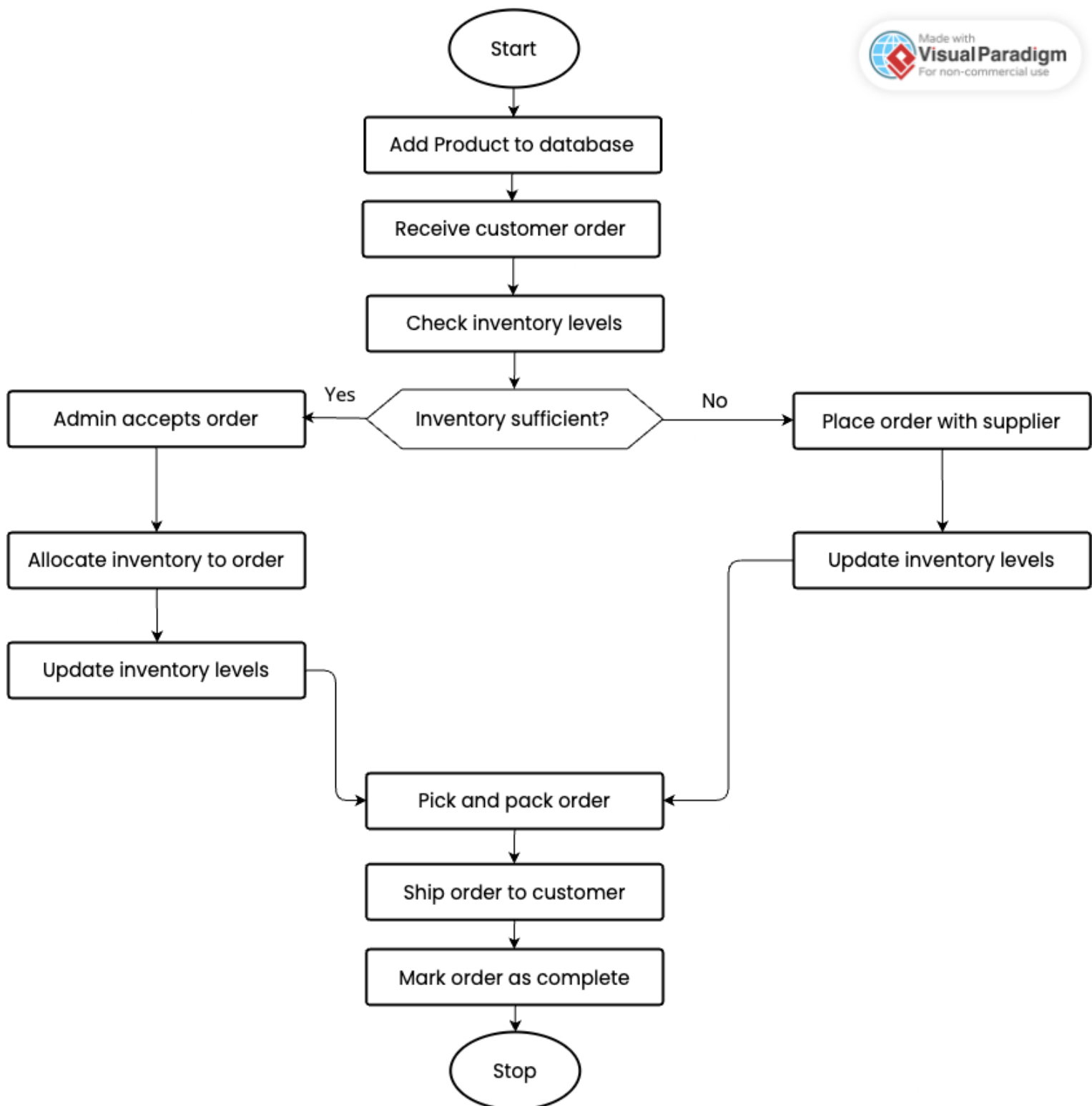
DFD Level 0:

DFD Level 1:

System Flowchart(Overview of the proposed solution):

UML- Unified Modelling Language:
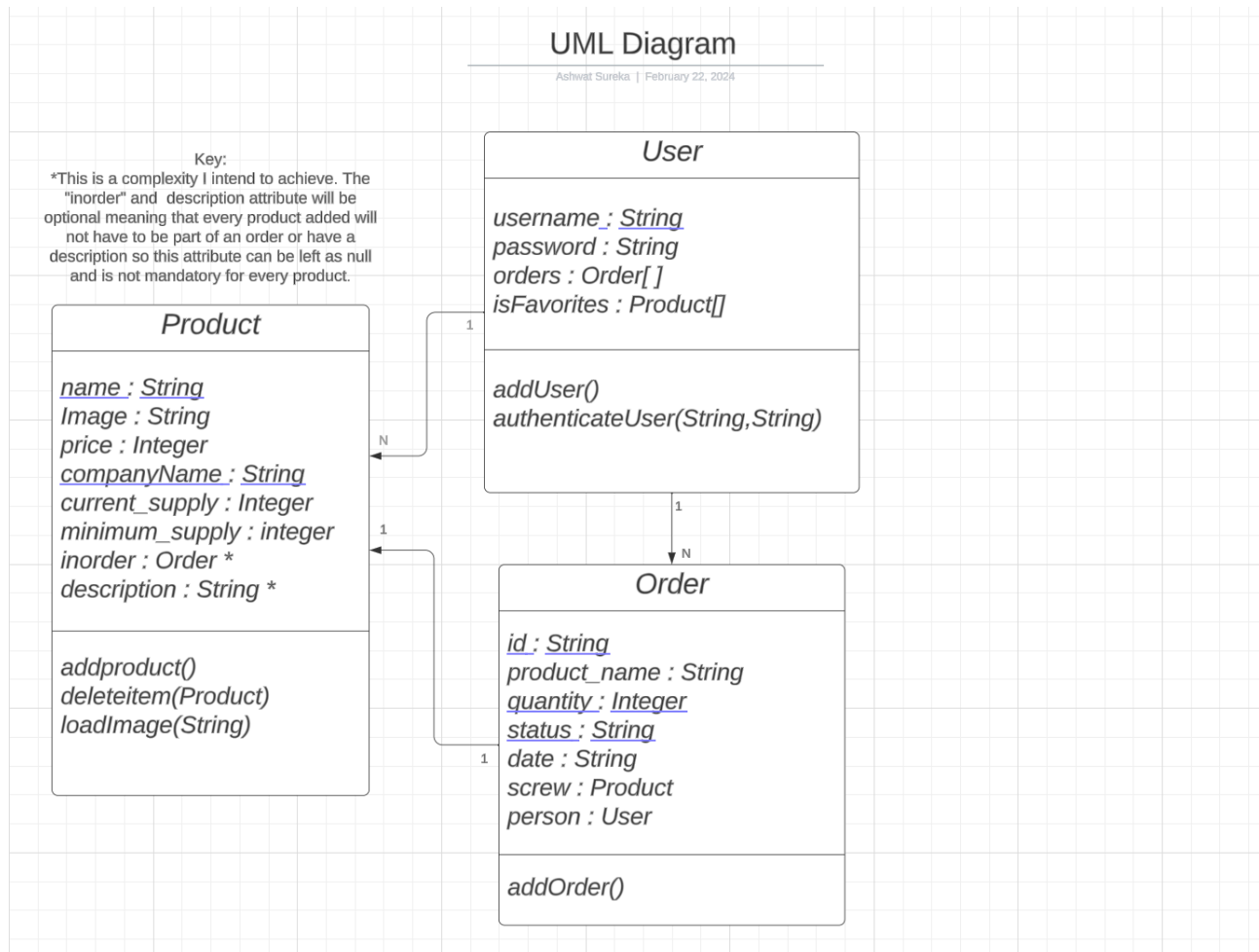
Different Layers of the Software (Development):
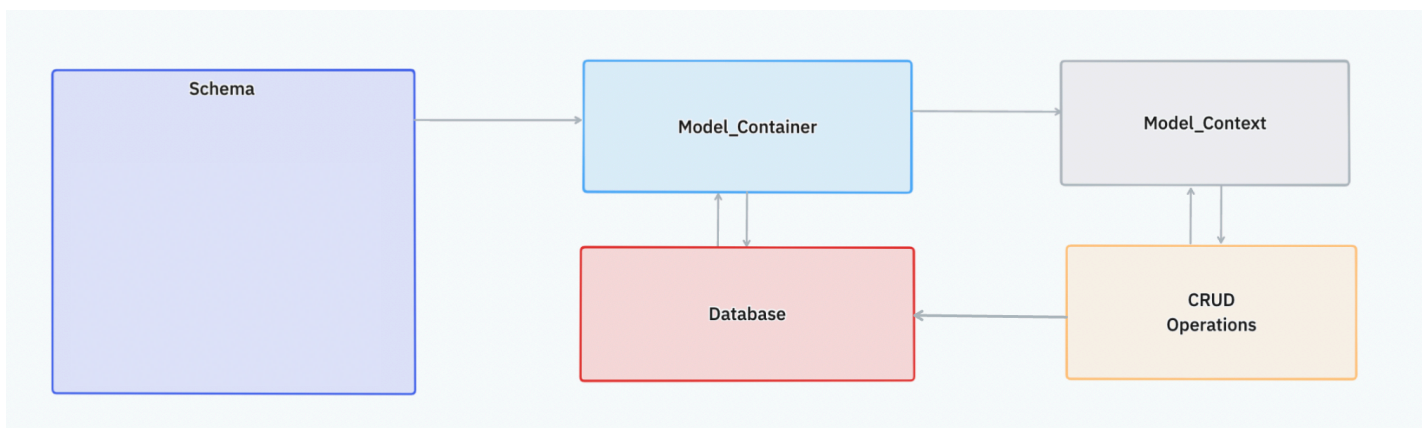
Internal Structure:

Screen Layouts:

I-Login Page

Login Page(Same for Both)

Enter Username

Enter Password

Sign In Button (Go to home page)

Sign Up Button (Go to Sign Up Form)

Purpose: To securely login to the app with a username and password. And if account is not created then display sign up form.

II- Sign Up Form for customers

Sign Up Form

Enter Username

Enter new Password

Confirm new Password

Create Account Button

Cancel Button (Go to login page)

Purpose: Allows a new customer to create a new account with a unique username and secure password.

IIIa)-Home Screen Layout for Admin

Home Page(For admin)

Profile Page

Orders Page

Add Product Form

Product List

Product#1   Company#1

Product#2   Company#2

Product#3   Company#3

Product#4   Company#4

Update Supply Form
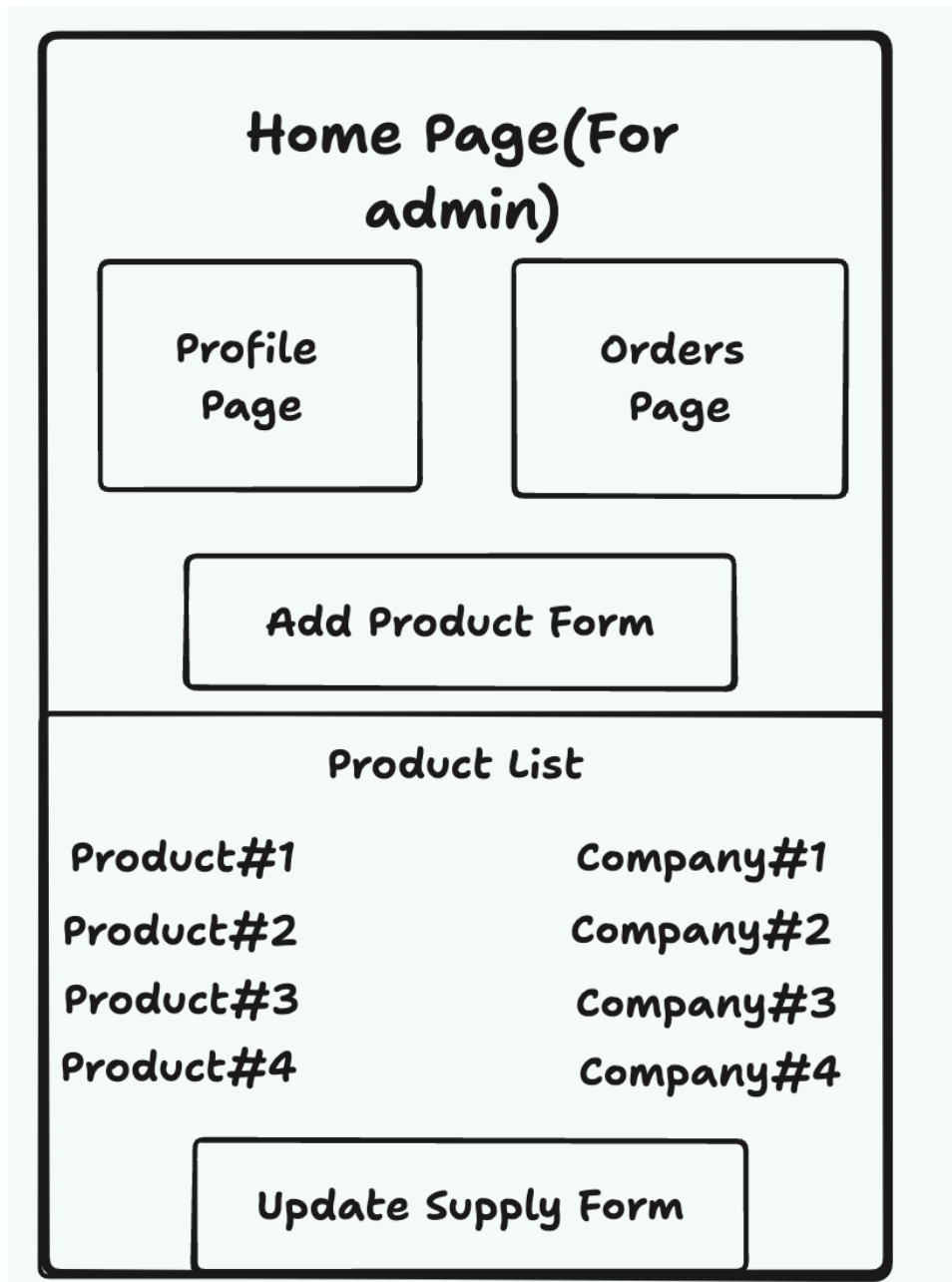
Purpose: Guides admin to different views, including the ones only accessible by admin

IIIb) - Home Screen Layout for Customers
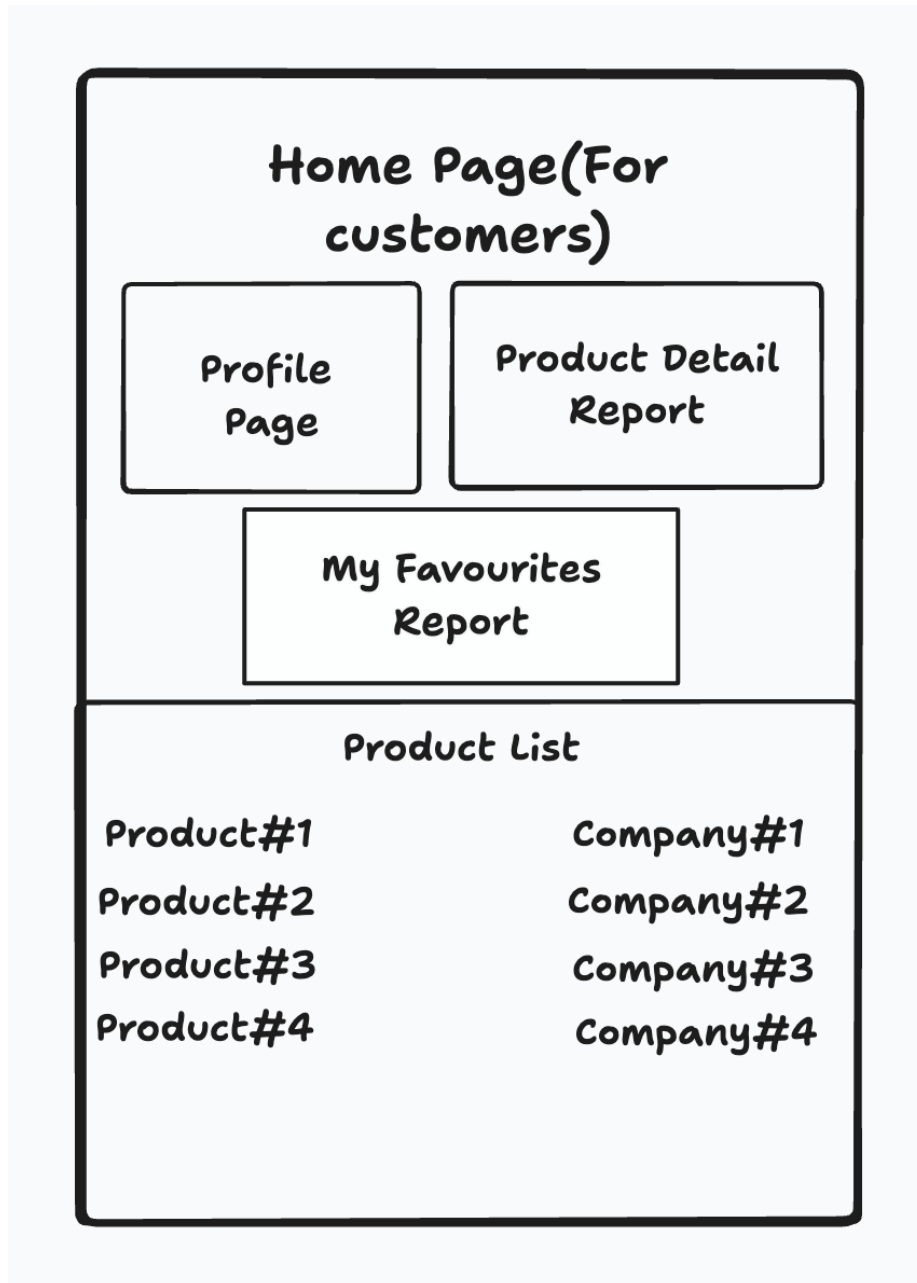
Purpose: Guides customers to different views, including the ones only accessible by customers

IV- My Favourites Report (Customers Only)

My Favourites Report

Home Page
(Back Button)

Product Name

Company Name

Product Price

Product Current Supply

Product Detail Report

Purpose: Shows the list of products that the customer has added to his favourites. Allows user to track supply of the product they want.

V-Profile Page

Profile Page(Same for Both)

Username

Home
Page
(Back Button)

Your Orders Report

Product#1 Quantity#1   Status

Product#2 Quantity#2   Status

Product#3 Quantity#3   Status

Purpose: Shows the list of past and pending orders, along with the user id. Allows user to log out.

VI-Orders Page(Admin Only)

Orders Page

Home Page
(Back Button)

Completed Orders Report

Product#1   Quantity#1   Date

Product#2   Quantity#2   Date

Pending Orders Report

Product#1   Quantity#1   Accept Button

Product#2   Quantity#2   Accept Button

Product#3   Quantity#3   Accept Button

Purpose: Shows the completed and pending orders and allows admin to accept an order.

VII-Add Product Form(Admin Only)

Add Product Form

Home Page
(Cancel Button)

Product Name (TextField)

Company Name (TextField)

Minimum Supply (TextField)

Current Supply (TextField)

Confirmation Button

Purpose: Allows admin to add a product for selling to customers

VIII-Update Supply Form(Admin Only)

Update Supply Form

Home
Page
(Back Button)

Product Name

Company Name

⊖ Current Supply Counter ⊕

Purpose: Allows admin to update supply after reordering, in order to maintain stock records.

IX-Product Detail Report(Customer Only)

Product Detail Report

Home Page
(Cancel Button)

Product Name

Company Name

Product Price

Place Order Form

Purpose: Allows customer to view more details about the product such as price. Allows access to form for placing order for product.

X-Place Order Form(Customer Only)

Place Order Form

Product Name

⊖ Order Quantity ⊕

Price

Confirm Order
Button

Product Detail
Report
(Cancel Button)

Purpose: Allows customer to place order for selected product.

Create Account Process

```
Start
```

var username: String
var newPassword: String
var confirmPassword: String

INPUT username
INPUT newPassword
INPUT confirmPassword

User presses button
"Create new account"

Is username=""
OR
newpassword=""
OR
confirmPassword=""

Yes → PRINT "Enter valid credentials"

No ↓

Does another account
with username entered,
already exists?

Yes → PRINT "An account with this username already exists."

No ↓

Does newPassword !=
confirmPassword?

Yes → PRINT "Passwords do not match"

No ↓

Is confirmPassword less
than 8 characters?

Yes → PRINT "Password is too short"

No ↓

Create new account using function
addUser()

```
Stop
```

Refer to screen II

Placing Order Process

```
┌─────────────┐
│    Start    │
└─────────────┘
       │
       ▼
┌──────────────────────┐
│   var user: User     │
│   var product: Product│
│   var quantity       │
│   var totalPrice     │
└──────────────────────┘
       │
       ▼
/ INPUT product.name /
/ INPUT user.name    /
/ INPUT quantity     /
       │
       ▼
┌────────────────────────────────┐
│ totalPrice=quantity*product.price│
└────────────────────────────────┘
       │
       ▼
/ User presses button /      ◇ Is quantity==0? ◇ ──Yes──▶ / PRINT "You cannot place order with 0 items" /
/ "Confirm order"     /              │
                                    No
                                     │
                                     ▼
                        ┌──────────────────┐
                        │    var order     │ ──▶ ◇ Is quantity > product.current_supply? ◇ ──Yes──▶ / PRINT "Your order has been placed however currently item is unavailable, so order may take time. Sorry for the inconvenience." /
                        └──────────────────┘              │
                                                         No
                                                          │
                                                          ▼
                                          / PRINT "Your order has been placed." /
                                                          │
                                                          ▼
                                                   ┌──────────┐
                                                   │   Stop   │
                                                   └──────────┘
```


Refer to screen X

Proposed Forms:

Form name	Purpose and Explaination	Validation Check
Add Product Form	Allows the admin to enter a new product for sale. Asks for product details such as name, company_name, price, etc. (Highlighted in Screen VII)	Presence Check, Integer Check
Place Order Form	Allows the customer to place a new order for a product. Asks for order_quantity and product_name. (Highlighted in screen X)	Presence Check, Integer Check
Update Supply Form	Allows the admin to update the supply of a product after reordering. Asks for current_supply and product_name. (Highlighted in screen VIII)	Presence Check, Integer Check
Sign Up Form	Allows the customer to create a new account for logging into the app. Asks for username and password.(Highlighted in screen II)	Length check, Presence Check

Proposed Tables:

Table Name	Purpose and Explaination	Relationship
Product Table	Used to store records of products and has the following fields- product_name, company_name, price, current_supply, min_supply, image, inorder	One to One relationship with order table
User Table	Used to store records of users and has the following fields- user_name, password, orders	One to many relationship with order table
Order Table	Used to store records of orders and has the following fields- id, product_name, quantity, date, screw, status, person	Many to one relationship with user table

One to one relationship with product table |

Proposed Queries:

Query Name	Purpose and Explaination	App Screen where query will be used
New Account Query	When a new account is created, the list of accounts already created is accessed to make sure no 2 accounts are created with the same username.(Success Criterion 7)	Sign Up View
Orders Query	Accesses all orders including past ones to show the user the status of all orders. It helps in order tracking for customers and the admin. (Success criterion 11)	Profile View
User Authentication Query	Used for authentication of password while logging into the app. (Success criterion 7)	Log In View
Search Query	Facilitates searching for products by using product name and company name. (Success criterion 12)	Table View

Proposed Reports:

Report Name	Purpose and Explaination
Product Detail Report	Shows the customer more details about the product when a product is selected.(Highlighted in Screen IX)
Orders Report	Shows the admin all the orders made by customers along with other details of the order. The report is customisable so the admin can change the status of the order and the report will change accordingly. (Highlighted in Screen VI)
My Favorites Report	Shows the customer a customised report consisting of his/her favourite products. The customer can mark any product as their favourite and add it to this report. This report allows the customer to keep track of their favourite products and view more details about the product stock so that the customer can order when the product comes back in stock. (Highlighted in Screen IV)
Order Status Report	Shows the customer and admin the status of all their orders and other details about the order such as quantity purchased, product purchased, etc. It allows order tracking for customers so that they can estimate when their product might arrive and shows the admin which orders are pending since how long and which orders are completed. (Highlighted in Screen V)

Test Plan:

The actual outcome has been obtained after testing the product.

Test Name	Purpose and Explaination	Expected Outcome	Actual Outcome	Success Criteria
Account Creation Validation	Ensures that every time a new account is created the password needs to be minimum eight characters and username has to be new.	If user tries to create account without a password of eight characters or an existing username then alert displayed to warn user.	The alert displays at right time and account is not created if rules not followed.	7
Account Verification	Ensures that nobody can login with the incorrect password or username.	If invalid username entered then field will be highlighted as red and the same thing happens with the password.	The field becomes red whenever the user tries to login with invalid username and password	1,7
New Product Creation Validation	Ensures that admin is not allowed to create a new product without filling all the fields. Ensures no new product created has a negative price or supply.	If admin tries to enter a negative price or some fields are empty then alert is displayed to warn the admin.	The alert is displayed at the right time and product is not created.	2
Supply Validation	Ensures that a checkmark is displayed to the admin when a product's current supply is more than the minimum supply	If admin has sufficiently supplied a product then checkmark is displayed and it is displayed only to the admin.	The checkmark was only displayed to the admin and not the user. It was displayed at the right time.	5

Place Order Validation	Ensures that a non-zero digit is entered for quantity when an order is placed and by default the order status of the order is set to pending. Ensures that order is only placed when the stock is available to complete that order	If zero is entered as quantity when order is placed then alert is displayed to the customer to add items to the order. If non-zero digit is entered then order is placed and the status is set to "pending". If order is placed when stock is less than alert is displayed to customer to try again in sometime and if stock is available than order is placed and status is set to "pending".	The alert is displayed correctly and order is not created unless non-zero digit is entered. The alert is displayed correctly if the order quantity is more than the stock available and order is not placed.	8
Product Deletion Validation	Ensures that when admin tries to delete product then the product is removed from the database completely	If admin swipes right to bring up the delete action button and clicks on it then the product is deleted from the database and is no longer visible to the admin nor the customer	The product gets deleted whenever the admin swipes right and clicks on delete action button.	3
App Screen Visibility in different environments and modes of device	Ensures that all elements of any app screen such as- buttons, text labels, titles are clearly visible with their respective colours even if the phone is in light mode or dark mode or the colours of the screen are set to inverted.	All elements of each screen is able to be clearly viewable in every screen setting of the device.	All elements of each screen were able to be clearly viewed in every screen setting of the simulator of the device.	12

Order Tracking Sync	Ensures that the order status is the latest and updated for both stakeholders-admin and customer.	If admin marks order as completed on his account then the order status is marked as completed for the customer as well and vice versa.	The order status was changing appropriately for the admin and customer. Whenever admin updated the order status it was refreshed for the customer as well.	11
Search Bar Feature for products	Ensures that whenever a user searches for a product either by the product name or the company name then the product is made visible in a list according to what is typed on the search bar.	If admin or customer searches for a product based on the product name or company name the product is presented according to what is typed.	Whenever user searches for the product, the product catering to what is typed on the search bar is shown based on product name and company name.	10
Navigation Stacking of Screens	Ensures that whenever user navigates to new screens, he/she has an option to go to the previous screen by popping the current screen from the navigation stack.	If admin or customer tries to go to a new screen from the home page they are able to go back to the home screen. But if admin has come to the home page they cannot go back to the login page unless they logout.	Whenever a new screen is stacked above the home screen then a back button is visible to go back to the home screen. The user is not able to go back further from the home screen unless they log out to go back to the log in page.	12
Specialised Reports Creation	Ensures that custom reports such as order reports displayed to admin and product detail reports displayed to customers(Refer to screens IX and VI) are consistently displaying accurate and relevant data to user and is created every time user demands it.	If admin or customer tries to view a specialised report such as product detail report or an orders report then all relevant data is displayed to both stakeholders every time.	Whenever a user views a specialised report it contains all relevant and accurate details consistently.	4,9

Consistency of records across all accounts	Ensures that all orders are synced for the admin and the customer. The customer has the same order status as the admin.	All records in the database are consistent and are changing simultaneously for all user accounts	The backend for the app works as expected for all customer accounts and the admin account.	1,2,3,4,5,6,7,8,9, 10,11
	Ensures that all products added for sale by admin is displayed for all customers and when a product is deleted it is deleted for all customers			

Bibliography:

1. "Make Real • Tldraw." *Make Real • Tldraw*, makereal.tldraw.com/. Accessed 20 Oct. 2023.

2. "Supply Chain Management Flowchart." *Supply Chain Management Flowchart | Flowchart Template*, online.visual-paradigm.com/diagrams/templates/flowchart/supply-chain-management-flowchart/. Accessed 02 Nov. 2023.

3. "SWIFTDATA Stack: Understanding Schema, Container & Context." *SwiftyPlace*, 18 Oct. 2023, www.swiftyplace.com/blog/swiftdata-stack-understanding-containers. Accessed 23 Nov. 2023.

4. "Intelligent Diagramming." *Lucidchart*, lucidchart.com/. Accessed 14 Oct. 2023.