Merchant Monetary System

CS-262 Design Document

Project Supervisor

Mr. Samyan Qayyum Wahla

Group ID ($G11$)

Project Member

Syed Hashir	2021-CS-1
Kabir Ahmed	2021-CS-4
M. Hamad Hassan	2021-CS-33

Department of Computer Science
University of Engineering and Technology, Lahore
Pakistan

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Chapter 1

Project Description

The system is designed for a company that provides logistics (delivery of products to its client), product management (crud operations), and effective communication with their worker, clients, and vendors.

The company has its office, warehouse, and rider. It has a different contract with multiple firms to take the shipment from the vendors and store it in dedicated warehouses. The rider will take orders from the shopkeeper. Their order is received at the office, and the office will create the feasibility report according to their shopkeepers' needs and instructions generated for their warehouse manager to fulfill their order. The area-specific rider will receive an email about their order. The office will send a confirmation email to their shopkeeper.

There are a total of four actors in the system and two stakeholders. Their titles and roles are:

- **CEO:** The company's owner manages all the operations.
- **Employee:** They are assistants to CEO to help in company operations.
- **Warehouse Manager:** Received the instructions from the employee and ready the shipment for the rider, and managed other expenses.
- **Rider:** They take orders from different shopkeepers and deliver the product according to pre-subscribed routes defined by the system.

The stakeholder is:

- **Shopkeepers:** Getting the goods and services from the company.
- **Vendor:** The vendor will provide the products to the company.

This system is designed for one company and one CEO. CEO will be provided with already defined credentials. The CEO is responsible for creating accounts for all others actors. The CEO will provide a credential to the actors, and they will be able to update their credentials.

The first dedicated dashboard for the CEO, where they monitor all operations. The operations manage their workers, products, and expenses and send emails. The CEO is the only person in the system with access to all operations. CEO analyzes company operations, including the performance of their workers and inventory. The system will present the company expenditure report.

The second dashboard is for office employees. They have access to manage emails, shopkeepers' orders, vendors' shipments, and company expenses. The company's expenses are the CEO, rider, and warehouse salaries. The system will present the report of payment to the vendor and shopkeeper. An employee will enter all the shipments that the company receives. They add product identifiers.

The third dashboard is for the warehouse manager, who receives feasibility reports of office employees and prepares the order for the rider. The warehouse manager must record the labor used in preparing the order. It could provide the miscellaneous expenses of the warehouse, like electricity costs, etc. They can view the product and make suitable changes according to the requirements.

The fourth dashboard is for a rider, which is basically the communicator between the company and the shopkeeper. The rider is responsible for taking orders from the shopkeeper. Enter order details into the system. The riders will check the current orders assigned to them by the company. They will pick up the shipment from the warehouse and delivery them to the shopkeeper. The system will present the routes to the destination with the order detail. The rider received a specific amount of fuel to perform the operations. The prescribed fuel is calculated according to the formula. They can see all the products. The product will be sorted in any order. Search for a specific product from a wide range of available products. The system will deploy different sharp algorithms to access the desired date orders quickly. Able to place the order and view the detail of the order as well.

The system will present the report to the CEO according to the performance of their workers, expenditures, sales and profit, salaries, inventory report, riders' performance, shopkeeper and vendor payment, workers' report, individual warehouse report, and miscellaneous expenses. Like how many products are received in the warehouse, how many products are left, how many products are delivered to company clients, how many riders have done shipments, which rider performs most shipments, and which rider needs

to perform better. It also includes how many orders a shopkeeper placed and whether the company received the payment.

The email notification mechanism is embedded in the system, which helps the company communicate within and outside with other vendors and shopkeepers. After the rider has confirmed the order, the system will send an email to the company. The company will send the order details to the warehouse manager to prepare the shipment for the rider. The rider also received the email for the delivery of the order. The employee emails the CEO for any need of assistance with an issue. The warehouse manager and rider also mail to the company office for any assistance. In external communication, the client will receive a confirmation email from the system about their order. They also take assistance from the company with any issue.

All the data is stored in an effective data structure to extract the data according to the need of the system actor and stakeholder.

Chapter 2

Project Features

1. CEO is able to manage employees, warehouse manager, rider, and shopkeeper.
2. CEO and Employee manage product-related operations.
3. CEO will be able to analyze company operations.
4. Warehouse manager readies the shipment for the rider.
5. Rider delivered the shipment to their shopkeeper.
6. Riders are able to select the shortest route to reach the destination.
7. One user is able to notify other users through email.
8. Riders are able to view products and place an order.
9. System presents different reports that will be generated.

Chapter 3

Technology Stack

The requirement is to design, develop and test the system in a desktop application. The essential system tracks the following language and an Integrated development environment.

Language	C # (.net framework 4.8)
IDEs	Microsoft Visual Studio 2022

Chapter 4

Project Actors

There are a total of four actors in the system and two stakeholders. Their titles and roles are:

- **CEO:** The company's owner manages all the operations.
- **Employee:** They are assistants to CEO to help in company operations.
- **Warehouse Manager:** Received the instructions from the employee and ready the shipment for the rider, and managed other expenses.
- **Rider:** They take orders from different shopkeepers and deliver the product according to pre-subscribed routes defined by the system.

The stakeholder is:

- **Shopkeepers:** Getting the goods and services from the company.
- **Vendor:** The vendor will provide the products to the company.

Chapter 5

Use Cases

5.1 Use Case 1:Log In

Use Case ID	U01
Name	Login
Actor	CEO, Employee, Rider, Warehouse Manager
Description	The login screen will be presented. The actor will select theor role and enter their username and password. And click on the login button. The system will check for its validity. The system will present the respective dashboard.
Pre-Condition	The respective actor will initiate the system, and the login in form is presented.
Flow	Main Success Scenario (or Basic Flow): 1. Actor is ready to take identifiers. 2. Actor selects his/her role from the given list. 3. Actor enters his/her username. 4. Actor enters his/her password. 5. Actor clicks on the login button. Extensions (or Alternative Flows): *a. If forgot password button is clicked 1. U02 will initiate *b. If the exit button is clicked 1. System will close

Flow	2a. If the actor doesn't select his/her role. 1. Error Signal will be present. 3a. If the actor doesn't enter his/her username. 1. Error Signal will be present. 4a. If the actor doesn't enter his/her password. 1. Error Signal will be present. 5a. if the selected role doesn't exist with existing data 1. Error Signal will be present. 5b. if the entered username doesn't exist with existing data 1. Error Signal will be present. 5c. if the entered password doesn't exist with existing data 1. Error Signal will be present.
Post-Condition	Respective Dashboard will be presented

5.2 Use Case 2:Forgot Password

Use Case ID	U02
Name	Forgot Password
Actor	CEO, Employee, Rider, Warehouse Manager
Description	Already registered users can change their password. The actor selects their role and enters his username and password. Then the actor confirms their password and clicks on Update Button; their password will be changed.
Pre-Condition	User must be registered in the system. Forgot Password Form is presented
Flow	Main Success Scenario (or Basic Flow): 1. Actor is ready to enter the identifiers. 2. Actor selects his/her role from the given list. 3. Actor enters his/her username. 4. Actor enters his/her password. 5. Actor clicks on the login button. Extensions (or Alternative Flows): *a. If forgot password button is clicked 1. U02 will initiate *b. If the exit button is clicked 1. System will close 2a. If the actor doesn't select his/her role. 1. Error Signal will be presented. 3a. If the actor doesn't enter his/her username. 1. Error Signal will be present. 4a. If the actor doesn't enter his/her password. 1. Error Signal will be present.

Flow	5a. if the selected role doesn't exist with existing data 1. Error Signal wil be present. 5b. if the entered username doesn't exist with existing data 1. Error Signal wil be present. 5c. if the entered password doesn't exist with existing data 1. Error Signal wil be present. 5d. if the password doesn't match the password that the user confirmed 1. Error Signal wil be present.
Post-Condition	Respective Dashboard will be presented

5.3 Use Case 3:View Dashboard

Use Case ID	U03
Name	View Dashboard
Actor	CEO
Description	After Successful Logging in to this system by CEO, CEO dashboard will be shown. CEO is the main handler of our system. This interface provides CEO to perform multiple CRUD operations. He has all the authority to add, search, update and delete any information related to all actors and other entities. He is able to view and generate reports. He can send emails as well.
Pre-Condition	CEO must have an account and logged in to this system
Flow	Main Scenario: After Successful logging by a role of CEO, CEO Dashboard will appear He can now has all the authorities and can do multiple operations

5.4 Use Case 4:Detail of Account

Use Case ID	U04
Name	Detail of Account
Actor	CEO, Employee
Description	Respective Actors can view all the details of each user who have registered themselves on this system. They can filter out users with certain designation, certain attribute and can apply multiple filters to search out specific users. This provides ability to edit and delete (only CEO) selected users.
Pre-Condition	Select Account Details from Option Menu Strip on Top Left All users detail will automatically be displayed
Flow	Main Scenario: 1. Select Your desired Row for required operations 2. Click Delete Button at the bottom of the screen if you want to delete selected row respectively. 3. Clicking Edit Button will open a new interface I05 with selected row data. Alternate Flow: • If text filters are selected and word text area is empty 1. An Alert message of Empty input is entered • If delete button is pressed without selecting any row data 1. Exception will be handled and an exception error will be displayed to the user 2. User will remain on the same page • If Close Button is Clicked 1. CEO or Employee Dashboard will again open
Post-Condition	Data from selected row will be deleted or updated

5.5 Use Case 5:Update Account

Use Case ID	U05
Name	Accounts Detail
Actor	CEO, Employee
Description	Respective Actors can view all the details of each user who have registered themselves on this system in Account Details Screen. You can edit your desired row data by providing modified information related to that user.
Pre-Condition	Desired Row Must be selected Click Edit Button
Flow	Main Scenario: 1. Designation is already selected and non-editable 2. Already Available Data will be shown in their respective areas 3. Modify data entity of your choice 4. Click Update Account Button Alternate Flow: • If user don't provide all required information 1. Alert Message will be displayed. 2. System remain to same page • If password is not of length equal to or greater than 8 1. Password will not be changed • If password text and confirm password text not matched 1. Again error message will be displayed
Post-Condition	Selected Data will get modified

5.6 Use Case 6:Add Products

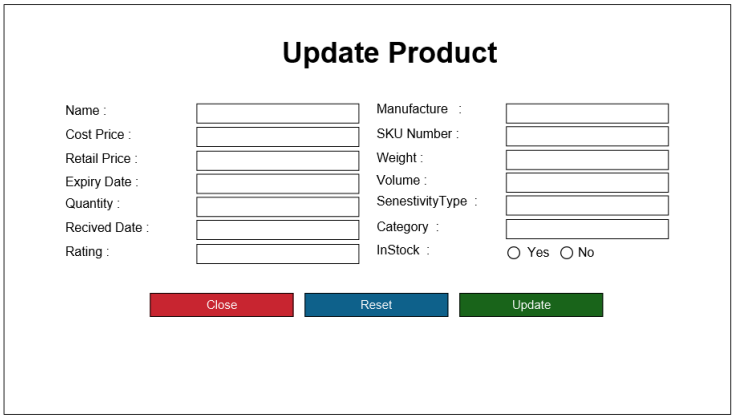
Use Case ID	U06
Name	Add Products
Actor	CEO, Employee
Description	These two concerned actors will add products in for their warehouses. They have to provide all details of the bought products and all the products will get entered in the system records.
Pre-Condition	Click on Add product Button on CEO or Employee Dashboard
Flow	Main Scenario: 1. Add Product Form will be displayed 2. It will ask the users for all details of products 3. Click on Add Button to add product details Alternate Flow: • If Reset is Clicked 1. All text and input areas will get clear 2. Control will remain on the same page • If Close is Clicked 1. Form will be closed 2. CEO and Employee Dashboard will again get displayed • If not necessary conditions are provided 1. Error Message will be displayed with a message
Post-Condition	Product will be added to system and will be sent to the selected Warehouse

5.7 Use Case 7(Products Details)

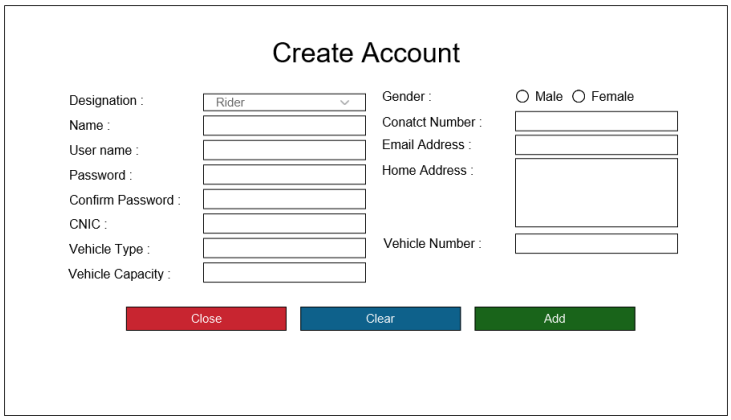
Use Case ID	U07
Name	Products Details
Actor	CEO, Employee
Description	This form allows the respective users to view products and perform certain operations on data. Certain operations include search with filters and edit and delete options (only for CEO) as well.
UI Interface in JUSTINMIND	
Pre-Condition	Click on Option on Top Left Corner Select products details

Flow	Main Scenario: 1. On Clicking product details, product forms will be displayed 2. Select Row from the data and click delete to delete and edit to edit selected item Alternate Flow: • If text filters are selected and word text area is empty 1. An Alert message of Empty input is entered • If delete button is pressed without selecting any row data 1. Exception will be handled and an exception error will be displayed to the user 2. User will remain on the same page • If Close Button is Clicked 1. CEO or Employee Dashboard will again open • If Clear Button is Clicked 1. All filters will get cleared
Post-Condition	Selected Row Data will get updated or deleted

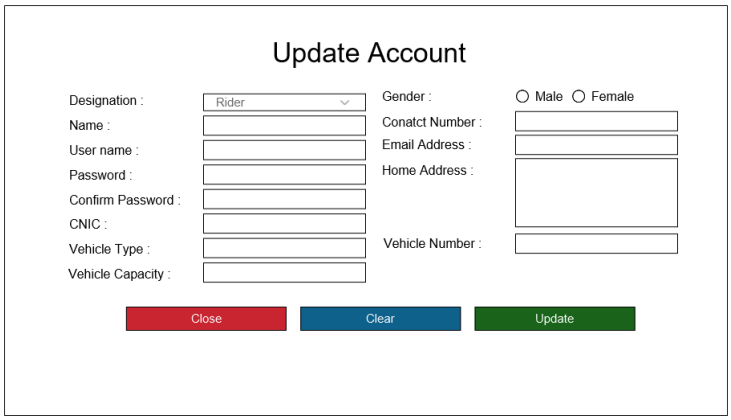
5.8 Use Case 8(Update Products)

Use Case ID	U08
Name	Update Products
Actor	CEO, Employee
Description	This form allows the respective users to edit products. Select the product from the data. Click Update in the I09. This form will get open. All previous product details will also be there in its respective fields. Modify Details according to your need.
UI Interface in JUSTINMIND	
Pre-Condition	Click on Update Button in U09
Flow	Main Scenario: 1. Clicking on Update Button will open this screen 2. Modify Details and Fill all areas 3. Click Update Button Alternate Flow: • If user don't provide all required information 1. Alert Message will be displayed. 2. System remain to same page • Clicking Reset 1. Clear the fields • Clicking Close Button 1. Close the Form 2. Return to Products Details UI
Post-Condition	Selected Data (Product) will get modified

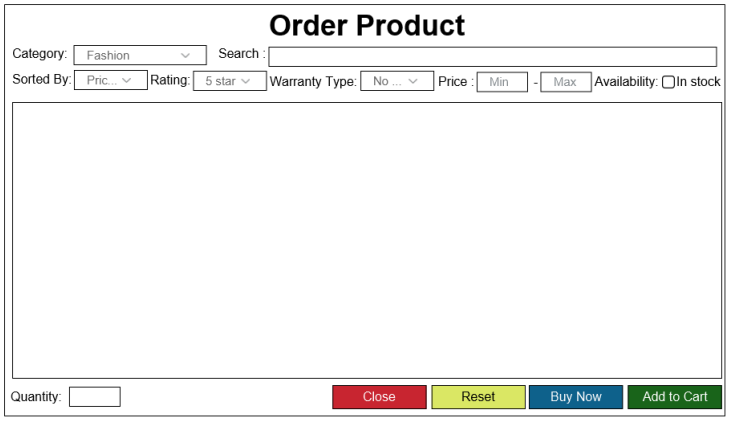
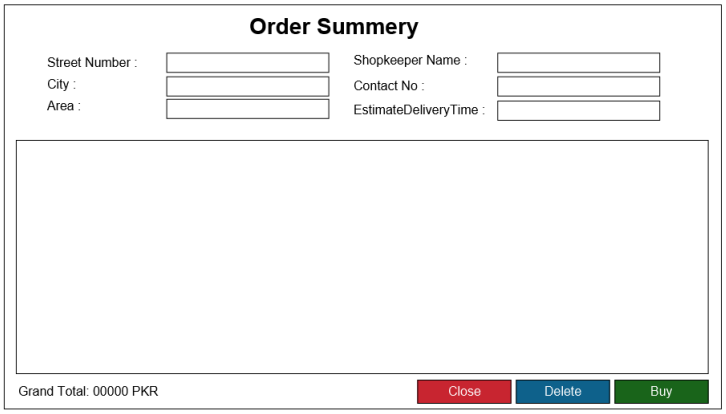
5.9 Use Case 9(Add Rider)

Use Case ID	U09
Name	Add Rider
Actor	CEO, Employee
Description	Irrespective of self-signup by rider himself, CEO and Employee can add rider details into their system. They have to provide his personal information and the information related to his vehicle. Rider himself will tell his details to Employee or his details will be provided to the CEO.
UI Interface in JUSTINMIND	
Pre-Condition	Click on Add Rider from CEO or Employee Dashboard
Flow	Main Scenario: 1. Designation will be selected automatically 2. Provide All Necessary personal information 3. Also Add Information Related to vehicle 4. Click on Add Button
Post-Condition	Rider Information will be Added to your system

5.10 Use Case 10(Update Rider)

Use Case ID	U10
Name	Update Rider
Actor	CEO, Employee, Rider
Description	Selecting Riders Details and then Clicking Update button after selecting row, will allow you to modify selected Riders Details. Change your required fields and Save the information
UI Interface in JUSTINMIND	
Pre-Condition	Click on Update in Rider Details after selecting rider
Flow	Main Scenario: 1. Designation will be selected automatically 2. Provide All Necessary personal information 3. Also Add Information Related to vehicle 4. Click on Add Button Alternate Flow: • Clicking Close Button 1. Return to Riders Details
Post-Condition	Rider Information will be modified and will get save to your system

5.11 Use Case 11(Order Product)

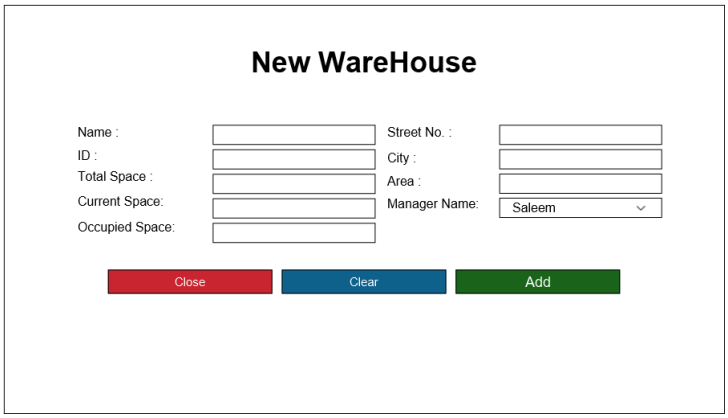
Use Case ID	U11
Name	Order Product
Actor	Rider
Description	Rider will approach the shopkeepers, take orders from them, recommend them some products and handed over the order to Employee in the company. Shopkeeper can be shown the summary of products he asked to buy
UI Interface in JUSTINMIND	 
Pre-Condition	Click on Order Product in the Rider Dashboard

Flow	Main Scenario: 1. At first all available products will be shown in the grid list 2. Rider will ask shopkeeper for the order 3. Rider will add the products by searching them and providing quantity 4. Select the product and click Add to Cart 5. After adding all the required products to cart, click Buy Now. 6. Order Summary Screen will open 7. Provide Necessary Details and Click Buy Alternate Flow: • Clicking Close Button 1. Return to Riders Dashboard • Clicking the Reset will reset the Cart
Post-Condition	Employee will get notified and order will be added to the system

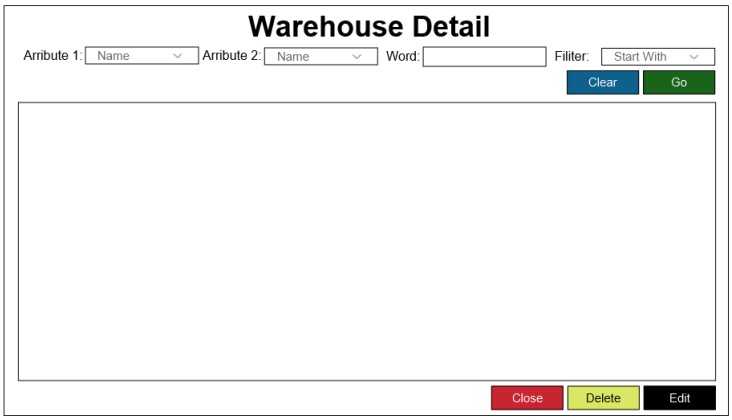
5.12 Use Case 12(Send Email)

Use Case ID	U12
Name	Send Email
Actor	Rider, CEO, Warehouse Manager, Employee
Description	To communicate with each other and notify about each activity, each user can contact with one another through email.
UI Interface in JUSTINMIND	
Pre-Condition	You must be a user of this system before
Flow	Main Scenario: 1. Click on Send Email from your dashboard 2. Type To 3. Type From 4. Subject 5. Email Body 6. Click Send Alternate Flow: • Clicking Close Button 1. Return to Respective Dashboard • Clicking the Reset will reset the Email
Post-Condition	Email will be send to the person specified in To Section

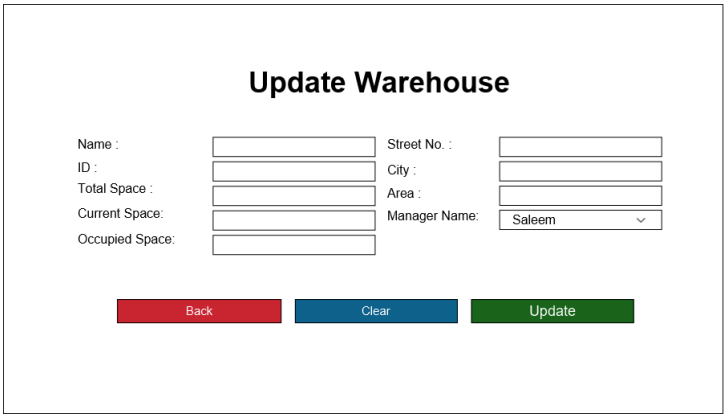
5.13 Use Case 13(New Warehouse)

Use Case ID	U13
Name	New Warehouse
Actor	CEO, Employee
Description	CEO and Employee Dashboard have an option to add a new warehouse for a company. Provide Necessary details like warehouse volume, capacity, etc and manager name as well.
UI Interface in JUSTINMIND	
Pre-Condition	Click on Add Warehouse in Employee and CEO Dashboard
Flow	Main Scenario: 1. New Warehouse UI screen will be displayed 2. Provide details of a new warehouse 3. Assign a New manager 4. Click on Add Alternate Flow: • Clicking Close Button 1. Return to Respective Dashboard • Clicking the Clear will reset the fields
Post-Condition	A new Warehouse will be added to the office

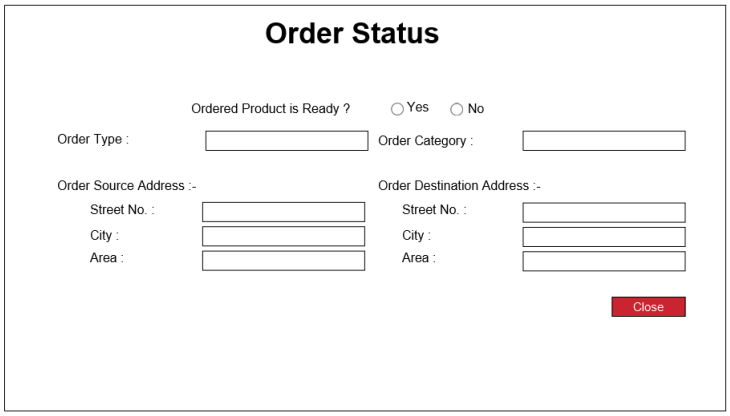
5.14 Use Case 14(View/Delete Warehouse)

Use Case ID	U14
Name	View/Delete Warehouse
Actor	CEO, Employee
Description	This form allows you to view all the warehouse with their details. Only CEO has the authority to delete warehouses. The concerned user can also filter out the warehouse details.
UI Interface in JUSTINMIND	
Pre-Condition	Click on Option in CEO or Employee Dashboard Click Warehouse details
Flow	Main Scenario: 1. Warehouse Details UI will appear 2. View Details 3. For deletion, select data row and click delete from below. Alternate Flow: • Clicking Edit Button 1. Will open a Edit Warehouse Form • Clicking Clear Button 1. Will reset the filters
Post-Condition	Detailed Warehouse data will be displayed or deletion occurs if any

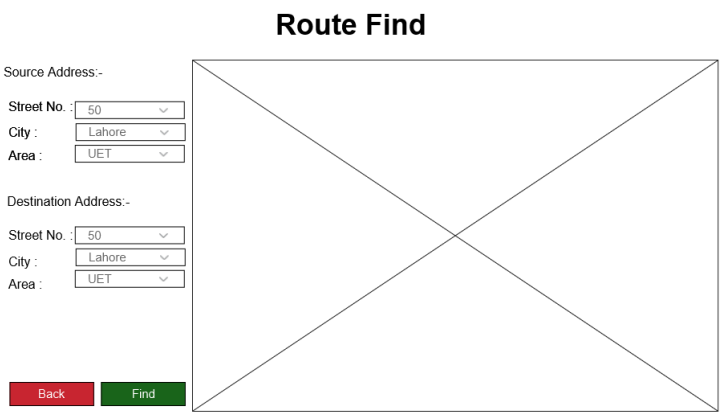
5.15 Use Case 15(Edit Warehouse)

Use Case ID	U15
Name	Edit Warehouse
Actor	CEO, Employee
Description	Selecting Warehouse Details and then Clicking Update button after selecting row, will allow you to modify selected Warehouse Details. Change your required fields and Save the information
UI Interface in JUSTINMIND	
Pre-Condition	Click on Update in Warehouse details after selecting data
Flow	Main Scenario: 1. Update Warehouse UI will show 2. Modify already filled fields with your requirements 3. Click Update Alternate Flow: • Clicking Clear Button 1. Clear All fields • Clicking Back Button 1. Back to Previous Warehouse Details
Post-Condition	Selected Warehouse details will be modified

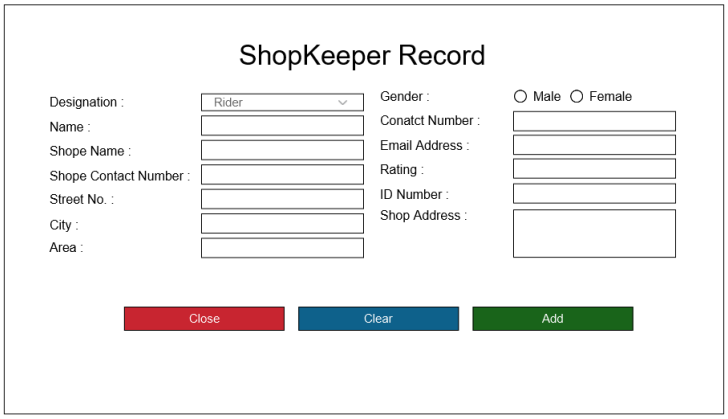
5.16 Use Case 16(Order Status)

Use Case ID	U16
Name	Order Status
Actor	CEO, Employee, Shopkeeper, Warehouse Manager
Description	From the Order Details, you are able to view the status of the order whether it is pending, in progress or completed/delivered. This will allow the concerned user to track progress details about specific order.
UI Interface in JUSTINMIND	
Pre-Condition	Order Details Form should open
Flow	Main Scenario: 1. From Orders List Click on Check Status. 2. A new Form Order Status will open
Post-Condition	You can now track the progress of your order

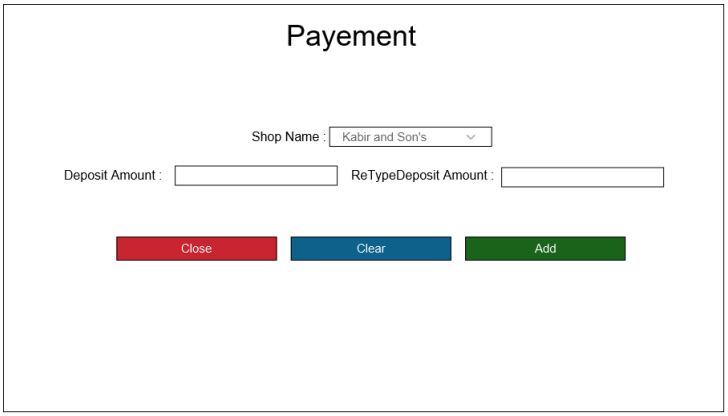
5.17 Use Case 17(Route Finder)

Use Case ID	U17
Name	Route Finder
Actor	Rider
Description	After the successful acceptance of certain order from warehouse, now rider has to select the best and the shortest path or route to the destination so his miscellaneous expenses (e.g., fuel) should be less. This allows him to select the shortest route. But he has been shown all possible routes.
UI Interface in JUSTINMIND	
Pre-Condition	Select Find Route from Rider's Dashboard
Flow	Main Scenario: 1. Route Find Form will open 2. Fill Source Address 3. Fill Destination Address 4. Select Find
Post-Condition	You will be shown all the possible routes from source to destination

5.18 Use Case 18(Add Shopkeeper)

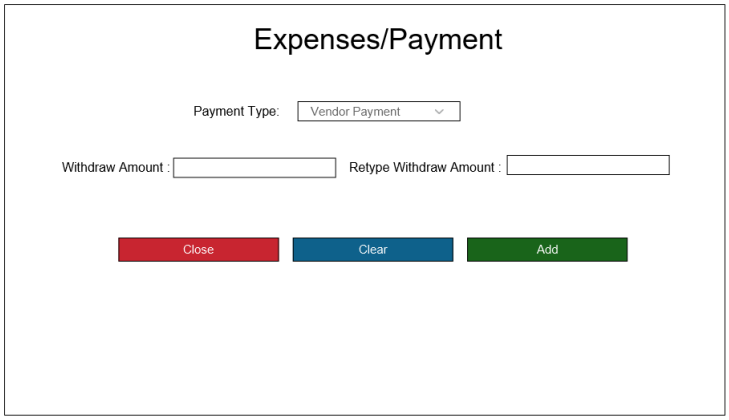
Use Case ID	U18
Name	Add Shopkeeper
Actor	Rider, CEO, Employee
Description	Rider will approach the shopkeeper. If shopkeeper is not registered with the system before, the rider will register him first if the shopkeeper orders something. Second scenario may be the CEO and Employee both have the authority to add shopkeeper details what the rider would give them
UI Interface in JUSTINMIND	
Pre-Condition	Select Add Shopkeeper from CEO's, Rider's, or Employee's Dashboard
Flow	Main Scenario: 1. Select Appropriate Designation 2. Fill all necessary details with the shop details as well 3. Click Add button Alternate Flow: • Clicking Clear Button 1. Will clear all the fields you have filled • Clicking Close Button 1. Will happen to return to the respective/corresponding dashboard • If all necessary field are not filled 1. Alert Message will occur 2. Control will remain on the same page
Post-Condition	Shopkeeper Information will be added to your system

5.19 Use Case 19(Add Payment)

Use Case ID	U19
Name	Add Payment
Actor	Rider, Employee, CEO
Description	Rider will approach the shopkeeper. Took Payment from the shopkeeper and add it into the system.
UI Interface in JUSTINMIND	
Pre-Condition	Select Add Payment from Rider's Dashboard(Shopkeeper Must be registered first)

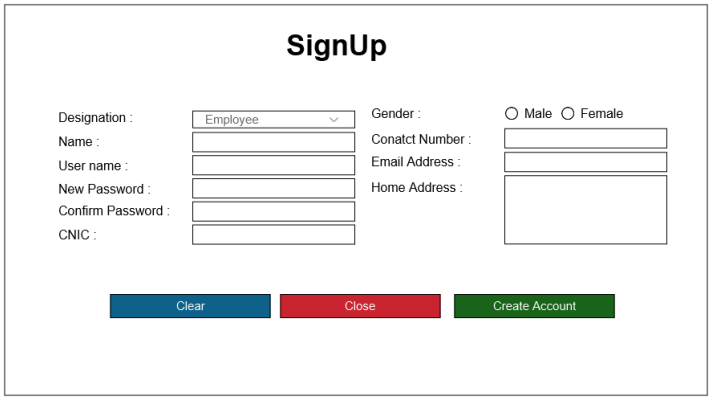
Flow	Main Scenario: 1. Payment Form will open 2. Select Shop Name (it should be registered first) 3. Add Deposit Amount and Confirm 4. Click Add Alternate Flow: • Clicking Clear Button 1. Will clear all the fields you have filled • Clicking Close Button 1. Will happen to return to the respective/corresponding dashboard • If deposit amount and Retype Deposit Amount are not same 1. Error Message will occur 2. System will return to the same page after clicking on OK button
Post-Condition	Payment will be accepted for the selected shopkeeper

5.20 Use Case 20(Withdraw Expenses)

Use Case ID	U20
Name	Withdraw Expenses
Actor	CEO
Description	—
UI Interface in JUSTINMIND	
Pre-Condition	

Flow	Main Scenario: 1. Payment Form will open 2. Select Payment Type 3. Type Withdraw Amount and Retype it in the next box 4. Click Add Alternate Flow: • Clicking Clear Button 1. Will clear all the fields you have filled • Clicking Close Button 1. Will happen to return to the respective/corresponding dashboard • If Withdraw amount and Retype Withdraw Amount are not same 1. Error Message will occur 2. System will return to the same page after clicking on OK button
Post-Condition	

5.21 Use Case 21(Create Account)

Use Case ID	U21
Name	Create Account
Actor	All
Description	All actors can link with the system by creating account and register themselves for this system. Provide Necessary Information and you can dive into the system by logging into the system.
UI Interface in JUSTINMIND	
Pre-Condition	System Will Initiate with this page
Flow	Main Scenario: 1. Select Your Designation 2. Provide All Necessary Details 3. Click on Create Account
Post-Condition	You are now the user of this system

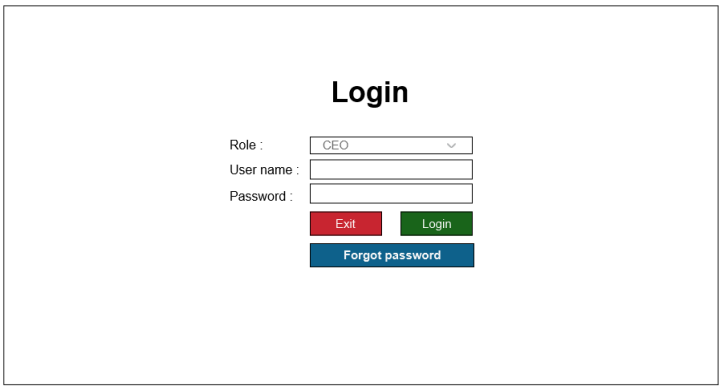
Chapter 6

Use Interfaces

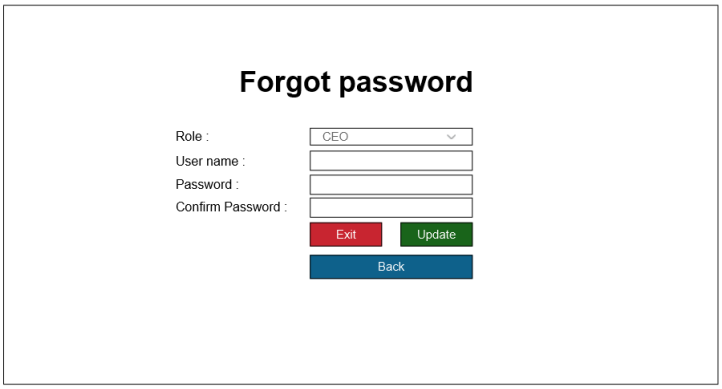
6.1 Intro

Interface ID	I01
Name	Intro
Linked Use Case	NULL
UI Interface in JUSTINMIND	

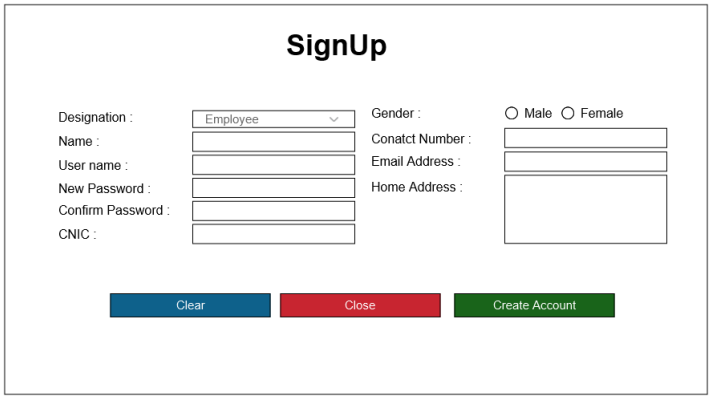
6.2 Login

Interface ID	I02
Name	Login
Linked Use Case	U01
UI Interface in JUSTINMIND	
Validators	• Password Validations (Must be of 8 characters) • User Validation(Check if user exist or not)

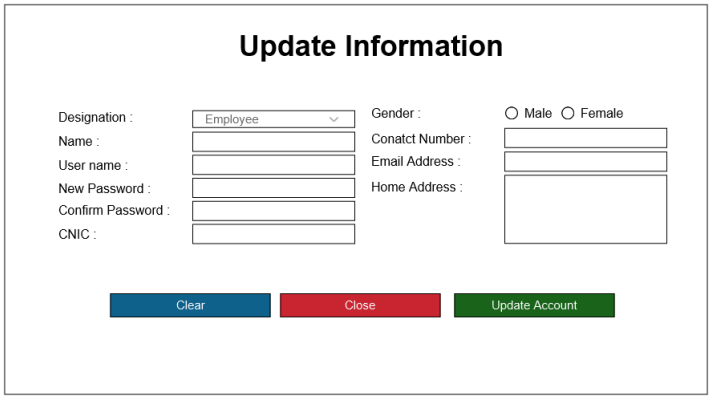
6.3 Forgot Password

Interface ID	103
Name	Forgot Password
Linked Use Case	
UI Interface in JUSTINMIND	
Validators	• New Password must be different from previous password • Username Validation • Password and Confirm Password Textbox are Same or not

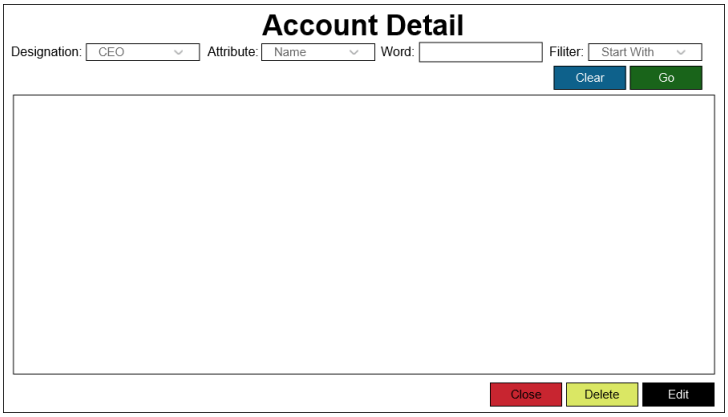
6.4 Create Account

Interface ID	104
Name	Create Account
Linked Use Case	U21
UI Interface in JUSTINMIND	
Validators	• New Password and Confirmation password must be the same • CNIC must be of 13 digits • Contact Number must be of 11 digits • All Information must be provided before account creation • Email Validations

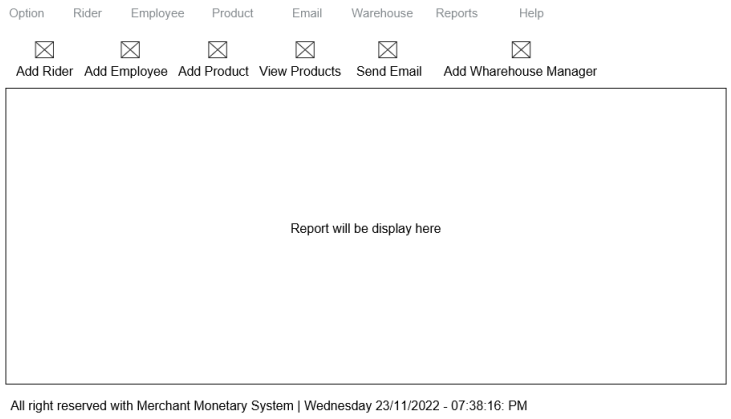
6.5 Update Information

Interface ID	I05
Name	Update Information
Linked Use Case	
UI Interface in JUSTINMIND	
Validators	• New Password and Confirmation password must be the same • CNIC must be of 13 digits • Contact Number must be of 11 digits • All Information must be provided before account creation • Email Validations

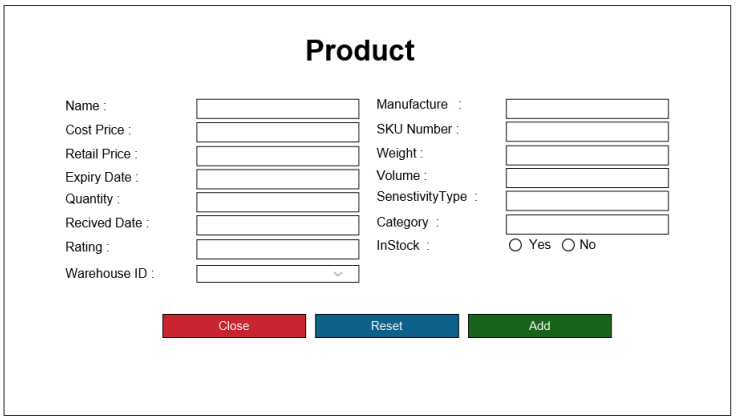
6.6 Account Detail

Interface ID	I06
Name	Account Detail
Linked Use Case	U04
UI Interface in JUSTINMIND	
Validators	• On clicked delete and edit button there is must to select any column first from grid list. • Filters must be applied before clicking Go

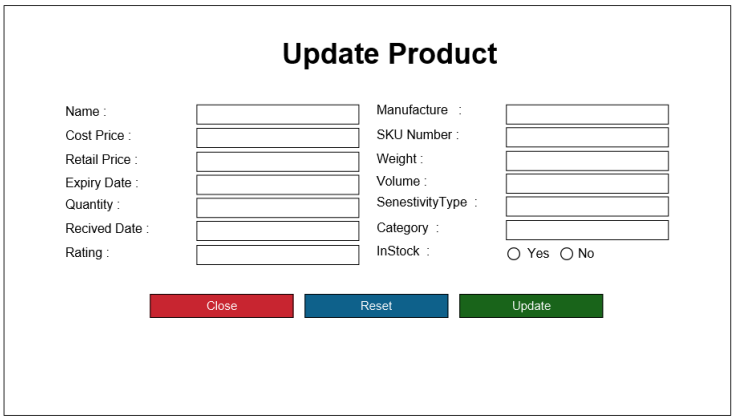
6.7 CEO Dashboard

Interface ID	I07
Name	CEO Dashboard
Linked Use Case	U03
UI Interface in JUSTINMIND	

6.8 Add Product

Interface ID	I08
Name	Add Product
Linked Use Case	U06
UI Interface in JUSTINMIND	
Validators	• Product Name must contain only Digits and alphabets. • Cost Price must not be negative. • The date must be positive. And not previous than current. • Quantity must be positive. And not in decimals. • Rating must be positive and integer. • SKU-ID must be positive. • Weight and Volume must be in integers and decimals and positive. • IN Stock check box must be filled.

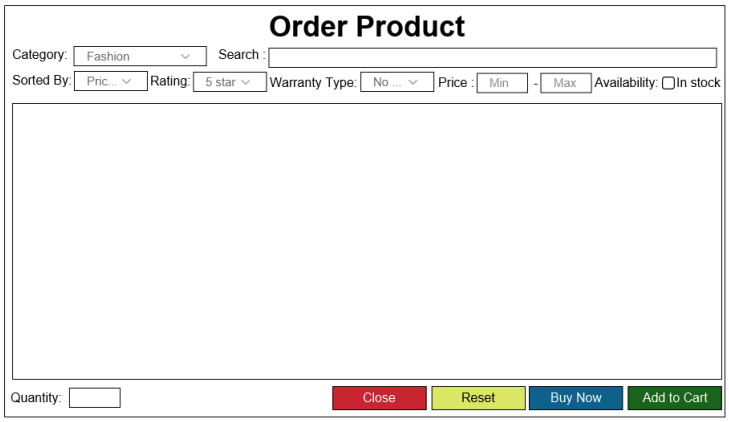
6.9 Update Product

Interface ID	I09
Name	Update Product
Linked Use Case	U08
UI Interface in JUSTINMIND	
Validators	• Product Name must contain only Digits and alphabets. • Cost Price must not be negative. • The date must be positive. And not previous than current. • Quantity must be positive. And not in decimals. • Rating must be positive and integer. • SKU-ID must be positive. • Weight and Volume must be in integers and decimals and positive. • IN Stock check box must be filled.

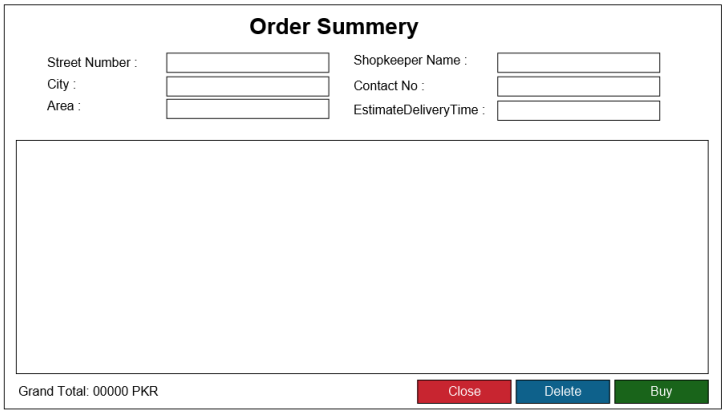
6.10 Product Detail

Interface ID	I10
Name	Product Detail
Linked Use Case	U07
UI Interface in JUSTINMIND	
Validators	• On clicked delete and edit button there is must to select any column first from grid list. • Filters must be applied before clicking Go.

6.11 Order Product

Interface ID	I11
Name	Order Product
Linked Use Case	U11
UI Interface in JUSTINMIND	
Validators	• Price must be positive. • Search text only contains alphabets and integers only.

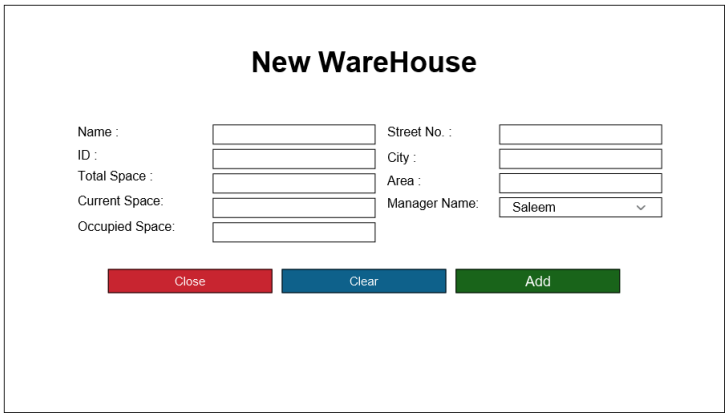
6.12 Order Summary

Interface ID	I12
Name	Order Summary
Linked Use Case	U11
UI Interface in JUSTINMIND	
Validators	• Street No. must be integer • Contact No. must be of 11 digits • Delivery time must be a number may be float or integer • All fields must be typed before buying products

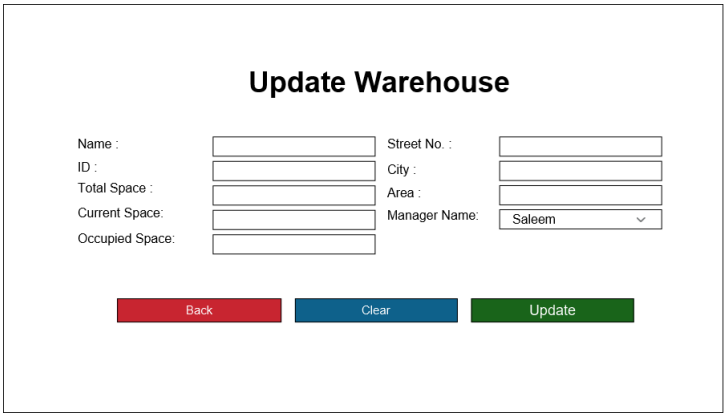
6.13 Send Email

Interface ID	I13
Name	Send Email
Linked Use Case	U12
UI Interface in JUSTINMIND	
Validators	• To section must be filled to send the mail.

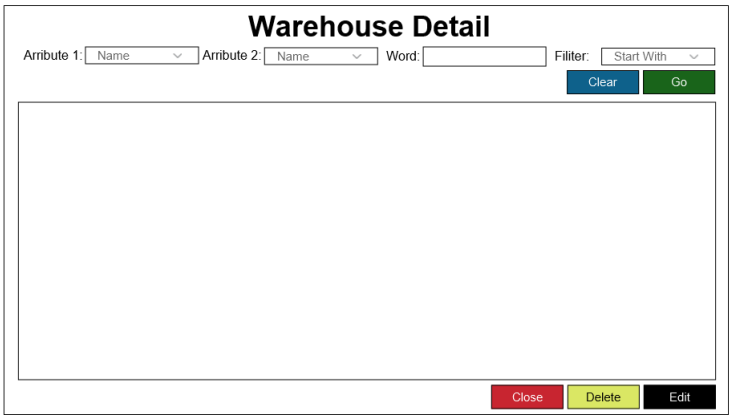
6.14 New Warehouse

Interface ID	I14
Name	New Warehouse
Linked Use Case	U13
UI Interface in JUSTINMIND	
Validators	• Space fields and Street No. input must be a number • Necessary fields must be filled before updating

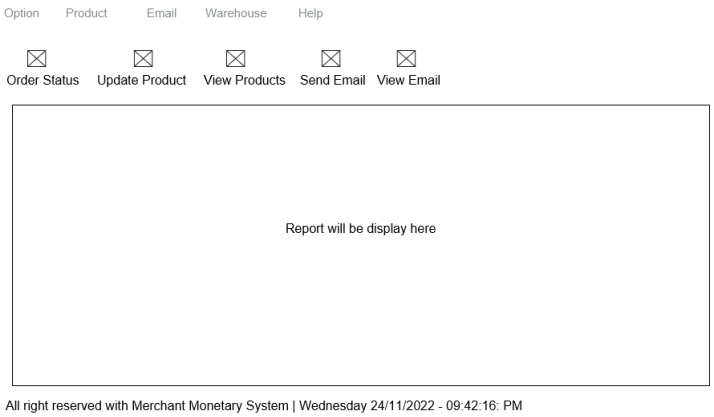
6.15 Update Warehouse

Interface ID	I15
Name	Update Warehouse
Linked Use Case	U15
UI Interface in JUSTINMIND	
Validators	• Space fields and Street No. input must be a number • Necessary fields must be filled before updating

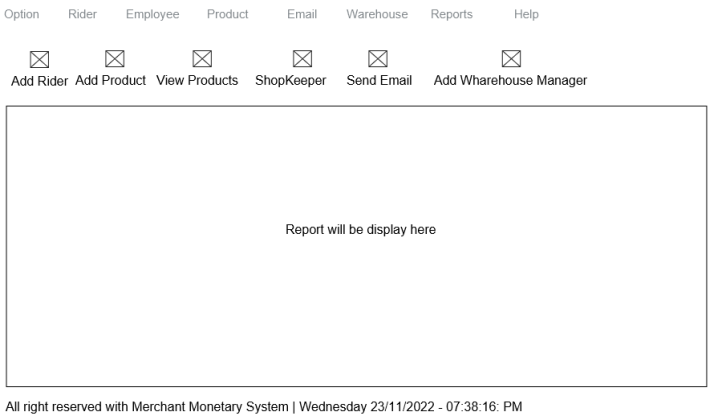
6.16 Warehouse Detail

Interface ID	I16
Name	Warehouse Detail
Linked Use Case	U14
UI Interface in JUSTINMIND	
Validators	• On clicked delete and edit button there is must to select any row first from grid list. • Filters must be applied before clicking Go

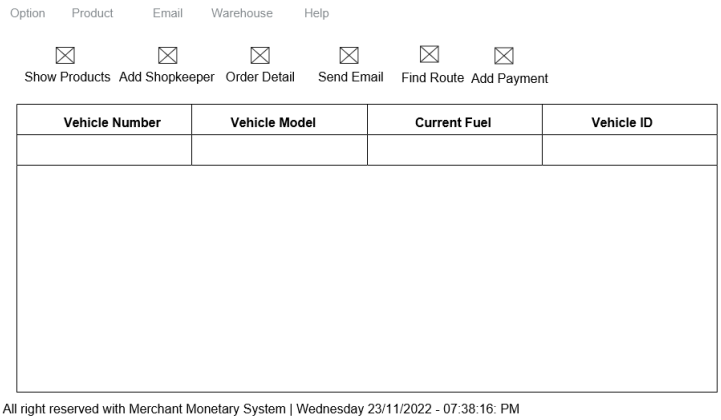
6.17 Warehouse Manager Dashboard

Interface ID	I17
Name	Warehouse Manager Dashboard
Linked Use Case	NILL
UI Interface in JUSTINMIND	

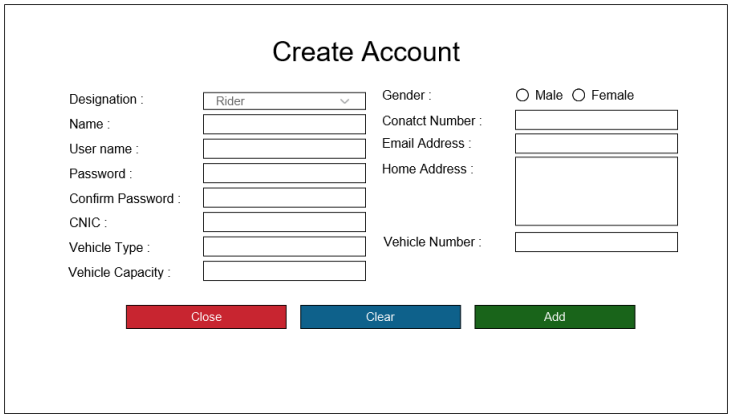
6.18 Employee Dashboard

Interface ID	I18
Name	Employee Dashboard
Linked Use Case	NILL
UI Interface in JUSTINMIND	

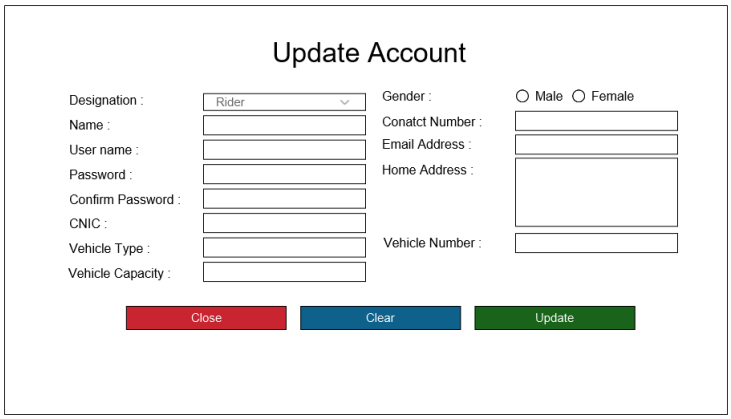
6.19 Rider Dashboard

Interface ID	I19
Name	Rider Dashboard
Linked Use Case	NILL
UI Interface in JUSTINMIND	

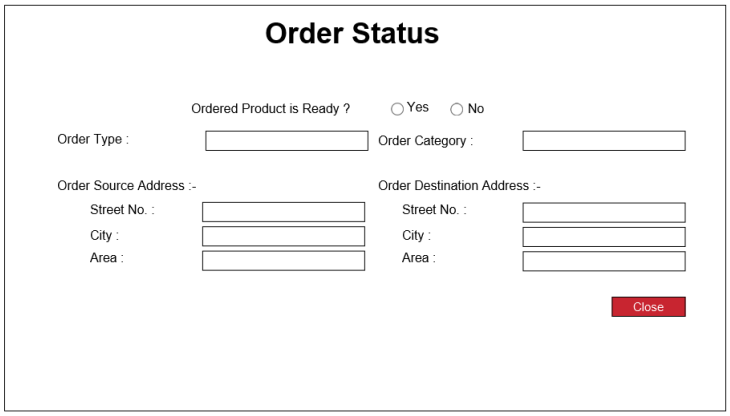
6.20 Add Rider

Interface ID	I20
Name	
Linked Use Case	U09
UI Interface in JUSTINMIND	
Validators	• Name Text Box must contain only alphabets. • The new Password and confirmation password • CNIC number must be of 13 digits. • Contact number must be of 11 digits. • Any text box value will not be added as negative. • All fields must be filled • Email validation

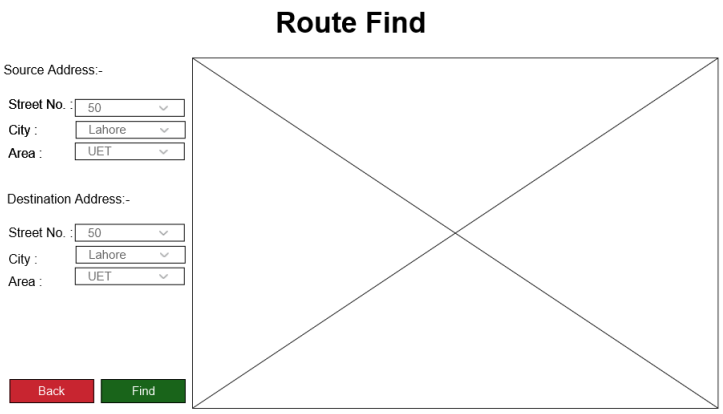
6.21 Update Rider

Interface ID	I21
Name	Update Rider
Linked Use Case	U10
UI Interface in JUSTINMIND	
Validators	• Name Text Box must contain only alphabets. • New Password must be different form last password • The new Password and confirmation password • CNIC number must be of 13 digits. • Contact number must be of 11 digits. • Any text box value will not be added as negative. • All fields must be filled • Email validation

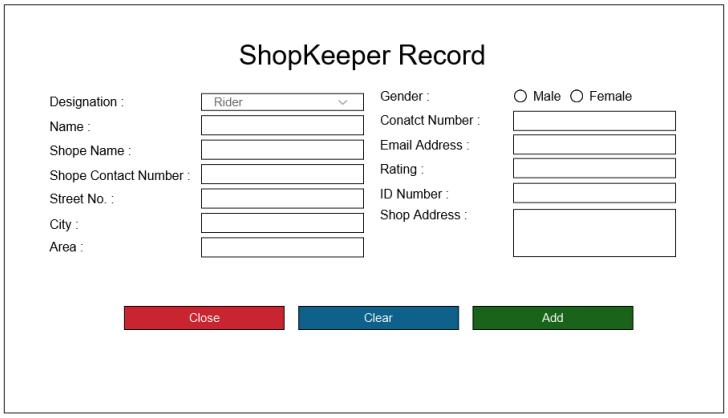
6.22 Order Status

Interface ID	I22
Name	Order Status
Linked Use Case	U16
UI Interface in JUSTINMIND	

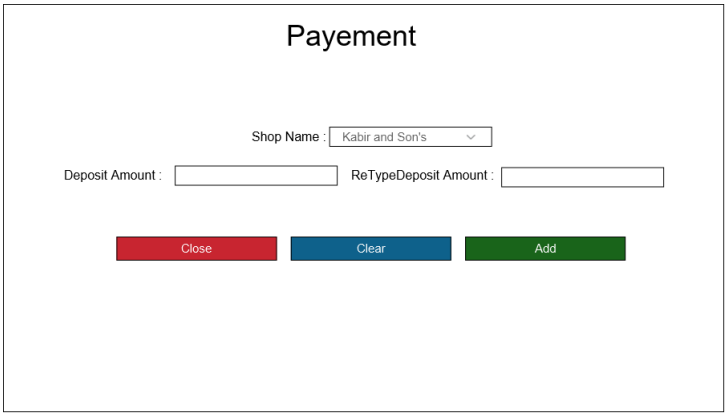
6.23 Order Status

Interface ID	I23
Name	Order Status
Linked Use Case	U17
UI Interface in JUSTINMIND	
Validators	• Street No. Must not be negative • All fields must be appropriately filled to find the routes

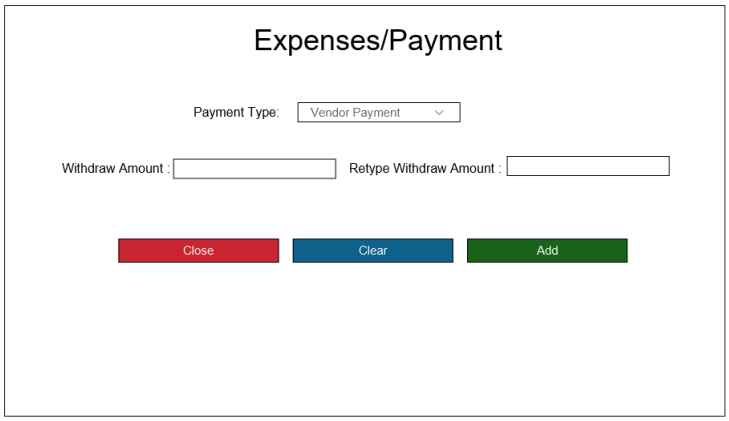
6.24 Shopkeeper Record

Interface ID	I24
Name	Shopkeeper Record
Linked Use Case	U18
UI Interface in JUSTINMIND	
Validators	• Email Validation • Contact Number Validation • Street No. must be a non-negative number • All necessary fields must be filled before clicking Add

6.25 Add Payment

Interface ID	I25
Name	Add Payment
Linked Use Case	U19
UI Interface in JUSTINMIND	
Validators	• Deposit and Retype Deposit Amount must be a number not string • Before Clicking Add, Both fields must be filled • Both fields must be same

6.26 Withdraw Expenses

Interface ID	I26
Name	Withdraw Expenses
Linked Use Case	
UI Interface in JUSTINMIND	
Validators	• Withdraw and Retype Withdraw Amount must be a number not string • Before Clicking Add, Both fields must be filled • Both fields must be same

Chapter 7

User Interface Details

Interface Id	Text Box	Drop Down	Password Box	Table	Date Field	Buttons
101	0	0	0	0	0	0
102	1	1	1	0	0	3
103	1	1	2	0	0	3
104	5	1	2	0	0	3
105	5	1	2	0	0	3
106	1	3	0	1	0	5
107	0	0	0	1	0	0
108	13	1	0	0	0	3
109	13	0	0	0	0	3
110	1	3	0	1	0	5
111	4	4	0	1	0	4
112	6	0	0	1	0	3
113	2	1	0	0	0	3
114	8	1	0	0	0	3
115	8	1	0	0	0	3
116	1	3	0	1	0	5
117	0	0	0	1	0	0
118	0	0	0	1	0	0
119	0	0	1	0	0	0
120	8	1	2	0	0	3
121	8	1	2	0	0	3
122	8	0	0	0	0	1
123	0	6	0	0	0	2
124	10	1	0	0	0	3
125	2	1	0	0	0	3
126	2	1	0	0	0	3

Interface Id	Auto-Complete	Radio Button	Check Box	Menu	Text Area	Progress Bar
101	0	0	0	0	0	1
102	0	0	0	0	0	0
103	0	0	0	0	0	0
104	0	2	0	0	1	0
105	1	2	0	0	1	0
106	0	0	0	0	0	0
107	0	0	0	14	0	0
108	0	2	0	0	0	0
109	0	2	0	0	0	0
110	0	0	0	0	0	0
111	0	0	1	0	0	0
112	0	0	0	0	0	0
113	0	0	0	0	1	0
114	1	0	0	0	0	0
115	1	0	0	0	0	0
116	0	0	0	0	0	0
117	0	0	0	10	0	0
118	0	0	0	14	0	0
119	0	0	0	11	0	0
120	0	2	0	0	0	0
121	1	2	0	0	0	0
122	0	2	0	0	0	0
123	0	0	0	0	0	0
124	0	2	0	0	1	0
125	0	0	0	0	0	0
126	0	0	0	0	0	0

Chapter 8

Classes

The classes which are used in the project are as under with there specific properties.

Class Name	**Software/ Domain**	**Is Abstract (Yes/No)**
CEO	Domain	No
Company	Domain	No
Office	Domain	No
WareHouse	Domain	No
User	Domain	No
Rider	Domain	No
Employee	Domain	No
WareHouseManager	Domain	No
ShopOwner	Domain	No
Shop	Domain	No
Ledger	Domain	No
Order	Domain	No
Product	Domain	No
Vehicle	Domain	No
Stack	Software	No
Queue	Software	No
Linked List	Software	No
Binary Search Tree	Software	No

Class Name	**Is Singleton (Yes/No)**	**Is the class will has parametrized constructor(Yes/No)**
CEO	Yes	Yes
Company	Yes	Yes
Office	Yes	Yes
WareHouse	No	Yes
User	No	Yes
Rider	No	Yes
Employee	No	Yes
WareHouse Manger	No	Yes
ShopOwner	No	Yes
Shop	No	Yes
Ledger	Yes	Yes
Order	No	Yes
Product	No	Yes
Vehicle	No	Yes
Stack	No	Yes
Queue	No	Yes
Linked List	No	Yes
Binary Search Tree	No	Yes

Chapter 9

Object Oriented Features

9.1 Composition

In our Project there are 8 places where we use Composition

- Company Class has composition of Ledger Class
- Company Class has composition of Office Class
- Company Class has composition of Warehouse Class
- Company Class has composition of CEO Class
- Warehouse Class has composition of Warehouse Manager Class
- Rider Class has composition of Vehicle Class
- Office Class has composition of User Class (Employee, Rider)
- Shop Owner Class has composition of Shop Class

9.2 Inheritance

In our project inheritance is used in following places

- User inherits the class of CEO
- User inherits the class of Rider
- User inherits the class of Shopkeeper
- User inherits the class of Warehouse Manager

9.3 Multi-Level Inheritance

In our project Multilevel inheritance is used as

- User class inherits the CEO class and CEO class inherits the Employee Class

9.4 Aggregation

In our project Multilevel inheritance is used as

- Rider Aggregate the Rating Class in our project

9.5 Association

In our project Multilevel inheritance is used as

- Warehouse Manager manages the order.
- CEO manages the products
- Rider take the order
- Rider adds the order
- Employee adds the products
- Employee manages the order

Chapter 10

Detailed Object Oriented Design

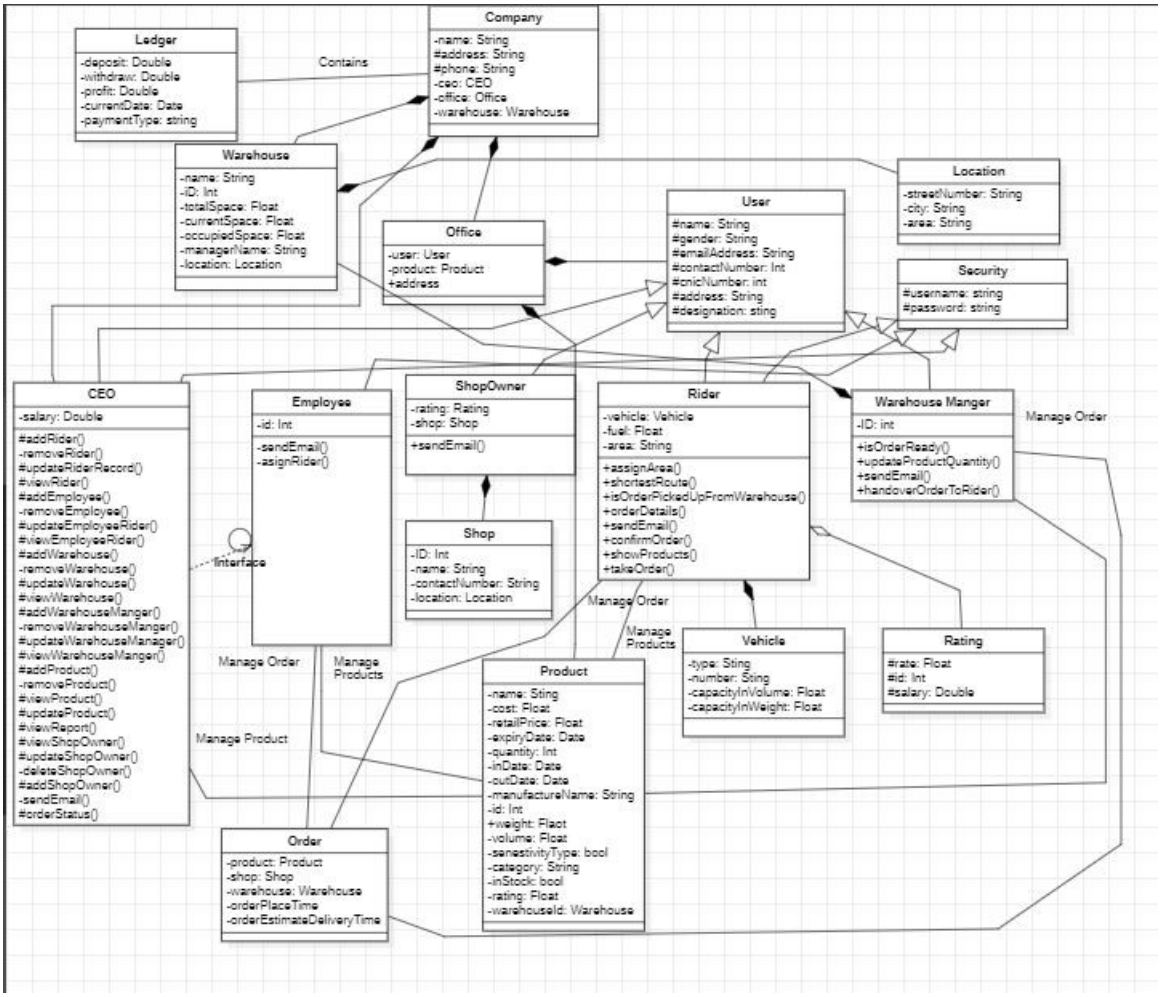


Figure 10.1: The detailed Object Oriented Design of the project that will be implemented according to mentioned logic

Chapter 11

Data Structure

Use Case ID	Data Structure Used	Justification for the use of data structure
U01	Linked List	In the U01 (LOGIN), search and compare the user from the list so when the user data is found it returns the action.
U04	Linked List	In the U04 (Account Details), Grid of the added users shown lists where all the users are stored(added)
U05	Linked List	In the U05 (Update Account), Update data of the user present in the Linked List
U06	Linked List	In the U06 (Add Product), Add the product data in the List.
U07	Linked List	In the U07 (View Product), View the product data in the Grid that are stored in the list at the back-end.
U08	Linked List	In the U08 (Update Product), Update the product data in the list where the data of the products are added.
U09	Linked List	In the U09 (Add Rider), Add the Rider data in the List. Selection of the list is because there is the ease in the deletion and search in the data of list
U10	Linked List	In the U10 (Update Rider), update the rider data. Selection of the list is to search is to ease.
U11	Queue	In the U11(Order Product), To place the order we use the mechanism of First in and First Out (first order item will be placed first)
U12	Stack	In the U12 (Email), To send the mail and view the mail (first send mail is shown in the last and the most recent one in the first)
U13	Linked List	In the U13 (Add Warehouse), Add the detail data of the warehouse in the list.

U14	Linked List	In the U14 (Detail Warehouse), Select the desired warehouse and delete the data of the warehouse and also delete the data from the list and selection of list is that to delete the warehouse other indexes of list easily manage.
U15	Linked List	In the U15 (Edit Warehouse), Select the data from the list and Edit the detail data of the warehouse in the list.
U16	Linked List	In the U16 (Order Status), Data is selected and data of the desired Order is updated in the list.
U17	BST	In the U17 (Route Finder), Routes are found according to the points (nodes) so selection of BST is due to the ease of the data finding.
U18	Linked List	In the U18 (Add Shopkeeper), Add the shopkeeper data in the list because there is an ease for the deletion and searching.
U19	Linked List	In the U19 (Add Payment), payment of the specific shopkeeper is added on the list to search and edit the details in the list.
U20	Linked List	In the U20 (Add Expenses Amount), Add the Expenses data in the List. Because there is an ease to update the specific data in the list and search or delete it in list.
U21	Linked List	In the U21 (Create Account), Linked list is used to add user.

Chapter 12

Exceptions

Type of Exception	**Why this exception will occur**	**Use Case Id in which exception could be occurred**	**How you will handle the** exception
Incorrect Format	By default system, take all input in string and the deploy system need to convert into desire format. If the input data is not converted into other datatype like int and float the future task not performed e.g. string 2 and int 2 behave different in CPU.	U06,U19,U09	Restrict the user to enter the required data in correct format.
File not Exit	The required file not in the correct path and CPU not recognize it.	U14,U07,U04	Restrict the user first select the file then perfrom future action
Incorrect URL	The wrong URL of the website broken the link with the DNS and required data not fetch from server.	U17	Apply stick constrain to avoid it.

Chapter 13

Data Storage

13.1 Mails (CSV)

Columns data names are

1. Columns data names are
2. Employee and Rider
3. Rider and Shopkeeper
4. Warehouse Manager and Employee
5. CEO and Employee

13.2 Products (CSV)

Columns data names are

1. Name
2. Cost
3. Retail price
4. Expiry Date
5. Quantity
6. In date
7. Out date

8. Manufacturer
9. ID
10. Weight
11. Volume
12. Category
13. Sensitivity
14. In stock
15. Rating
16. Warehouse Hold ID

13.3 Users (CSV)

Columns data names are

1. Name
2. Gender
3. Email address
4. Contact Number
5. CNIC number
6. Address
7. Desigination

Chapter 14

Email Sending

At first

1. Rider will email the employee about the order of shopkeeper
2. Employee email warehouse manager to ready the shipment for rider
3. Rider will email the Employee and Shopkeeper that he has picked the order and cc to CEO.

Chapter 15

Project Plan

Use Case Id	Member Name	Estimated Completion Date
001-008	Syed Hashir	09/12/2022
009-018	Kabir Ahmed	10/12/2022
019-026	M. Hamad Hassan	11/12/2022

Chapter 16

Analytical Reports

In our project, we can use the analytical reports

1. Salary Report
2. Rider Capture Order Report
3. Profit Report
4. Sold Products