

Drugs Distribution Management System

CS261-Final Report



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1 Project Description

We have made a desktop application that is about the distribution of drugs (medicines) from the distribution company to the medical store. First, we made the design of forms on the “JustnMind” tool. Some features in our project are give bonus to riders, sending email after delivery, Sending Email on account creation, sending email in case of forgetting password, View the tracks of riders on map. There are three actors in our project.

First one is **Manager** that can view employee’s data like employee ID, employee name, Email, Phone no, basic salary. We can search specific employee. Searching is done using their unique ID’s. He can add employee. For adding employees his name, email, phone and salary information is required. Employees data is shown in grid. He can delete employees of the distribution company. He can view rider’s data like rider ID, rider name, Email, Phone no, basic salary. Like employees, manager can search riders by ID’s. He can also accept request of employee’s approval and deletion. He can update employee’s and rider’s data. He can view those medicines whose quantity is very less. He views those medicine that are required to be ordered as soon as possible so that there will be no problem in distribution of medicines. He can view different types of reports. He can view daily product distribution report, daily fuel consumption report, product performance report, monthly salary report, performance evaluation report. In these reports, he can be able to see the profit and loss of company.

In Daily **Product Distribution Report** manager can view daily distribution of medicine. He can see how much medicine are delivered. In **Daily Fuel Consumption Report** manager can see the consumption of fuel. He can see that how much fuel is used for some track. In **Product Performance Report** manager can see the performance of medicines. He can see which medicine is delivered most. In **Monthly Salary Report**, manager can see the monthly salary report of riders and employees. He can see whom bonus is given from distribution company. In **Performance Evaluation Report**, manager can see the monthly performance evaluation report. He can see total monthly sales , cost on fuel consumption, total profit and loss.

Second one is **Employee** that can view rider’s data like rider ID, rider name, Email, Phone no, basic salary. Searching is possible using their unique ID’s. They can add riders. For adding riders his name, email, phone and salary information is required. Riders can be deleted by employees. They can also update riders(already working in company) data. They can see fuel consumption corresponding to each track of rider. In this way they can calculate fuel usage and cost on fuel so that they try to use less fuel in future. Employees can view tracks of riders. On map the medical stores from which rider take order is shown. So, different tracks are shown for riders. We give medical store address and its location is shown on map for convenience in distribution of products. They can also see the status that medicine is delivered or not.

Third one is **rider** that can add medical store information from which distribution company get order. The company can get medical store information so that there will be no disturbance in distribution. Rider can get order about the medicine from the medical store.

Order is dependent on medical store. If there is no medical store, then no order will be taken. So, composition is present. One class extend another class function so polymorphism occurs. Manager class is parent of Employee class and then Employee class is further parent of Rider class. So there exist multi-level inheritance. We have used Kruskal algorithm to find the shortest path for riders so that fuel consumption should be managed. We have used linked list besides array because we don’t know the count of riders and employees. We have also used Queue by keeping in mind the principle of FIFO(first in first out) because first that order is delivered that is first stake. We will store our data in coma separated file. Some csv files are Employees.csv(7 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining), Riders.csv(8 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining, Bonus), Orders.csv(9 columns: Medicine, Supplier, Price, Quantity, Description, MedicalStore, Status, OrderDate, IsAssigned), RiderApproval.csv(9 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining, Bonus, Status), MedicalStore.csv(6 columns: StoreName, PhoneNo, Email, Lattitude, Longitude, Bill), Routes.csv(8 columns: TrackName, Route, Distance, Rider, Vehicle, Fuel, Price, Assigned Date and Time), Medicine.csv(5 columns: productitem, vendor, money, description, Quantity), MedicalStoreRider.csv(4 columns: StoreName, Email, Rider, Adding Date), Managers.csv(2 columns: Username, Password), Bonus.csv(3 columns: ID, Name, Bonus, Salary).

Email will be sent to riders and employees according to given conditions. While forgetting password you will receive the email. When the rider or Employee is added then Email will be sent to them containing their user ID and Password. When the rider or Employee is removed then Email will be sent to them that they have been removed due to any condition or situation. When the Employee orders products then the Email will be sent to him that your order is placed and you will receive it one date. When the order is delivered then the Email is sent to him containing the quantity of products.

2 Project Features

Project features are given below.

2.1 Email Sending

Our project includes the feature of email sending. Email will be sent at some situation. When you create your account, then email will be sent to you. Similarly, When the product (drugs) has delivered, then email will be sent to medical store.

2.2 Forget Password

When user does not know his password, then there is an option of forget password in which email will be sent to you and You have given some password that you can use for login.

2.3 View Track

There is a feature of view tracks of riders in which riders can see their daily tracks that they have to follow for delivering products. The location of all assigned medical store (assigned to one rider) will be shown to that specific rider.

2.4 Give Bonus

We give bonus to riders in which bonus will be given to the basis of adding maximum number of medical stores.

2.5 User Defined UI Background Color

You can change background color of UI screen of your own choice. We have applied color picker for choosing color of UI screen.

3 System Requirements

- from PyQt5 import QtCore, QtGui, QtWidgets()
- from PyQt5.QtGui import * (It is used for QtGui)
- import pyautogui (It is used for showing “Alert” and “dialogue box” on screen.)
- import string (This library is used for making riders and Employees ID generated by system.)
- import math (It is used for mathematical calculation)
- from PyQt5.QtCore import * (It is used for QtWidgets)
- import random (It is used for random generation of password)
- import colorsys (It is used for color picker for changing of UI background)
- from PyQt5.QtWidgets import * (It is used for QtWidgets)
- from fpdf import FPDF (It is used for making PDF report)
- import requests (It is used for email validation that check that the written email exists or not)
- from datetime import datetime (It is used for string to date conversion)
- from geopy.distance import geodesic as GD (It is used for finding distance between two latitudes)

- import re (It is used for converting from string to integer)
- import csv (It is used for making csv file)

4 Project Actors

There are three actors in our project.

1. **Manager** can add, delete and update employees and riders. He can view riders and search them by their specific ID. He is responsible for approval and rejection of riders. He can view threshold quantity of medicine. He will also order the products of less quantity. He can also see analytics means the evaluation reports.
2. **Employee** can add and delete riders. They send request to manager for rider's approval that will finally decide about your approval. They can view riders and can search them by their specific ID. They can view fuel consumption. They can see tracks of all riders and they can see daily orders given to riders and their status.
3. **Rider** can view tracks add medical store that give order to distribution company. He will view products available in distribution company. He can take order from pharmacy or medical store and then delivered orders.

5 Use Cases

5.1 Use Case 1(View Employee)

Use Case ID	U01
Name	View Employee
Actor	Manager
Description	Manager can view employee's data like employee ID, employee name, Email, Phone no, basic salary. For getting information about some specific employee he can search him. Searching is done using their unique ID's.
Flow	<ol style="list-style-type: none"> 1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. If some employees already exist, then system shows their data. 4. He can search them by their ID's. 5. In case no Employee is added the system will show nothing to view for manager.
Assigned to	Muhammad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.2 Use Case 2(Add Employee)

Use Case ID	U02
Name	Add Employee
Actor	Manager
Description	Manager can add employee. For adding employees his name, email, phone and salary information is required.

Flow	<ol style="list-style-type: none"> 1. After Logged in, manager arrives at Manager's Dashboard. 2. Then he adds employee name. 3. Then he enters email. 4. After that he enters phone and salary. 5. After entering all attributes of employee, manager push add button. 6. System will show you dialogue box that employee is added.
Assigned to	Muhmmad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.3 Use Case 3(Delete Employee)

Use Case ID	U03
Name	Delete Employee
Actor	Manager
Description	Employees data is shown in grid. Manager can select any employee; his information is loaded in text boxes. After selecting some employee, he can delete him.
Flow	<ol style="list-style-type: none"> 1. After Logged in, manager arrives at Manager's Dashboard. 2. For deleting some specific employee, the required inputs get filled by going into grid specific row. 3. Pushing delete button for deleting employee. 4. System will show dialogue box for confirmation.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.4 Use Case 4(View Rider)

Use Case ID	U04
Name	View Rider
Actor	Manager
Description	Manager can view rider's data like rider ID, rider name, Email, Phone no, basic salary. For getting information about some rider he can search him. Searching is done using their unique ID's.
Flow	<ol style="list-style-type: none"> 1. After Logged in, manager arrives at Manager's Dashboard. 2. He opens the tab of viewing Riders. 3. Then he adds employee name. 4. System will Show riders to him added by Employees. 5. He can search them by their unique ID's. 6. In case no Rider is available the system will show nothing to manager.

Assigned to	Muhmmad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.5 Use Case 5(Accept Approval)

Use Case ID	U05
Name	Approve/Reject Rider
Actor	Manager
Description	Manager can accept request of employees about rider's addition. He will select that which rider will work for distribution company and which not.
Flow	<ol style="list-style-type: none"> 1. After Logged in, manager arrives at Manager's Dashboard. 2. The Manager will go into approvals page. 3. For accepting managers request for riders some, the required inputs get filled by going into grid specific row. 4. On pushing "Accept" button, the rider will be added for giving service for distribution. 5. System will show dialogue box, when rider is added.
Assigned to	Muhmmad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.6 Use Case 6(View Threshold)

Use Case ID	U06
Name	View Threshold
Actor	Manager
Description	Manager can view those medicines whose quantity is very less. He views those medicine that are required to be ordered as soon as possible.
Flow	<ol style="list-style-type: none"> 1. After Logged in, manager arrives at Manager's Dashboard. 2. Manager will go to view Threshold drugs. 3. System will show him which medicines are in lesser amount. 4. System will also show him the remaining quantity of medicines. 5. Manager views those medicines which are ordered to be soon as possible.
Assigned to	Muhmmad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.7 Use Case 7(Order Threshold)

5.8 Use Case 8(View Reports)

Use Case ID	U08
Name	View Reports
Actor	Manager
Description	Manager can view different types of reports. He can view daily product distribution report, daily fuel consumption report, product performance report, monthly salary report, performance evaluation report. In these reports, he can be able to see the profit and loss of company.
Flow	<ol style="list-style-type: none">1. After Logged in manager arrives at Manager's Dashboard.2. Manager goes to view reports.3. System will show a page of different reports to download.4. Manager push the "download" button.5. Manager will download the daily product distribution report, daily fuel consumption report, product performance report, monthly salary report, performance evaluation report.
Assigned to	Muhmmad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.9 Use Case 9(View Riders)

Use Case ID	U09
Name	View Riders
Actor	Employee
Description	Employees can view rider's data like rider ID, rider name, Email, Phone no, basic salary. For getting information about some specific rider he can search him. Searching is done using their unique ID's.
Flow	<ol style="list-style-type: none">1. After Logged in, employees arrive at Manager's Dashboard.2. He opens the tab of viewing riders.3. System will Show riders to him.4. He can search them by their unique ID's.5. In case no Rider is available the system will show nothing to employees.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.10 Use Case 10(Add Riders)

Use Case ID	U10
Name	Add Riders
Actor	Employee
Description	Employee can add riders. For adding riders his name, email, phone and salary information is required. A request will be given to Manager whether to add or not.
Flow	1. After Logged in, employees arrive at Manager's Dashboard. 2. He opens the tab of viewing riders. 3. Employee can add rider's data. 4. A request will be given to manager by system. 5. Manager will accept or Reject it. 6. Rider will be added in case of approval from manager. 7. System will show dialogue box that rider is added.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.11 Use Case 11(Delete Riders)

Use Case ID	U11
Name	Delete Riders
Actor	Employee
Description	Rider's data is shown in grid. Employee can select any rider; his information is loaded in text boxes. After selecting some riders, they can be deleted. A request will be given to Manager whether to add or not.
Flow	1. After Logged in, employees arrive at Manager's Dashboard. 2. He opens the tab of viewing riders. 3. Employee can delete rider's data.
Flow	4. A request will be given to manager by system. 5. Manager will accept or reject it. 6. Rider will be removed in case of approval from manager. 7. System will show dialogue box that rider is removed.
Assigned to	Muhmmad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.12 Use Case 12(View Fuel Consumption)

Use Case ID	U12
Name	View Fuel Consumption
Actor	Employee
Description	Employees can see fuel consumption corresponding to each track. In this way they can calculate fuel usage and cost on fuel so that they try to use less fuel in future. Distance should be kept in mind.
Flow	1. After Logged in, employees arrive at Employee's Dashboard. 2. Employee goes to view fuel consumption. 3. System will show track, distance, vehicle, fuel usage and fuel price.
Assigned to	Muhmmad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.13 Use Case 13(Track Routes)

Use Case ID	U13
Name	Track Routes
Actor	Employee
Description	Employees can view tracks of riders. On map the medical stores from which rider take order is shown. So different tracks are shown for riders. We give medical store's Latitude and longitude and its location is shown on map.
Flow	1. After Logged in, employees arrive at Employee's Dashboard. 2. Employee goes to view routes. 3. System will show the tracks to required medical store. 4. System will show the tracks to on map.
Assigned to	Muhmmad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.14 Use Case 14(View Orders)

Use Case ID	U14
Name	View Orders
Actor	Employee
Description	Employee can view orders for medicine delivery corresponding to track and each rider. He can also see the status that medicine is delivered or not.
Flow	<ol style="list-style-type: none">1. After Logged in, employees arrive at Employee's Dashboard.2. Employee goes to view orders.3. Employee will enter rider's ID and track.4. System will show required information to Employee that whether it is delivered or not.5. System will show medicine, supplier, Quantity, pharmacy, tracks and status.
Assigned to	Muhmmad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.15 Use Case 15(Add Medical Store)

Use Case ID	U15
Name	Add Medical Store
Actor	Rider
Description	Rider can add medical store information from which company get order. The company can store medical store information so that there will be no disturbance in distribution.
Flow	<ol style="list-style-type: none">1. After Logged in rider arrives at Rider's Dashboard.2. Rider will go to Add Medical Store.3. After taking an order from Medical Stores he will add their data.4. He will add medical store name, phone, email, country, city and address.5. After pushing button, system will show dialogue box that information is added.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.16 Use Case 16(Take Order)

Use Case ID	U16
Name	Take Order
Actor	Rider
Description	Rider can get information about the medicine from the medical store. Shopkeeper is selected and rider take order and this information is sent to employees.

Flow	1. After Logged in, rider arrives at Rider's Dashboard. 2. System will show him data of medicine. 3. He enters medicine name, supplier of medicine, price, quantity and shopkeeper. 4. Then he pushes "order" button.
Flow	5. System will show dialogue box that medicines are ordered. 6. System will total price of ordered products.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.17 Use Case 17(Update Employee)

Use Case ID	U17
Name	Update Employee
Actor	Manager
Description	Manager can view employee's data, he can update this specific employee's data. In this use case, he can change mistakes present in rider's already given details. He can replace his salary and email and other things.
Flow	1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. If some employees already exist, then system shows their data. 4. He can search them by their ID's. 5. In case no Employee is added the system will show nothing to view for manager.
Assigned to	Muhammad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.18 Use Case 18(Search Rider by ID)

Use Case ID	U18
Name	Search Rider by ID)
Actor	Manager
Description	Manager can view rider's data like rider ID, his name, Email, Phone no, basic salary. For getting information about some specific employee he can search him. Searching is done using their unique ID's.
Flow	1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. He can search them by their ID's.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum

Known Issues	No issue
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5.19 Use Case 19(Reject Approval)

Use Case ID	U19
Name	Reject Approval
Actor	Manager
Description	Manager can accept request of employees about rider's deletion. He will select that which rider will work for distribution company and which not by rejecting approvals.
Flow	<ol style="list-style-type: none"> 1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. The Manager will go into approvals page. 4. For rejecting employee's request for rider's approval , the required inputs get filled by going into grid specific row. 5. On pushing "Reject" button, the rider will be removed for giving service for distribution company. 6. System will show dialogue box, when rider is deleted.
Assigned to	Muhammad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.20 Use Case 20(View Approval)

Use Case ID	U20
Name	View Approval
Actor	Manager
Description	Here manager can see the employee's request of rider's approval and rejection. He can select that which rider will work for distribution company.
Flow	<ol style="list-style-type: none"> 1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. The Manager will go into approvals page. 4. After that, he will see employee's request of rider's approval and rejection.
Assigned to	Muhammad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.21 Use Case 21(Add Product)

Use Case ID	U21
Name	Add Product
Actor	Manager

Description	Manager can add medicines. He will go to threshold product and add drugs name, supplier, price and quantity of medicine.
Flow	1. First manager gets logged in. 2. Then manager arrives at Manager's dashboard. 3. Then he goes to view threshold page. 4. After that, he can add medicine by clicking on "Order" button.
Assigned to	Muhammad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.22 Use Case 22(Search Rider by ID)

Use Case ID	U22
Name	Search Rider by ID
Actor	Employee
Description	Employee can view rider's data like rider ID, rider name, Email, Phone no, etc. For getting information about some specific rider, they can search him. Searching is done using their unique ID's.
Flow	1. First employees get logged in. 2. Then he arrives at Employees dashboard. 3. If any rider already exists, then system shows their data. 4. They can search them by their ID's. 5. In case no rider is added, the system will show nothing to view for manager.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.23 Use Case 23(Update Rider)

Use Case ID	U23
Name	Update Rider
Actor	Employee
Description	Employee can update rider's data. He can update that rider's data that are already exists. So, they can change their name, email, phone no and salary.
Flow	1. After Logged in, employees arrive at Employee's Dashboard. 3. He opens the tab of viewing riders. 4. Employee can update rider's data. 5. Rider's data will be updated. 6. System will show confirmation box that rider is updated.
Assigned to	Muhammad Nazir
Status	Completed

Working by	Muhmmad Nazir
Known Issues	No issue

5.24 Use Case 24(View Tracks)

Use Case ID	U24
Name	View Tracks
Actor	Rider
Description	Rider can view all the tracks. Here that orders are delivered that rider can delivered. Hence, he can see all the tracks of riders.
Flow	<ol style="list-style-type: none"> 1. First rider gets logged in. 2. Then manager arrives at Rider's dashboard. 3. He goes to view tracks page. 4. Then he can see all the tracks of riders on map.
Assigned to	Muhammad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.25 Use Case 25(View Rider Corresponding to Track)

Use Case ID	U25
Name	View Rider Corresponding to Track
Actor	Employee
Description	Employee can view rider corresponding to track. When tracks were assigned to riders then employee can select tracks and knows that which rider has assigned this track.
Flow	<ol style="list-style-type: none"> 1. First employee gets logged in. 2. Then manager arrives at Employee's dashboard. 3. Then he selects track from combo Box. 4. After that, he will see the data of rider corresponding to track.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

5.26 Use Case 26(View Assign Orders)

Use Case ID	U26
Name	View Assign Orders
Actor	Rider
Description	Here rider can see all the assign orders. He will see all the orders that were assigned to him by employee's or distribution company.
Flow	<ol style="list-style-type: none"> 1. First rider gets logged in.. 2. Then rider arrives at Rider's dashboard. 3. He will go to view tracks. 4. In this page, he can see all the assign orders from company.

Assigned to	Muhammad Nazir
Status	Completed
Working by	Muhammad Nazir
Known Issues	No issue

5.27 Use Case 27(Assign Track to Riders)

Use Case ID	U27
Name	Assign Track to Riders
Actor	Employee
Description	Employee will assign track to riders. He will choose that which track should assign to which rider.
Flow	<ol style="list-style-type: none"> 1. First employee gets logged in. 2. Then employee arrives at Employee's dashboard. 3. He will go to "view orders" page. 4. Then he will see orders. 5. After that, he will assign tracks to riders.
Assigned to	Muhammad Umar
Status	Completed
Working by	Muhammad Umar
Known Issues	No issue

5.28 Use Case 28(View Products)

Use Case ID	U28
Name	View Products
Actor	Rider
Description	Rider can view products(drugs). He can view that products that are available in our distribution company.
Flow	<ol style="list-style-type: none"> 1. First rider gets logged in. 2. Then he reached at rider's Dashboard. 3. Then he can view all products available in our distribution company.
Assigned to	Subhan Anjum
Status	Completed
Working by	Subhan Anjum
Known Issues	No issue

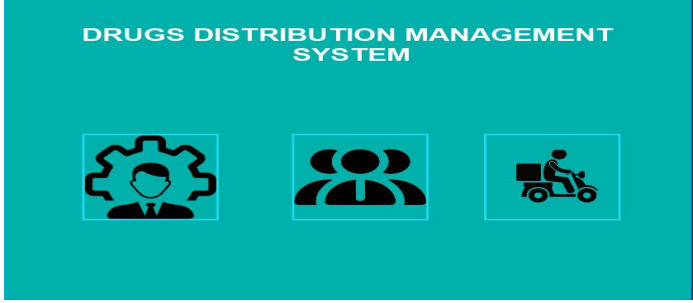

5.29 Use Case 29(Deliver Order)

Use Case ID	U29
Name	Deliver Order
Actor	Rider
Description	Rider will go to view tracks and he will see all the available orders. Then he will push on "Delivered" button and order is delivered.
Flow	<ol style="list-style-type: none"> 1. First rider gets logged in. 2. Then he arrives at Rider's dashboard. 3. He will see available orders. 4. Then he will select "Delivered" button and the order will be delivered.

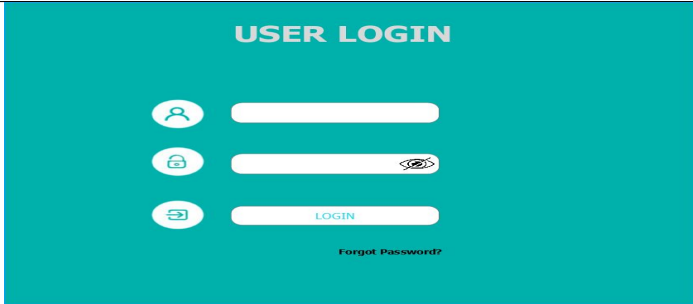

Assigned to	Muhmmad Nazir
Status	Completed
Working by	Muhmmad Nazir
Known Issues	No issue

6 User Interfaces

6.1 Use Interfaces 01(Main)

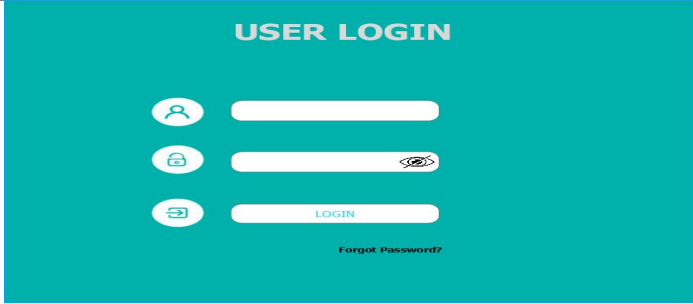
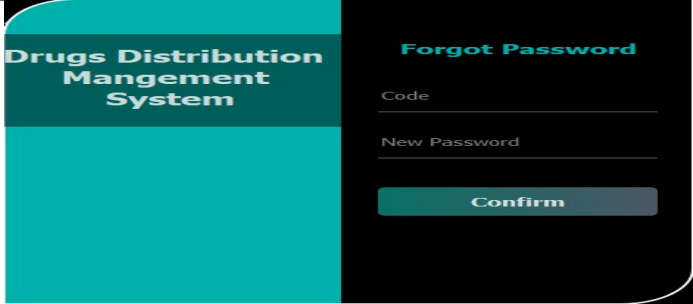
Interface ID	I01
Name	Main
Linked Use Case	No use case is related to this interface
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	There is validation on color picker. Default color of UI is shown on above picture but user can choose color of his own choice. He cannot select very light and dark colors.

6.2 Use Interfaces 02(Login)


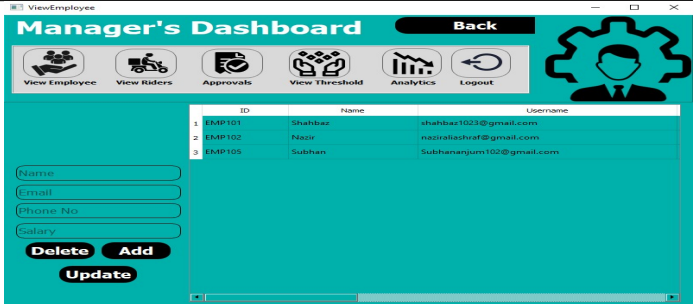
Interface ID	I02
Name	Login
Linked Use Case	No use case is related
UI Screen (JustinMind)	
UI Screen (Actual)	

Validators	Showing “Alert” on pushing login button if anyone username and password are empty or incorrect. There is validation of email in which no two users can login with the same email.
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6.3 Use Interfaces 03(Forget Password)



Interface ID	I03
Name	Forget Password
Linked Use Case	No use case is related to this interface
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	There is validation on color picker. Default color of UI is shown on above picture but user can choose color of his own choice. He cannot select very light and dark colors.

6.4 Use Interfaces 04(View Employee)


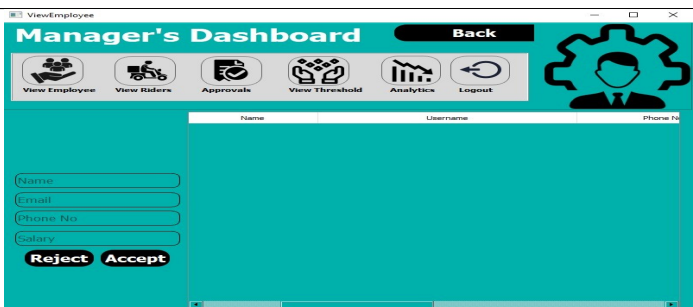
Interface ID	I04
Name	View Employee
Linked Use Case	U01, U02, U03, U17
UI Screen (JustinMind)	
UI Screen (Actual)	

Validators	Showing dialogue box on pushing “Add” “Update” and “Delete” button if required input is not complete. If input is not filled, then employee cannot add. Same email cannot be used for two persons. Back button is used for going direct to previous screen.
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6.5 Use Interfaces 05(View Rider)


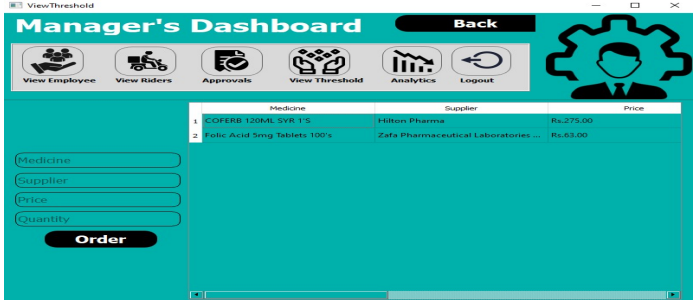
Interface ID	I05
Name	View Rider(For Manager)
Linked Use Case	U04, U18
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	There is validation on search. You can search data by ID(used digits) and we have applied contains filter. Back button is used for going recent previous screen.

6.6 Use Interfaces 06(Approval)


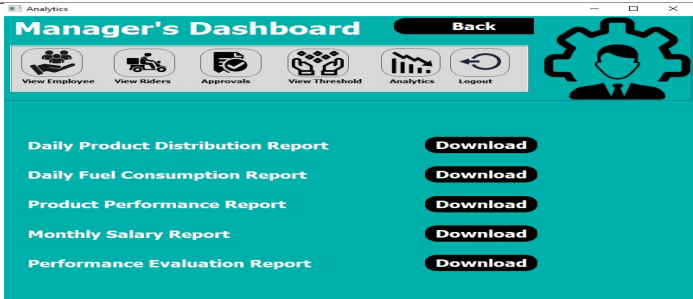
Interface ID	I06
Name	Manager Approval
Linked Use Case	U05, U19, U20
UI Screen (JustinMind)	 <p>MANAGER'S DASHGBOARD</p> <p>View Employee View Riders Approvals View Threshold Analytics Logout</p> <p>ID Name Email Phone Salary Approvals</p> <p>Accept Reject</p>
UI Screen (Actual)	 <p>Manager's Dashboard</p> <p>View Employee View Riders Approvals View Threshold Analytics Logout</p> <p>Name Username Phone No</p> <p>Reject Accept</p>

Validators	Showing Alert on pushing “Accept” and “Reject” button if required input is not complete. If input is not filled, then approvals and rejection cannot be done. Same email cannot be used for two persons. Back button is used for going direct to previous screen.
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6.7 Use Interfaces 07(View Threhold)


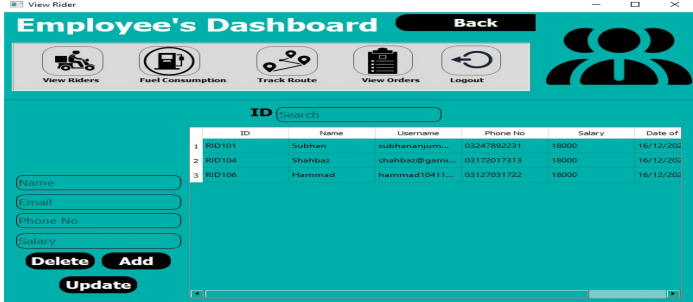
Interface ID	I07
Name	View Threhold
Linked Use Case	U06, U07, U21
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	Showing “Alert” on pushing “Order” button if required input is not complete. If input is not filled, then products cannot add. Back button is used for going direct to previous screen.

6.8 Use Interfaces 08(Analytics)

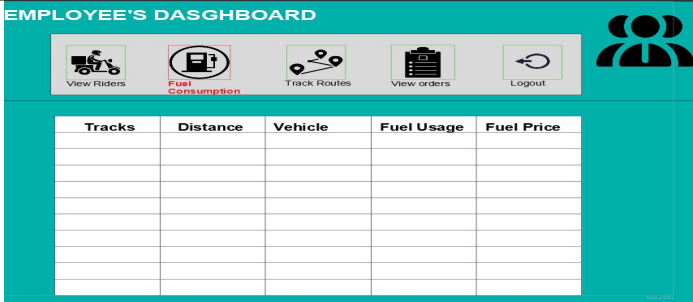
Interface ID	I08
Name	Manager Analytics
Linked Use Case	U08
UI Screen (JustinMind)	
UI Screen (Actual)	

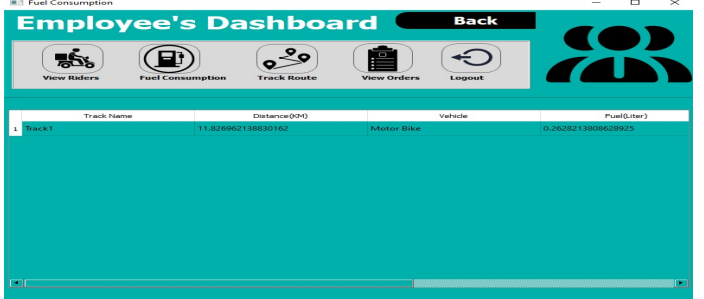
Validators	“Back” button is used for going direct to previous screen.
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6.9 Use Interfaces 09(View Rider)


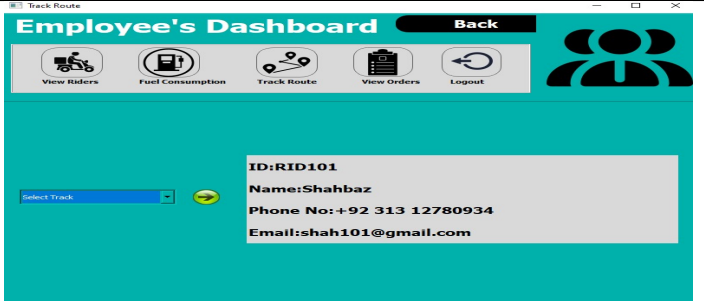
Interface ID	I09
Name	View Rider for Employee
Linked Use Case	U09, U10, U11, U22, U23
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	Showing Alert on pushing “Add”, “Update” and “Delete” button if required input is not complete or incorrect. If input is not filled, then we cannot add, delete and update rider’s data. Same email cannot be used for two persons. There is validation on search. You can search data by ID(used digits) and we have applied contains filter. “Back” button is used for going direct to previous screen.

6.10 Use Interfaces 10(Fuel Consumption)


Interface ID	I10
Name	Fuel Consumption
Linked Use Case	U12
UI Screen (JustinMind)	

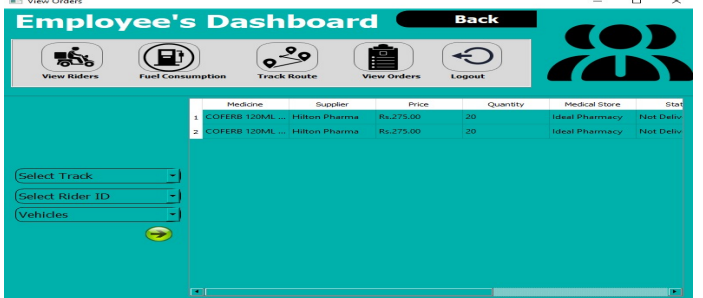
UI Screen (Actual)	
Validators	“Back” button is used for going direct to previous screen.

6.11 Use Interfaces 11(Track Routes)


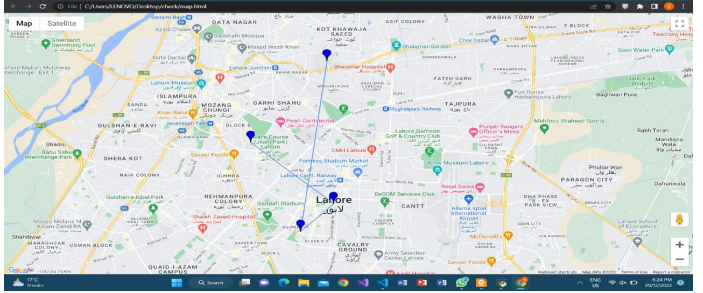
Interface ID	I11
Name	Track Routes
Linked Use Case	U13, U25
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	Showing “dialogue box” on pushing button if track is not selected in drop down. “Back” button is used for going to recent previous screen.

6.12 Use Interfaces 12(View Orders)

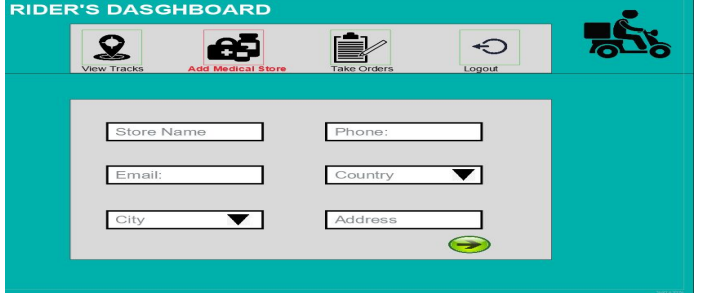
Interface ID	I12
Name	View Orders
Linked Use Case	U14, U27
UI Screen (JustinMind)	

<p>UI Screen (Actual)</p>	
<p>Validators</p>	<p>Showing message box if input fields are empty. “Back” button is used for going to previous opened page.</p>

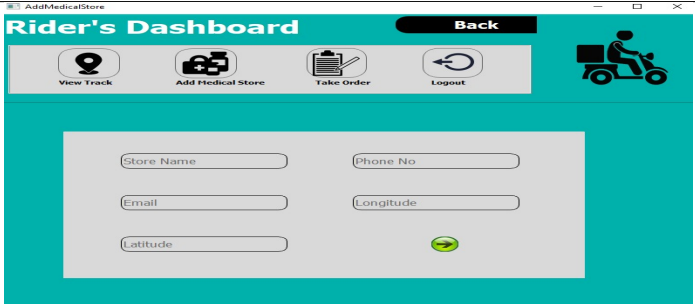
6.13 Use Interfaces 13(View Tracks)

<p>Interface ID</p>	<p>I13</p>
<p>Name</p>	<p>View Tracks</p>
<p>Linked Use Case</p>	<p>28, U29, U26, U24</p>
<p>UI Screen (JustinMind)</p>	<p>No UI</p>
<p>UI Screen(Actual)</p>	
<p>Map</p>	
<p>Validators</p>	<p>Showing message box if input fields are empty. “Back” button is used for going to previous opened page.</p>

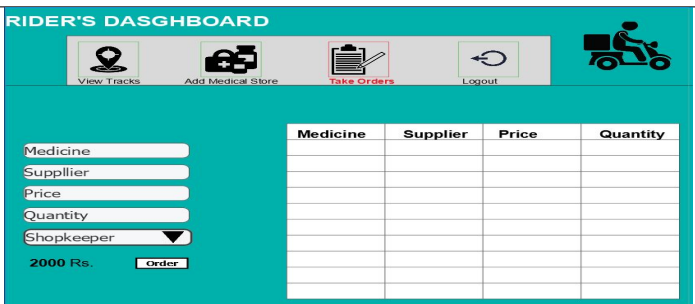

6.14 Use Interfaces 14(Add Medical Store)

<p>Interface ID</p>	<p>I14</p>
<p>Name</p>	<p>Add Medical Store</p>
<p>Linked Use Case</p>	<p>U15</p>
<p>UI Screen (JustinMind)</p>	

24

UI Screen (Actual)	
Validators	Showing message box on pushing “Arrow” button if required input is not complete. “Back” button is used for going to previous opened page.

6.15 Use Interfaces 15(Take Order)

Interface ID	I15
Name	Add Medical Store
Linked Use Case	U16
UI Screen (JustinMind)	
UI Screen (Actual)	
Validators	Showing message box on pushing “Arrow” button if required input is not complete. “Back” button is used for going to previous opened page.

7 Classes

Class name	Software / Domain	Is Abstract (Yes/No)	Is Singleton (Yes/No)	Is the class will have parametrized constructor (Yes/No)
Email	Software	No	No	Yes
Account	Software	No	Yes	Yes
EmployeeNode	Software	No	No	Yes
Employee	Domain	No	No	Yes
RiderNode	Software	No	No	Yes
Rider	Domain	No	No	Yes
RiderApprovalNode	Software	No	Yes	Yes
RiderApproval	Software	No	No	Yes
Address	Software	No	No	Yes

MedicalStoreNode	Software	No	No	Yes
MedicalStore	Domain	No	No	Yes
ProductNode	Software	No	No	Yes
Product	Domain	No	No	Yes
OrderNode	Software	No	No	Yes
Order	Domain	No	No	Yes
RouteNode	Software	No	No	Yes
Route	Domain	No	No	Yes

8 Object Oriented Features

8.1 Composition

There is composition between “RiderNode” and “Rider” classes. And also, there exists composition between “EmployeeNode” and “Employee” classes. It is shown in Detailed Object-Oriented Design.

8.2 Inheritance

There exists inheritance between “Account” and “EmployeeNode” classes. And also, there exists inheritance between “EmployeeNode” and “RiderNode” classes , “RiderNode” and “EiderApprovalNode”, “productNode” and “OrderNode” , “Address” and “MedicalStore” classes. It is shown in Detailed Object-Oriented Design.

8.3 Multi-Level Inheritance

There exists multi-level inheritance in such a way that “Account” class inherits “EmployeeNode” and it inherits “RiderNode” which then inherits “RiderApprovalNode” class. It is shown in Detailed Object-Oriented Design.

9 Detailed Object-Oriented Design

Below is the detailed Object Oriented Design:

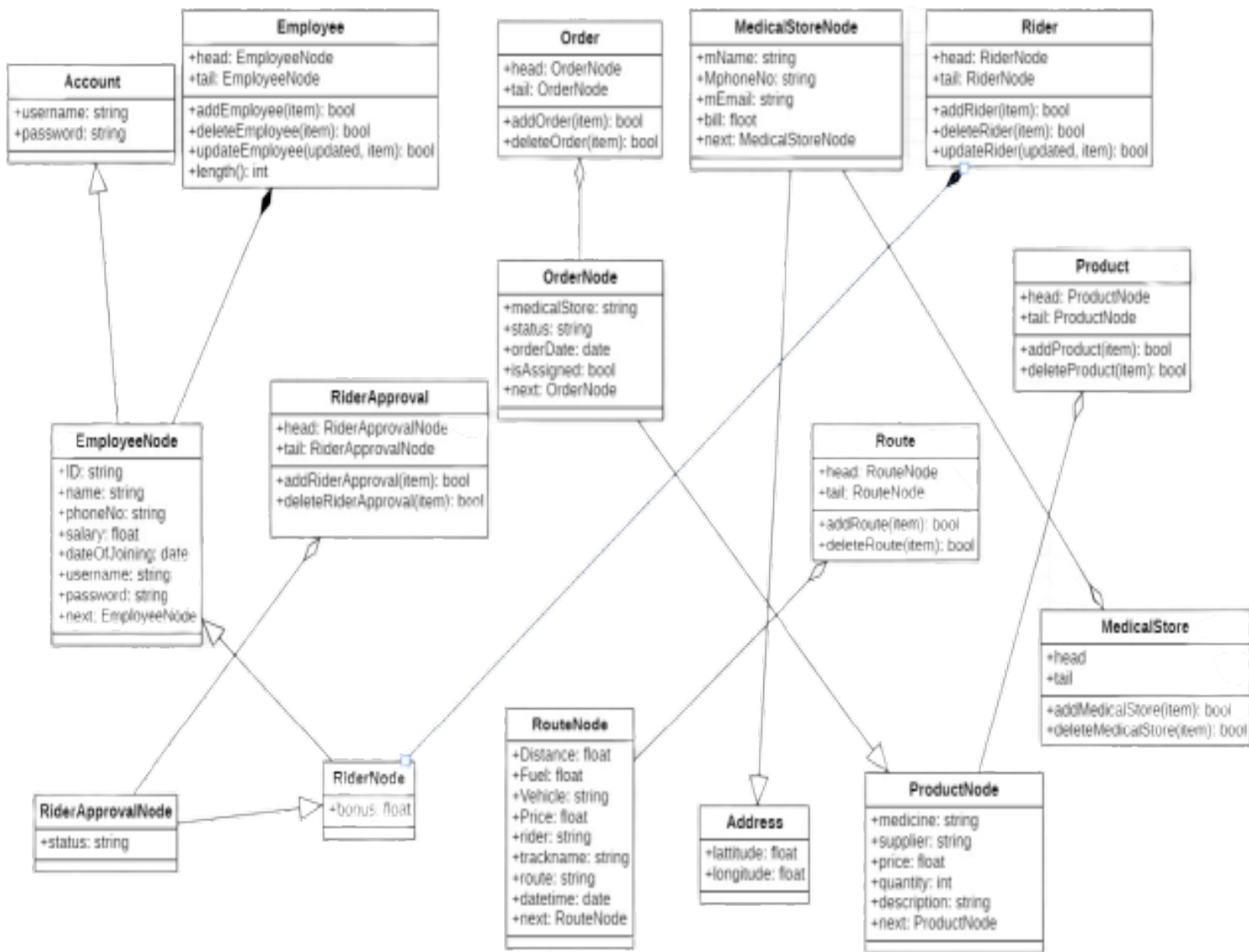


fig 9.1:Detailed Object Oriented Design using OOP Pillars

10 Data Structure

Entity	Related Use cases	Data Structure Used	Justification
Rider	U10, U11, U05, U04, U23, U18, U25	Linked List	Data manipulation is faster in linked list. Due to its fast insertion and deletion, we have used linked list.
Employee	U01, U02, U03, U05, U17,	Linked List	Because we can insert and delete data fastly in linked list so we have used it in our project. Hence, we can manipulate data easily.
Product	U06, U21, U28	Linked List	Data manipulation is faster in linked list. Due to its fast insertion and deletion, we have used linked list.
Order	U16, U26, U29, U07,	Queue	We have used Queue by keeping in mind the principle of FIFO(first in first out) because first that order is delivered that is first take.

Route	U24, U13	Kruskal algorithm	We have used Kruskal algorithm to find the shortest path for riders so that fuel consumption should be managed.
Medical Store	U15	Linked List	Due to its fast insertion and deletion, we have used linked list. So, Data manipulation be co faster in liked list.
Address	U15	Linked List	Data manipulation is faster in liked list. Due to its fast insertion and deletion, we have used linked list.

11 Exceptions

Following Exceptions might Occur:

Type of Exception	Why this exception will occur	Use Case Id in which exception could be occurred	How you will handle the exception
Runtime Exception	It was occurred during reading of files.	Add Employee, Delete Employee, Add Rider, Delete Rider, Update Rider, Update employee	Using Try and Except
Email not Exist	It will be occurred when email is not already exist.	Login, Add, delete, Update, Assign Route	Using Try and Except

12 Data Storage

We will be storing our data by separating it using commas. We will use comma separated files.

- Employees.csv(7 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining)
- Riders.csv(8 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining, Bonus)
- Orders.csv(9 columns: Medicine, Supplier, Price, Quantity, Description, MedicalStore, Status, OrderDate, IsAssigned)
- Orders.csv(4 columns: Medicine, Date, status, isAssigned)
- RiderApproval.csv(9 columns: Username, Password, ID, Name, PhoneNo, Salary, Date of Joining, Bonus, Status),
- MedicalStore.csv(6 columns: StoreName, PhoneNo, Email, Lattitude, Longitude, Bill),
- Routes.csv(8 columns: TrackName, Route, Distance, Rider, Vehicle, Fuel, Price, Assigned Date and Time),
- Medicine.csv(5 columns: productitem, vendor, money, description, Quantity), MedicalStoreRider.csv(4 columns: StoreName, Email, Rider, Adding Date)
- Managers.csv(2 columns: Username, Password)
- Bonus.csv(3 columns: ID, Name, Bonus, Salary).

13 Email Sending

Email will be sent to riders and employees according to given conditions

- While forgetting password you will receive the email.
- When the rider or Employee is added (means on account creation) then Email will be sent to them containing their user ID and Password.
- When the rider or Employee is removed then Email will be sent to them that they have been removed due to any condition or situation.
- When the drugs are delivered then the Email will be sent to him that your order is placed.

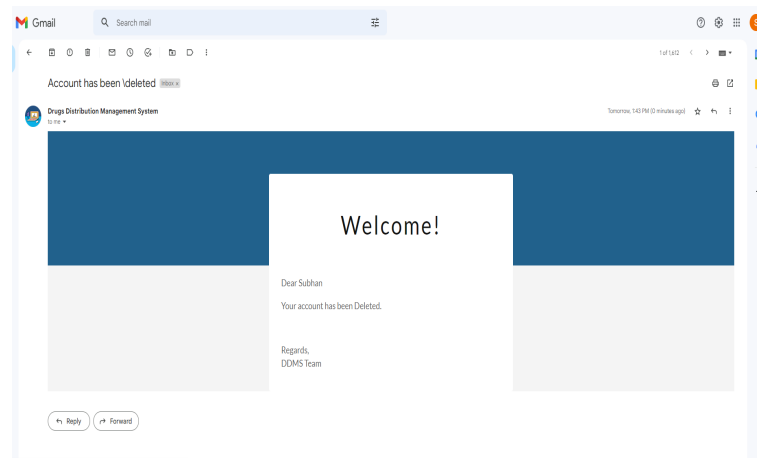


fig 13.1:A picture as a template of an Email

14 Project Plan

Use Case Id	Use Case Name	Member Name	Completion Date	Due date
U02, U01	Add Employee, View Employee	Muhammad Nazir	08-12-2022	08-12-2022
U03, U10	Delete Employee, Add Rider	Subhan Anjum	08-12-2022	08-12-2022
U11, U05	Delete Rider, Approvals (Accept and Reject)	Muhammad Umar	08-12-2022	08-12-2022
U04	View rider	Muhammad Nazir	10-12-2022	11-12-2022
U16, U09	Take order, View Riders	Subhan Anjum	11-12-2022	11-12-2022
U14, U06	View Order, View Threshold	Muhammad Umar	11-12-2022	11-12-2022
U23, U21	Update Rider, Add Products	Muhammad Nazir	14-12-2022	15-12-2022
U08, U18	View Reports, Search Rider by ID	Subhan Anjum	15-12-2022	15-12-2022
U17, U12	Update Employee, View Fuel Consumption	Muhammad Umar	14-12-2022	15-12-2022
U26, U29	View Assign Orders, Deliver Orders	Muhammad Nazir	18-12-2022	17-12-2022
U22, U28	Search Rider by ID, View Products	Subhan Anjum	17-12-2022	17-12-2022

U07, U24	Order Threshold, View Tracks	Muhammad Umar	18-12-2022	17-12-2022
U13	Track Routes	Muhammad Nazir	20-12-2022	18-12-2022
U25	View Rider Corresponding to Track	Subhan Anjum	20-12-2022	18-12-2022
U27	Assign Tracks to Riders	Muhammad Umar	19-12-2022	18-12-2022

15 Analytical Reports

Here are the Analytical Reports.

15.1 Daily Product Distribution Report

In this report manager can view daily distribution of medicine. He can see how much medicine are delivered.

Daily Product Distribution Report

Rider ID	Medicine	Quantity	Price
None	COFERB 120ML SYR 1'S	40	Rs.275.00
RID101	Fexet-D Tab 10's	40	Rs.158.12
RID101	Myteka Tablets 10mg 14's	60	Rs.220.00
RID101	Folic Acid 5mg Tablets 100's	70	Rs.63.00

- End of Report -

fig 15.1.1: A report of daily distribution of Medicine that shows the quantity of drugs that are delivered and also tell about price and rider that has delivered the drugs.

15.2 Daily Fuel Consumption Report

In this report manager can see the consumption of fuel. He can see that how much fuel is used for some track.

Daily Fuel Consumption Report

Rider ID	Track	Fuel(KM)	Price(RS)
RID101	Track1	0.262	59.08

- End of Report -

fig 15.2.1: A report of fuel consumption that shows consumption of fuel with price related to some rider and track.

15.3 Product Performance Report

In this report manager can see the performance of medicines. He can see which medicine is delivered most.

Product Performance Report

Medicine	Quantity	Price(RS)	Percentage(%)
COFERB 120ML SYR 1'S	40	Rs.275.00	19.04%
Fexet-D Tab 10's	40	Rs.158.12	19.04%
Myteka Tablets 10mg 14's	60	Rs.220.00	28.57%
Folic Acid 5mg Tablets 100's	70	Rs.63.00	33.33%

- End of Report -

fig 15.3.1: A performance Report of delivery of Medicine that shows the quantity of products with their percentage so know which medicine is delivered maximum.

15.4 Monthly Salary Report

In this report, manager can see the monthly salary report of riders and employees. He can see whom bonus is given from distribution company.

Monthly Salary Reports.pdf x

Monthly Salary Report

ID	Basic Salary	Bonus	Salary
RID101	18000	0	18000
RID104	18000	0	18000
RID106	18000	0	18000
EMP101	23000	0	23000
EMP102	23000	0	23000
EMP105	23000	0	23000

- End of Report -

fig 15.4.1: A detailed Report of Monthly Salary and Bonus that shows the salary and bonus of riders

15.5 Performance Evaluation Report

In this report, manager can see the performance Evaluation of the riders

Performance Evaluation Report			
Store Name	Email	Rider ID	Date
Pharmacy One +	naziraliashraf@gmail.com	RID101	20/12/2022
Clinix Pharmacy	subhananjum001@gmail.com	RID101	20/12/2022
- End of Report -			

fig 15.5.1: A sample of performance evaluation report of the riders