



Software Construction & Development

BSSE 5-1

Project Report

Submitted To:

Mr. Islam Abbasi

Submitted By:

Ahsan Abbas 53143

Ziafat Hussain 55062

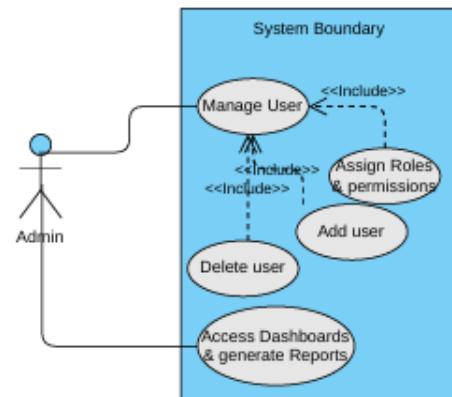
Title: Modern Courier Management System

Contents

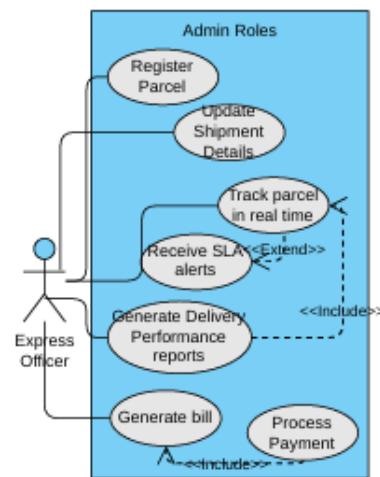
Usecase Diagram:.....	3
Descriptive Use Case:.....	6
Sequence Diagram:.....	24
Class Diagram:	31
Activity Diagram:.....	32
State Diagram:.....	41

Usecase Diagram:

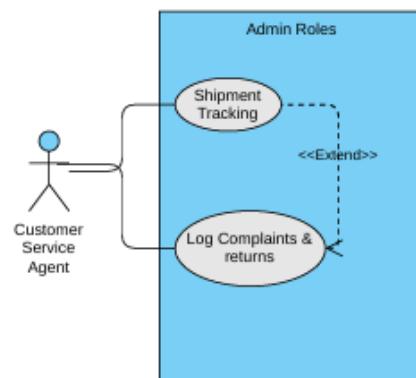
1. Admin



1. Express officer

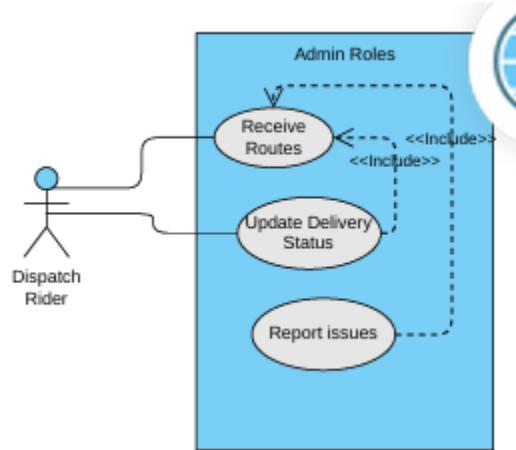


1. Customer service agent

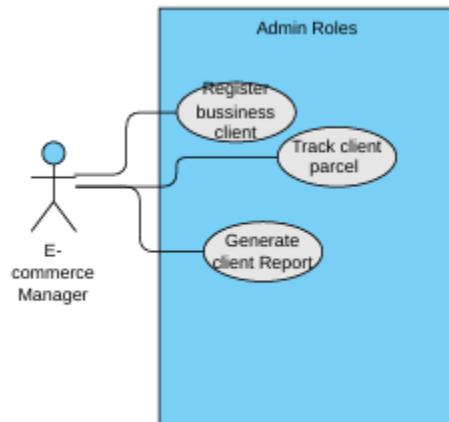


SCD

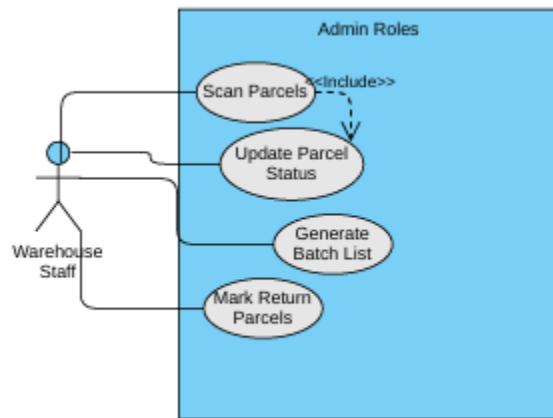
4. Dispatch Rider



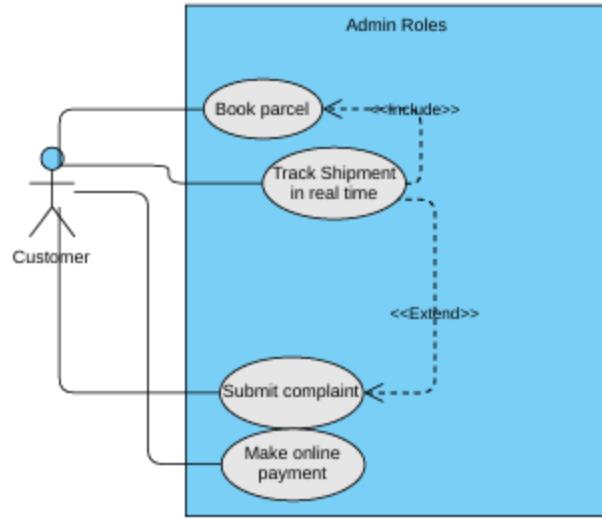
5. E-commerce manager



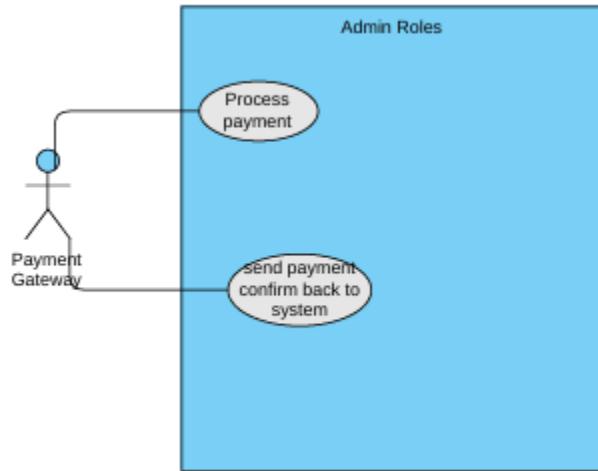
6. Warehouse Staff



7. Customer



8. Payment Gateway



Descriptive Use Case:

Use Case No.	01	
Use Case Name	Manage User	
Actor	Admin	
Type	Primary Actor	
Description	Admin will manage users, such as can add delete users.	
Preconditions	Admin should be login. The user will be on dashboard.	
Postconditions	The users will be able to perform the assigned tasks.	
Normal Flow	Actor Action	System Response
	1. Admin opens the User management portal from dashboard.	2. System will open the User management portal and show options to add/delete a user, assign roles and permissions.
	3. Admin will select the desired operation.	3. The system will perform the selected operation.
	5. Admin will confirm the changes	4. After successful operation the system will ask to save changes 6. Then system will update the record and display conformation.
Alternate Flow	A5.1 if Admin will not confirm the change then records will not be saved.	

Use Case No.	UC-ADM-01a	
Use Case Name	Create User	
Actor	Admin	
Type	Primary Actor.	
Description	The admin creates new user accounts.	
Preconditions	- Admin is logged into the system. - User Management module is accessible. - Required user details are available.	
Postconditions	- New user profile is added.	
Normal Flow	Actor Action	System Response
	1) Admin selects “Create User” option.	2) System displays a form requiring user details (Name, Email, Role, etc.).

	3) Admin fills out the form and submits it.	4) System validates entered data for completeness and checks for duplicates. 5) Ask for confirmation.
	6) Admin confirms the submission.	7) System saves the new user record in the database and displays a success message.
Alternate Flow	A3.1 if incorrect data is added then ask for resubmission of form. A6.1 if confirmation fails then do not save changes.	

Use Case No.	UC-ADM-01b	
Use Case Name	Delete User	
Actor	Admin	
Type	Primary Actor.	
Description	The admin creates new user accounts or deletes inactive user profiles to maintain accurate and secure user data.	
Preconditions	<ul style="list-style-type: none"> - Admin is logged into the system. - User Management module is accessible. - For creation, required user details are available. 	
Postconditions	<ul style="list-style-type: none"> - New user profile is added or deleted successfully. - Audit logs are updated for record tracking. 	
	Actor Action	System Response
Normal Flow	1) Admin selects an existing user and clicks "Delete User."	2) System ask for confirmation.
	3) Admin confirms the deletion action.	4) System removes the user, updates the user list, and displays a deletion success message.
	5) Admin reviews updated list of users.	
Alternate Flow	-----	

Use Case No.	UC-ADM-01c
Use Case Name	Assign Role
Actor	Admin
Type	Primary Actor.

Description	The admin assigns roles to the users.	
Preconditions	<ul style="list-style-type: none"> - Admin is logged into the system. - User Management module is accessible. - Required user details are available. 	
Postconditions	- Roles assigned user.	
Normal Flow	Actor Action	System Response
	1) Admin selects “Assign role” option.	2) System ask to select a user.
	3) Admin select the user	4) System ask for the permissions
	5) Admin select roles and confirm.	6) System update the user record in the database and displays a success message.
Alternate Flow		

Use Case No.	UC-ADM-01d	
Use Case Name	Assign Role	
Actor	Admin	
Type	Primary Actor.	
Description	The admin assigns roles to the users.	
Preconditions	<ul style="list-style-type: none"> - Admin is logged into the system. - User Management module is accessible. - Required user details are available. 	
Postconditions	- Roles assigned user.	
Normal Flow	Actor Action	System Response
	1) Admin selects “Unassign role” option.	2) System ask to select a user.
	3) Admin select the user	4) System ask for the permissions
	5) Admin select roles and confirm.	6) System update the user record in the database and displays a success message.
Alternate Flow		

Use Case No.	UC-ADM-03	
Use Case Name	View Detailed Reports	
Actor	Admin	
Type	Primary Actor.	
Description	The Admin views detailed parcel reports that include shipment status, timestamps, route details, and responsible handlers to analyze inter-branch operations.	
Preconditions	<ul style="list-style-type: none"> - Admin must have selected a parcel or shipment record. 	
Postconditions	<ul style="list-style-type: none"> - The system displays detailed report and analytics data for the selected shipment. 	
Normal Flow	Actor Action	System Response
	<ol style="list-style-type: none"> 1. Admin clicks on view detail button. 2. Admin will select the report type. 5. If Admin wants to print it will print the. 6. User will close the page. 	<ol style="list-style-type: none"> 3. The system will ask about which type of report. 4. System will fetch all the history and records required for that report, generate report and then show to the user. 5. System will print that report, 6. System will go back to Admin Dashboard.
Alternate Flow	A5.1 if user will not want to print then it will press the close button.	

Use Case ID	UC-EO-01	
Use case name	Register Parcel	
Actor	Express Officer	
Description	Officer will register the new parcel into the system for record and delivery.	
Preconditions	Officer must me login.	
Postconditions	Parcel details will be stored in records.	
Main Flow	Actor Action	System Response
	<ol style="list-style-type: none"> 1. Officer will open form. 3. User will enter the information about the parcel required. 	<ol style="list-style-type: none"> 2. System will display form and ask for details. 4. System will store the details. 5. The system will also store the details about the user, and date and time of registration..

Alternate Flow	A3.1. If officer will enter wrong data, then system will ask for the reenter the data.
-----------------------	--

Use Case ID	UC-EO-02	
Use Case Name	Update Parcel Status	
Actor Type	Primary – Express Officer	
Description	The officer updates the status of parcels such as “delivered,” or “returned.”	
Preconditions	Parcel must already exist in the system.	
Postconditions	Parcel status will be updated and visible to customers.	
Main Flow	User Action	System Response
	<ol style="list-style-type: none"> 1. User will enter parcel details, manually or scan Barcode. <p>4. Then officer will change the parcel status and press save.</p>	<ol style="list-style-type: none"> 2. System will search parcel details in database. 3. If found the will allow user to update status. <ol style="list-style-type: none"> 5. Then system will update the status in records and also store the information about the user who has updated status on which date and time. 6. Show confirmation message.
Alternate Flow	A1.1 if user enter the wrong data manually, then it will be asked to search barcode or reenter the correct data.	

Use Case ID	UC-EO-03	
Use case name	Track parcel	
Actor	Express Officer	
Description	To track the current status and details of a parcel using different search filters.	
Preconditions	Parcel must be registered in system.	
Postconditions	Parcel tracking information is displayed.	
Main Flow	Actor Action	System Response
	<ol style="list-style-type: none"> 1. Officer will open track portal <p>3. User will enter the information about the parcel.</p>	<ol style="list-style-type: none"> 2. System will display a track portal. <ol style="list-style-type: none"> 4. System will search the parcel in database. 5. Will track the status of parcel,

		6. Then will display the parcel status.
Alternate Flow	E3.1. If officer will enter wrong data, then system will ask for the reenter the data.	

Use Case ID	UC-EO-04	
Use Case Name	Generate & Print Bills	
Actor Type	Primary – Express Officer	
Description	To generate and print customer shipment bills after parcel registration.	
Preconditions	Parcel details must be available and verified.	
Postconditions	Bill is generated, printed, and logged in the system.	
Main Flow	User Action	System Response
	<p>1. User will press the button of generate the bill.</p>	<p>2. The system will fetch the rates for weights, and distance,</p> <p>3. Then it will calculate the total bill.</p> <p>4. Then print in format on the officer's screen.</p>
	<p>5. Then officer will press print button.</p>	<p>6. Then the system will print the invoice through the connected machine.</p>
Alternate Flow	A5.1 if officer will cancel then it will cancel the invoice.	

Use Case ID	UC-EO-05	
Use Case Name	Generate Bill	
Actor Type	Primary – Express Officer	
Description	Calculate bill and generate bill invoice	
Preconditions	Parcel must be added to the system.	
Postconditions	Bill will be generated for the system.	
Main Flow	User Action	System Response
	<p>1. User will press to generate bill.</p>	<p>2. The system fetch the details of parcel.</p> <p>3. Then will fetch rates of shipment from database.</p> <p>4. Calculate the bill.</p>

		5. Show the bill invoice to the system.
Alternate Flow	-----	

Use Case ID	UC-EO-06	
Use Case Name	Process payment	
Actor Type	Primary – Express Officer	
Description	To confirm payment receipt and mark shipments as paid or verified.	
Preconditions	Bill must be generated and linked to a parcel.	
Postconditions	Shipment is updated to “Payment Verified” status.	
Main Flow	User Action	System Response
	<p>6. User will confirm that the payment is collected from customer.</p>	<p>7. The system will update the payment status for that shipment as paid, also store the information of which user has collected.</p> <p>8. Then will update the records of payments that this payment is collected in data base.</p> <p>9. Then notify the relevant user who will take this order.</p>
Alternate Flow	-----	

Use Case ID	UC-CSA-01	
Use Case Name	Search for Shipment	
Actor Type	Primary – Customer Service Agent	
Description	The Customer Service Agent searches for a shipment using tracking ID, sender name, or customer contact to assist customers in inquiries.	
Preconditions	Agent must be logged into the system with access to shipment database.	
Postconditions	Shipment details are displayed based on the search criteria.	
Main Flow	User Action	System Response
	<p>1. User will open the search for portal.</p>	<p>2. The system will ask for the details such as in, or destination, or senders name.</p>
	<p>3. The User will enter the required details.</p>	<p>4. System will fetch all the details about that system from database.</p>

		5. Will display all the details on user's screen.
Alternate Flow	A3.1 if user enter the wrong details, od did not match any record then he will be asked to enter the correct information.	

Use Case ID	UC-CSA-02	
Use Case Name	View Shipment Details & Status	
Actor Type	Primary – Customer Service Agent	
Description	The agent views shipment details and current delivery status to inform the customer about parcel progress.	
Preconditions	Shipment must exist and be searchable in the system.	
Postconditions	Shipment details and latest status updates are displayed.	
Main Flow	User Action	System Response
	1. User will enter the shipment details.	2. System will fetch the record and shipment status from database. 3. Then It will display to the user
Alternate Flow	A1.1 if shipment not found then it will tell the user that this record does not exist.	

Use Case ID	UC-CSA-03	
Use Case Name	Record Complaints	
Actor Type	Primary – Customer Service Agent	
Description	The agent records customer complaints related to lost parcels, delays, or service issues and forwards them for resolution.	
Preconditions	Agent must be logged in, and customer details must be available.	
Postconditions	Complaint is recorded in the system and assigned a unique complaint ID.	
Main Flow	User Action	System Response
	1. After searching the record, user will press the complaint button.	2. System will ask for complaint details,
	3. Then user will enter details, then submit.	4. System will save the complaint in records and the shipment details for further inquiry.
Alternate Flow	-----	

Use Case ID	UC-DR-01	
Use Case Name	View Assigned Deliveries	
Actor Type	Primary – Dispatch Rider.	

Description	The system will show all the assigned deliveries to the rider.	
Preconditions	Rider should be login, and at least one delivery should be assigned.	
Postconditions	Rider will be able to see the assigned deliveries.	
Main Flow	User Action	System Response
	<ol style="list-style-type: none"> 1. User will select to view deliveries. 	<ol style="list-style-type: none"> 2. System will fetch assigned deliveries from the database. 3. Display deliveries to the user.
Alternate Flow	2S.1 if no delivery assigned then show that no delivery is assigned.	

Use Case ID	UC-DR-02	
Use Case Name	Update delivery status	
Actor Type	Primary – Dispatch Rider.	
Description	System will be update the status of the parcel in the database.	
Preconditions	Rider should be login, and at least one delivery should be assigned.	
Postconditions	Status of the parcel will be updated.	
Main Flow	User Action	System Response
	<ol style="list-style-type: none"> 1. User will select the parcel. 	<ol style="list-style-type: none"> 2. System will ask for the new status.
	<ol style="list-style-type: none"> 3. User will select new status. 	<ol style="list-style-type: none"> 4. System will update record in database.
Alternate Flow	-----	

Use Case ID	UC-DR-03	
Use Case Name	Issue reports	
Actor Type	Primary – Dispatch Rider.	
Description	Any issue occurs while delivery, system will be updated.	
Preconditions	Rider should be login, and at least one delivery should be assigned.	
Postconditions	Issue will be reported.	
Main Flow	User Action	System Response
	<ol style="list-style-type: none"> 1. User will select the parcel. 	
	<ol style="list-style-type: none"> 2. User will enter the issue 	<ol style="list-style-type: none"> 3. System will update record in database.
Alternate Flow	-----	

Use Case ID	UC-ECM -01	
Use Case Name	Register Business Client	
Actor Type	Primary – E Commerce Manager.	
Description	New business client such as ecommerce platforms will registered in the system.	

Preconditions	Manager should be login.	
Postconditions	New partner will be integrated	
Main Flow	User Action	System Response
	1. User will select to integrate new client.	
		2. System will show the form and ask for the details.
	3. User will add insert the details.	4. System will validate the credentials. 5. System will store new client in the database.
Alternate Flow	4S.1 if credentials are wrong then input again that field.	

Use Case ID	UC-ECM -01	
Use Case Name	Track Client Parcel	
Actor Type	Primary – E Commerce Manager.	
Description	User see the current position and status of the parcel.	
Preconditions	Manager should be login.	
Postconditions	User will know the status of the parcel.	
Main Flow	User Action	System Response
	1. User will enter the details of the parcel and the client.	
		2. System will fetch the details for that parcel. 3. Then will show the details to the user.
Alternate Flow	3S.1 if no parcel exits then show that no parcel found.	

Use Case ID	UC-ECM -03	
Use Case Name	Generate client Report	
Actor Type	Primary – E Commerce Manager.	
Description	User see the current position and status of the parcel.	
Preconditions	Manager should be login.	
Postconditions	User will know the status of the parcel.	
Main Flow	User Action	System Response
	1. User will enter select the client for its details.	
		2. System will fetch the details for that client. 3. Then will show the details to the user.

		4. Then will generate the reports and show to the user.
Alternate Flow	3S.1 if no client exits then show that no parcel found.	

Use Case ID	UC-ECM -02	
Use Case Name	Generate client Report	
Actor Type	Primary – E Commerce Manager.	
Description	User see the current position and status of the parcel.	
Preconditions	Manager should be login.	
Postconditions	User will know the status of the parcel.	
Main Flow	User Action	System Response
	1. User will enter select the client for its details.	
		2. System will fetch the details for that client. 3. Then will show the details to the user. 4. Then will generate the reports and show to the user.
Alternate Flow	3S.1 if no client exists then show that no parcel found.	

Use Case ID	UC-01	
Use Case Name	Scan Parcels	
Actor	Warehouse Staff	
Actor Type	Primary	
Description	Allows warehouse staff to scan parcel barcodes for processing.	
Preconditions	Parcel must exist in the system.	
Postconditions	Parcel status updated to 'Scanned'.	
Main Flow	User	System response
	1. Staff selects 'Scan Parcels'. 3. Staff scans parcel barcode. 5. Staff confirms scan.	2. System activates barcode scanner. 4. System retrieves parcel details. 6. System updates parcel status.

SCD

Alternate Flow(s)	If barcode invalid, system displays 'Parcel not found'.
--------------------------	---

Use Case ID	UC-02	
Use Case Name	Update Parcel Status	
Actor	Warehouse Staff	
Actor Type	Primary	
Description	Allows staff to update parcel delivery status.	
Preconditions	Parcel must be scanned first.	
Postconditions	Status change saved successfully.	
Main Flow	User	System response
	1. Staff selects 'Update Parcel Status'. 3. Staff selects parcel. 5. Staff confirms change.	2. System displays parcel list. 4. System updates status in database. 6. System displays success message.
Alternate Flow(s)	If parcel not found, system shows error.	

Use Case ID	UC-03	
Use Case Name	Generate Batch List	
Actor	Warehouse Staff	
Actor Type	Primary	
Description	Generates a list of parcels ready for dispatch or return.	
Preconditions	Parcels must be scanned and verified.	
Postconditions	Batch list created successfully.	
Main Flow	User	System response
	1. Staff selects 'Generate Batch List'.	

	<p>3. Staff confirms list.</p> <p>5. Staff prints list.</p>	<p>2. System retrieves scanned parcels.</p> <p>4. System generates batch ID.</p> <p>6. System marks parcels ready for dispatch.</p>
Alternate Flow(s)	If no parcels found, system shows 'No items to process'.	

Use Case ID	UC-04	
Use Case Name	Mark Return Parcels	
Actor	Warehouse Staff	
Actor Type	Primary	
Description	Allows staff to mark parcels as returned or failed deliveries.	
Preconditions	Parcel must exist and be undelivered.	
Postconditions	Parcel marked as returned successfully.	
Main Flow	User	System response
	<p>1. Staff selects 'Mark Return Parcels'.</p> <p>3. Staff marks parcel as returned.</p>	<p>2. System displays undelivered list.</p> <p>4. System updates status to 'Returned'.</p>
Alternate Flow(s)	If parcel invalid, system displays error.	

Use Case ID	UC-01
Use Case Name	Book Shipment
Actor	Customer
Actor Type	Primary

Description	Allows the customer to create and confirm a new shipment by entering sender, receiver, and package details.	
Preconditions	Customer must be logged into the system.	
Postconditions	Shipment is recorded in the system and assigned a unique tracking ID.	
Main Flow	User	System response
	1. Customer selects 'Book Shipment.' 3.Customer enters sender, receiver, and package details. 5.Customer selects delivery type (standard/express). 7.Customer confirms booking. 9.Customer completes payment successfully.	2.System displays shipment booking form. 4.System validates all required fields. 6.System calculates shipping cost and estimated delivery time. 8.System includes the 'Make Payment' use case. 10.System generates shipment ID, confirms booking.
Alternate Flow(s)	Missing or invalid input . System prompts user to correct fields.	

Use Case ID	UC-02	
Use Case Name	Track Shipment in Real Time	
Actor	Customer	
Actor Type	Primary	
Description	It enables the customer to monitor real-time shipment status and location.	
Preconditions	Shipment must exist and be dispatched.	
Postconditions	Real-time tracking details are displayed successfully.	
Main Flow	User	System response
	1.Customer selects 'Track Shipment.'	

SCD

	<p>3.Customer enters tracking ID.</p> <p>5.Customer requests real-time status.</p>	<p>2.System displays tracking input form.</p> <p>4.System retrieves shipment details.</p> <p>6.System displays live shipment location, current status, and includes 'View History' data.</p>
Alternate Flow(s)	Invalid or expired tracking ID, System displays 'Shipment not found!.'	

Use Case ID	UC-03	
Use Case Name	View History	
Actor	Customer	
Actor Type	Primary	
Description	Allows the customer to view his/her previous history.	
Preconditions	Customer have sent or receive parcels to view history.	
Postconditions	History displayed to the customer.	
Main Flow	User	System response
	1.Customer selects 'View History.'	2.System shows list showing history.
Alternate Flow(s)		

Use Case ID	UC-04	
Use Case Name	Make Payment	
Actor	Customer	
Actor Type	Primary	
Description	Allows customer to make payment for the shipment booking.	
Preconditions	Shipment booking details must be confirmed.	

SCD

Postconditions	Payment is processed successfully, and receipt generated.	
Main Flow	User	System response
	1.Customer selects payment option. 3.Customer enters payment details. 5.Customer confirms payment. 7.Customer receives receipt.	2.System connects to payment gateway and displays payment form. 4.System validates card or wallet details. 6.System processes payment and displays confirmation message. 8.System updates shipment record and returns control to 'Book Shipment.'
Alternate Flow(s)	Invalid card/wallet info; System prompts for correction.	

Use Case ID	UC-05	
Use Case Name	Give Feedback	
Actor	Customer	
Actor Type	Primary	
Description	Allows customer to rate service or provide feedback.	
Preconditions	Customer must have completed a delivery.	
Postconditions	Feedback is recorded successfully.	
Main Flow	User	System response
	1.Customer selects 'Give Feedback.' 3.Customer rates service and adds comments.	2.System displays feedback form. 4.System stores feedback.

SCD

Alternate Flow(s)		

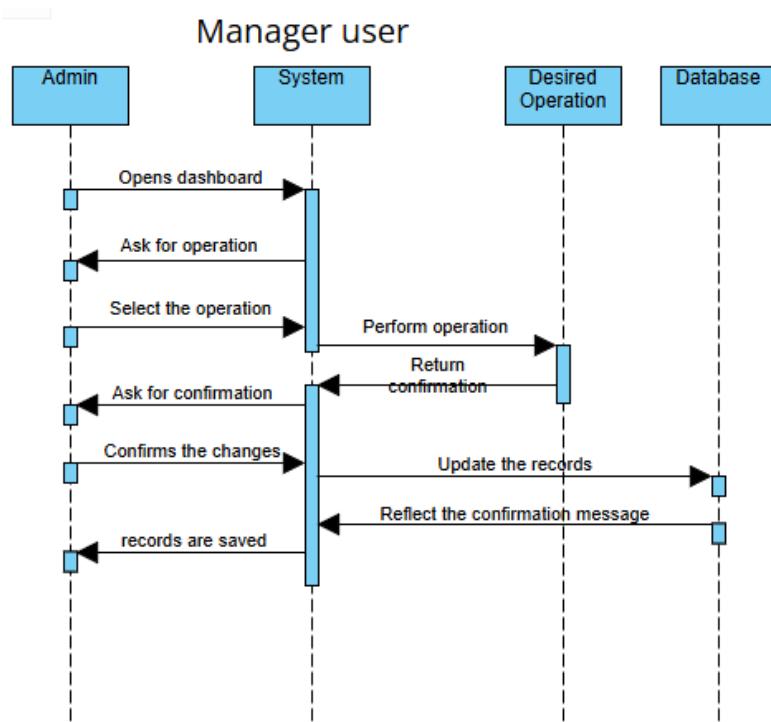
Use Case ID	UC-PG-01	
Use Case Name	Process payment	
Actor Type	Primary – External System (Payment Gateway)	
Description	The Payment Gateway allows the system to get payment from user.	
Preconditions	A bill should be generated.	
Postconditions	The system receives the latest payment status (success, failed, pending).	
Main Flow	User Action (System as Initiator)	System Response
	1. System will send the request.	2. Process payment. 3. Sent status back to the system.
	4. System will receive the status.	
Alternate Flow	-----	

Use Case ID	UC-E1	
Use Case Name	Share Order with Courier System	
Primary Actor	E-Commerce Platform	
Actor Type	External System	
Description	This use case enables the E-Commerce Platform to share customer orders with the Courier System for delivery processing. The system receives order data such as order ID, sender and receiver details, package weight, and delivery type to register a shipment automatically.	
Preconditions	The E-Commerce platform must be connected to the courier system via API or integration channel.	
Postconditions	The courier system successfully registers the shared order and generates a tracking ID.	
Main Flow	User (E-Commerce Platform)	System response
	1. Platform will send the shipment details via API.	2. System will fetch the data and will save it in records. 3. And will notify ecommerce manager.
Alternate flow		

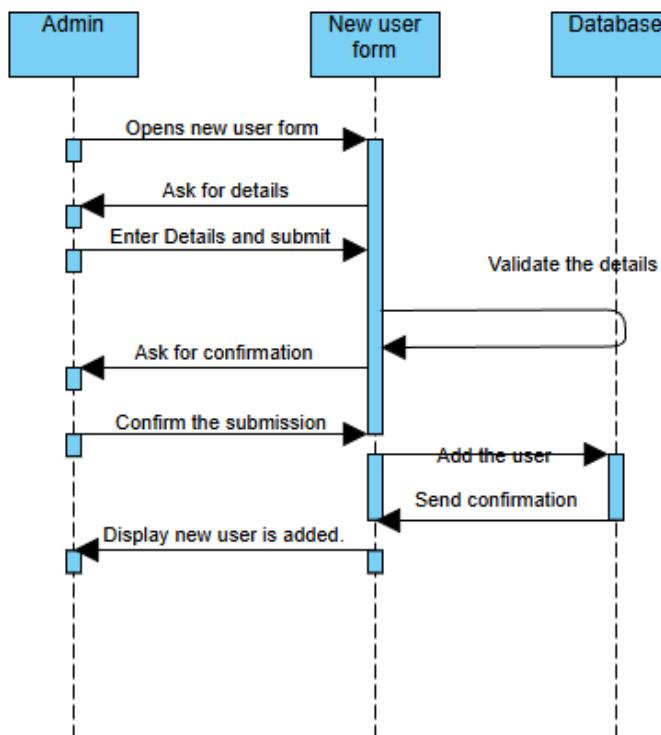
Use Case ID	UC-E2
--------------------	--------------

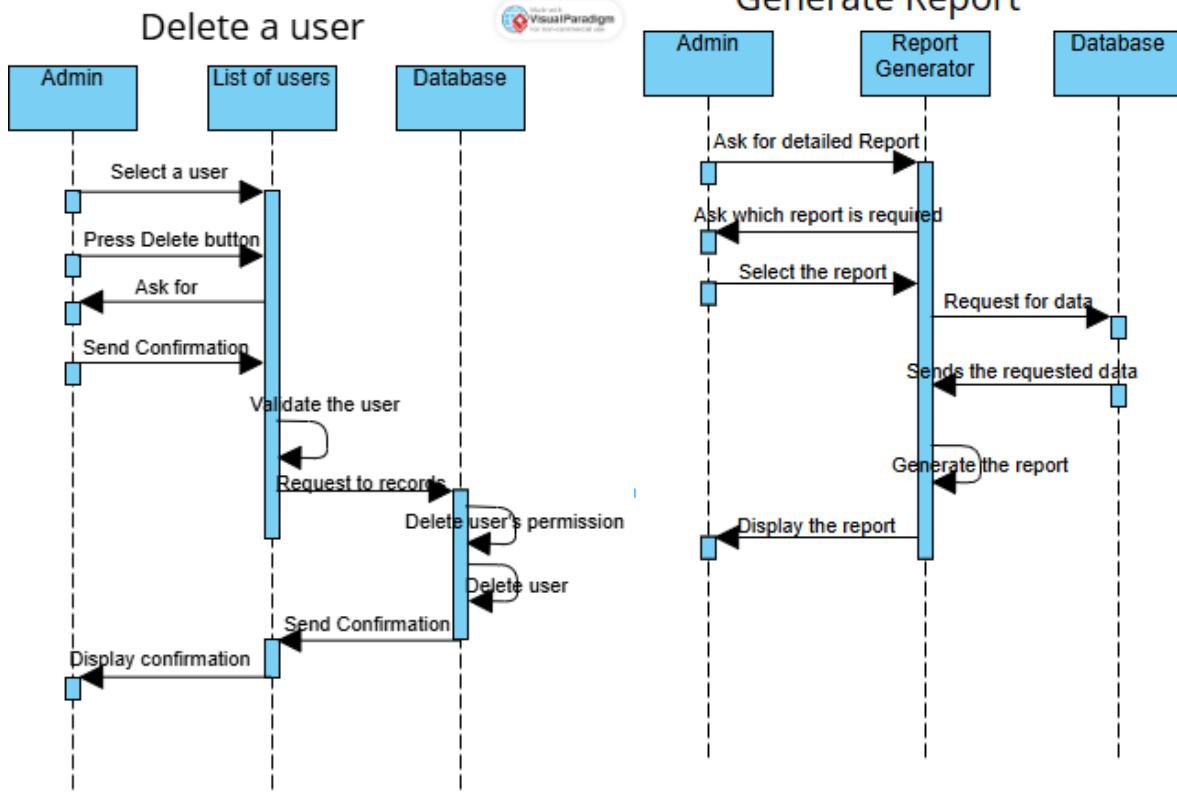
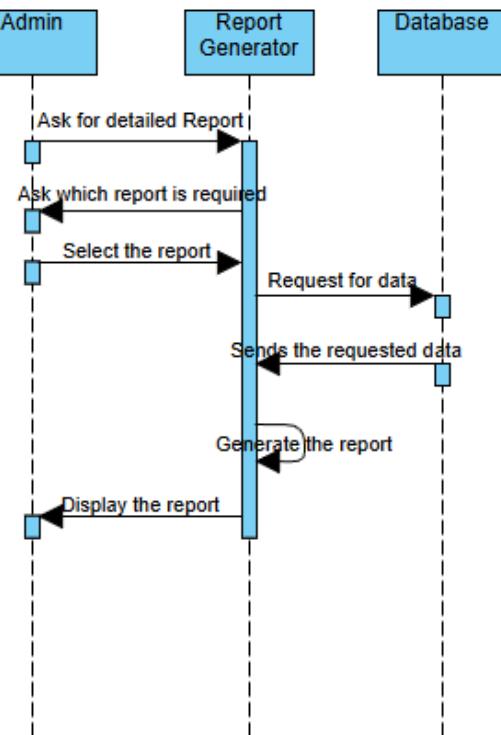
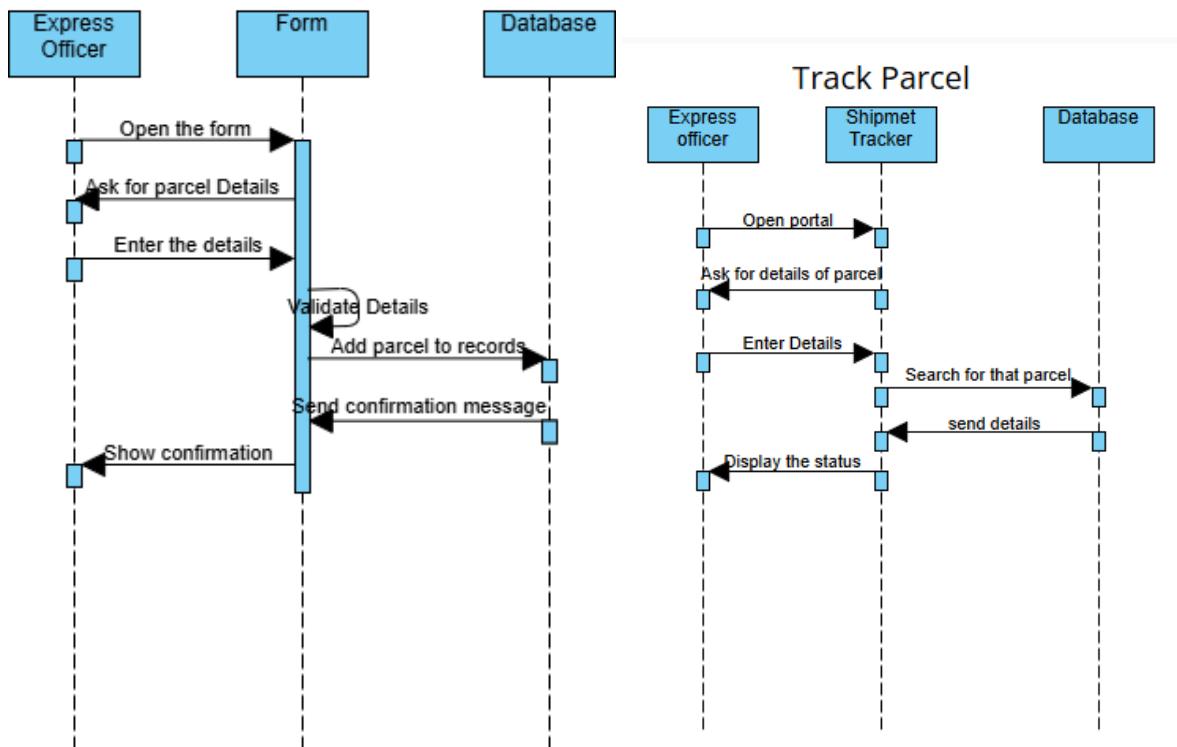
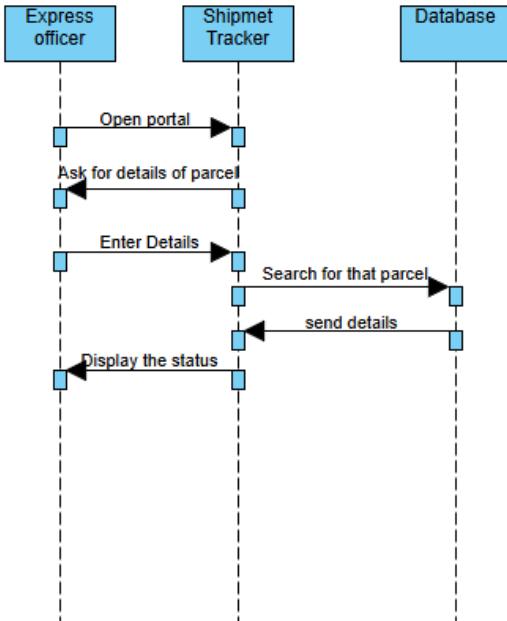
Use Case Name	Sync Refund / Return Status	
Primary Actor	E-Commerce Platform	
Actor Type	External System	
Description	This use case allows the E-Commerce Platform to synchronize refund or return statuses with the Courier System, ensuring that returned parcels or canceled shipments are properly updated in the system.	
Preconditions	Order must already exist in the courier system.	
Postconditions	The courier system updates the parcel status to “Returned,” “Refunded,” or “Cancelled.”	
Main Flow	User (E-Commerce Platform)	System response
		<p>1. When the status of an ecommerce platform then system will send the update status to that e commerce platform for that shipment.</p>
	2. Then ecommerce will receive that status and sends confirmation.	
Alternate Flow(s)		

Sequence Diagram:

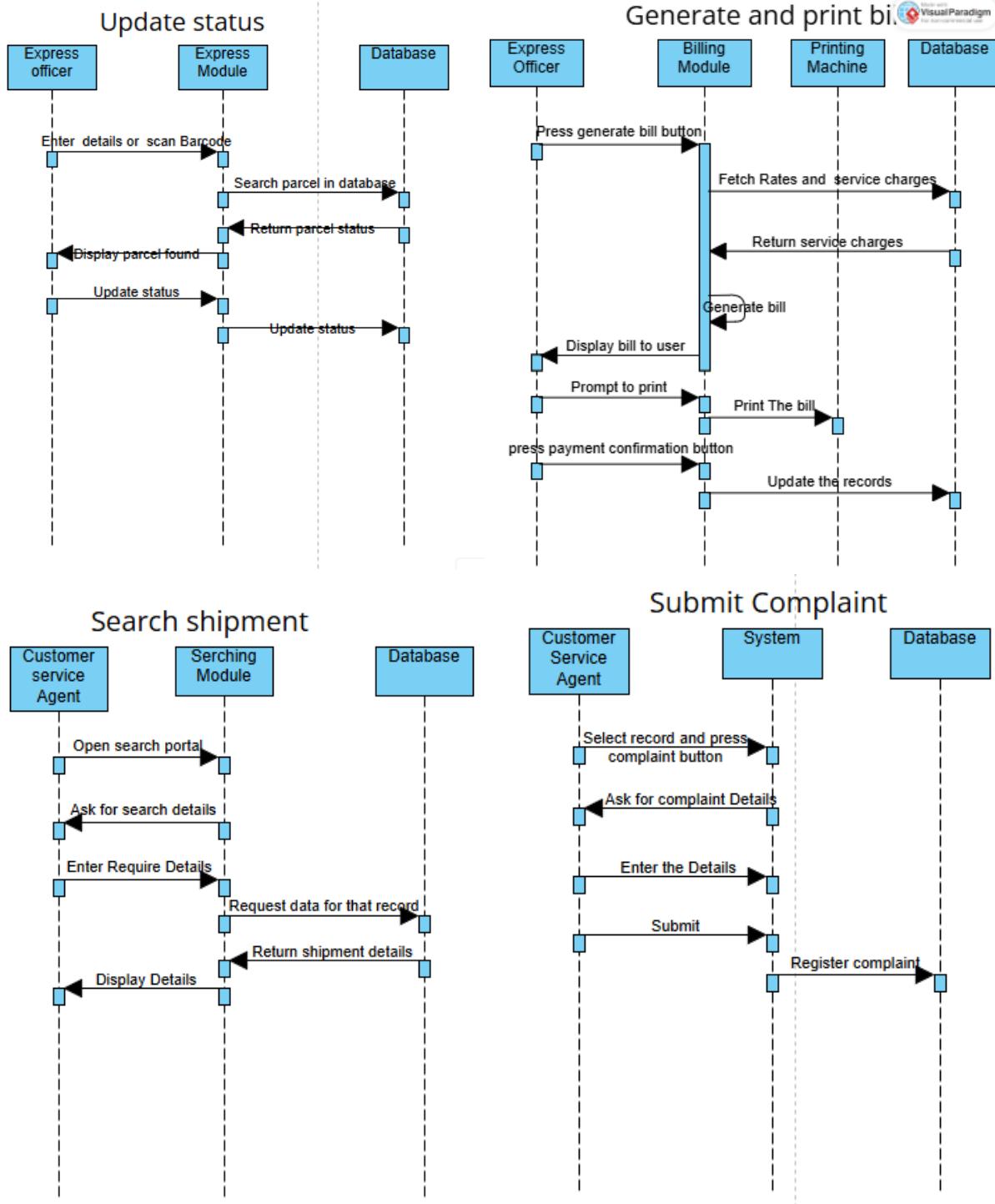


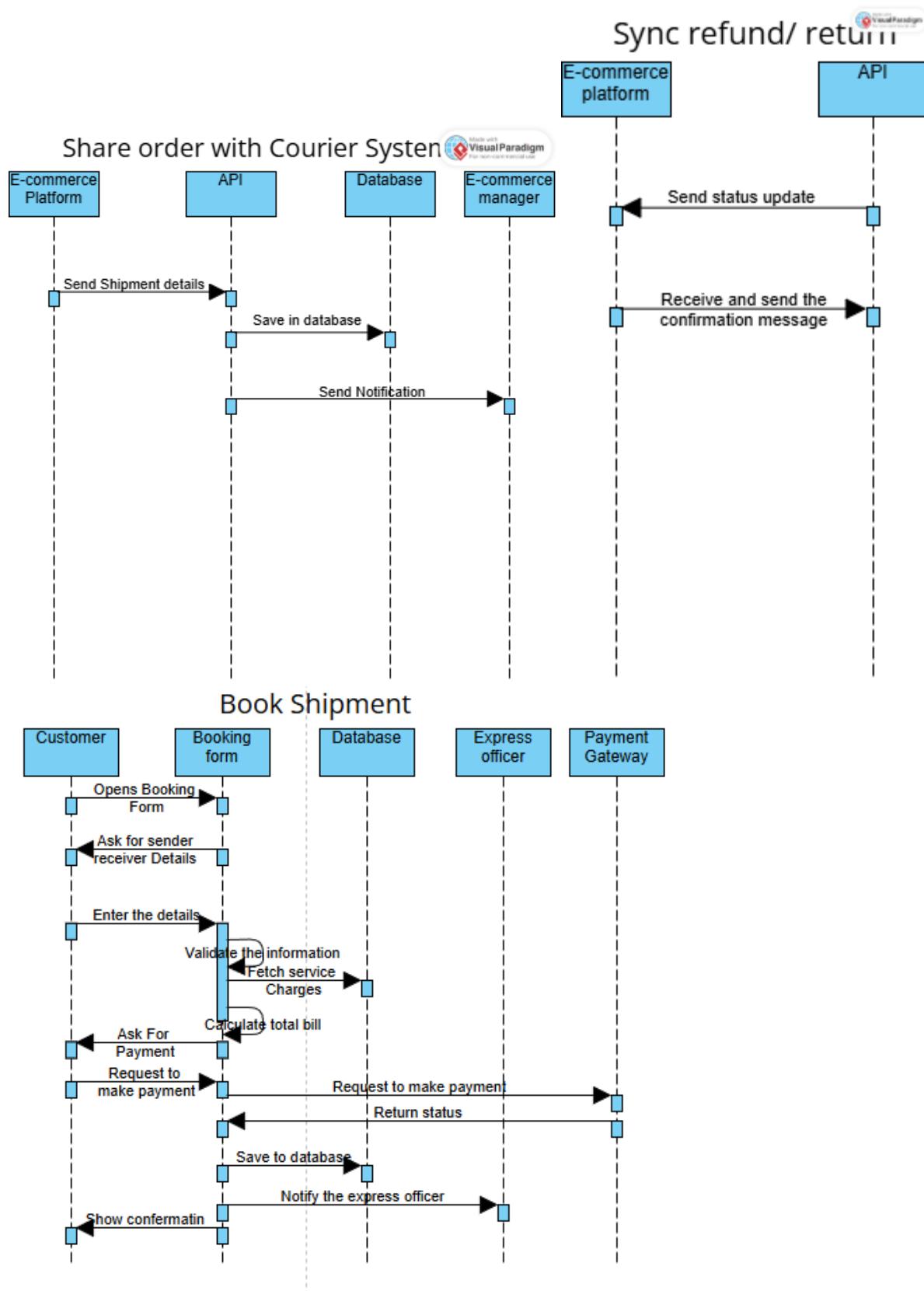
Add a user



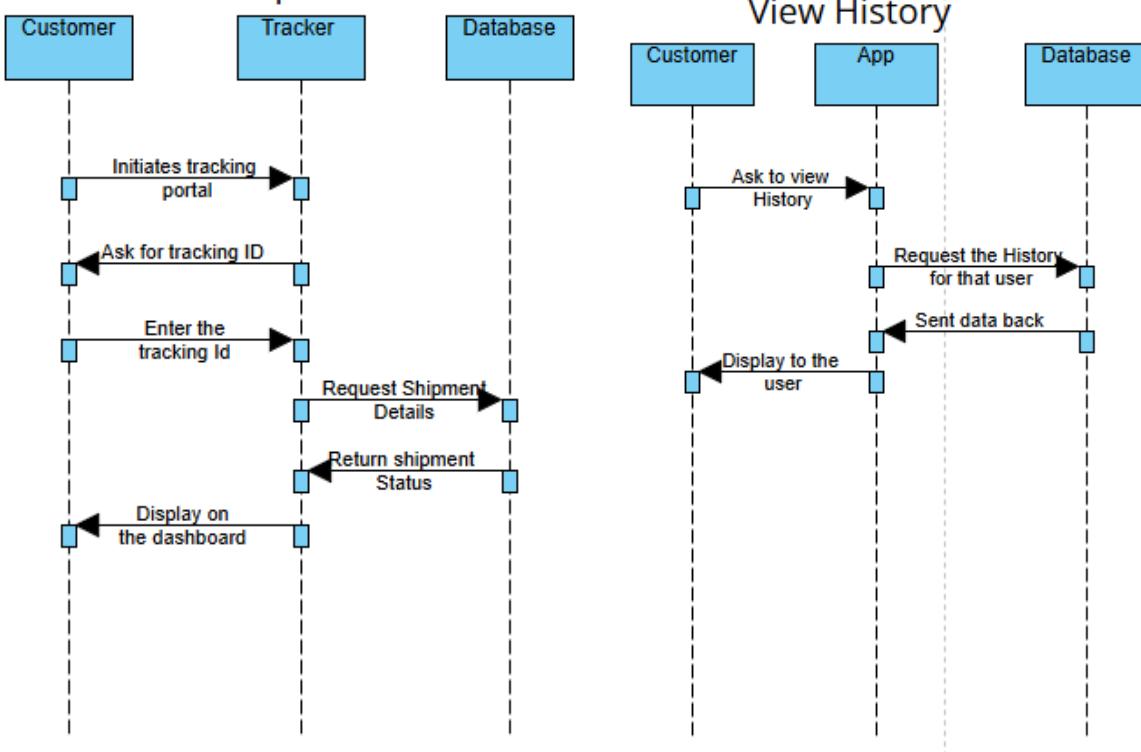
Delete a user**Generate Report****Register Parcel****Track Parcel**

SCD

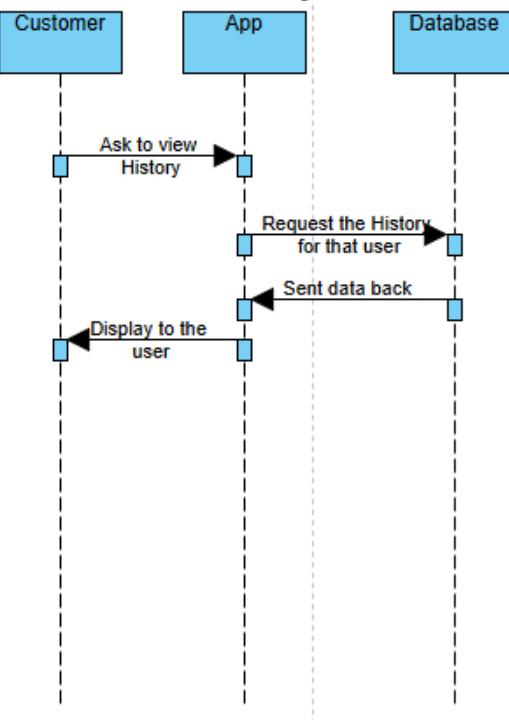




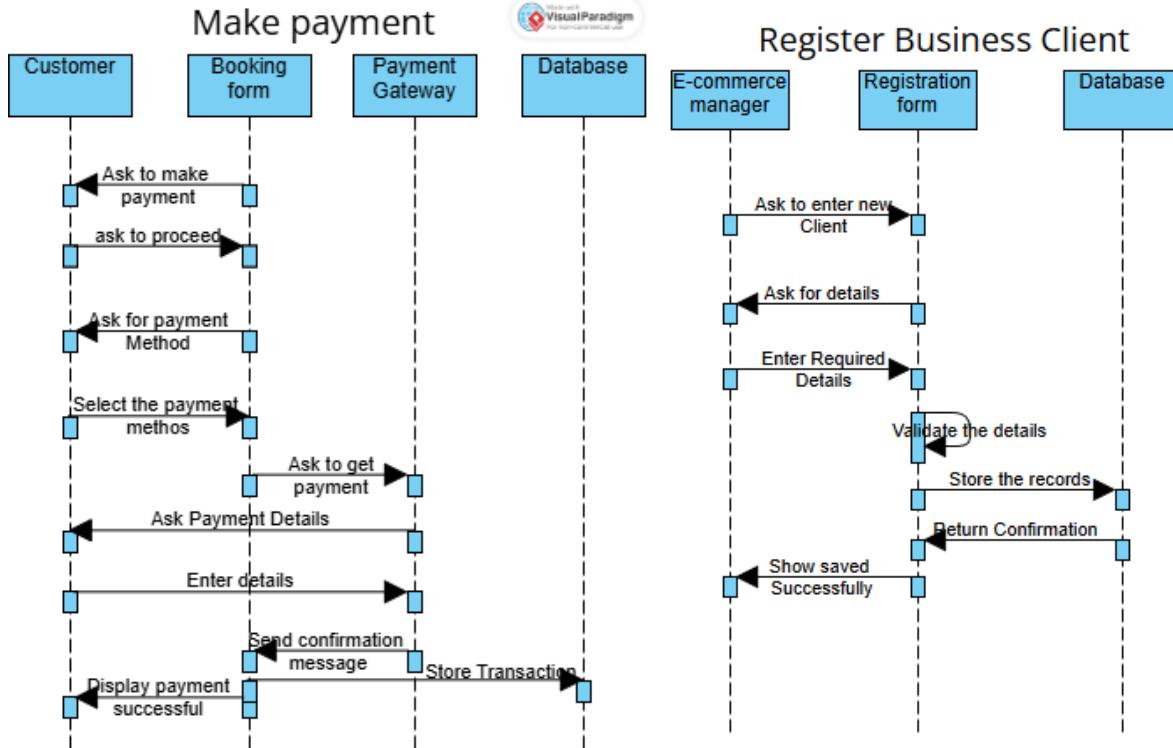
Track shipment



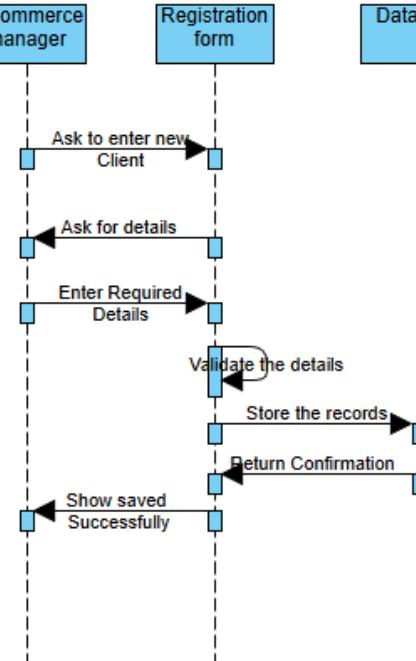
View History



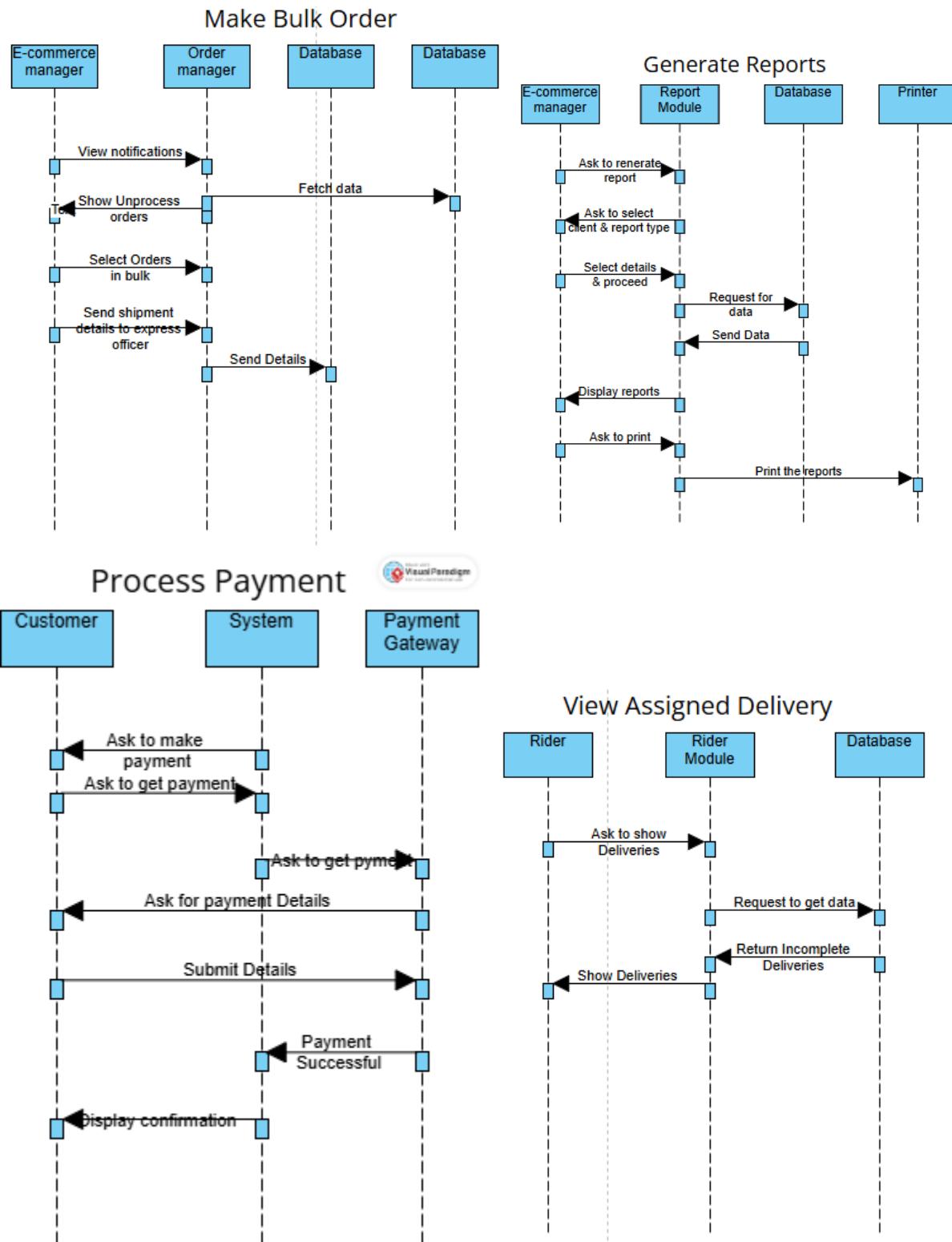
Make payment



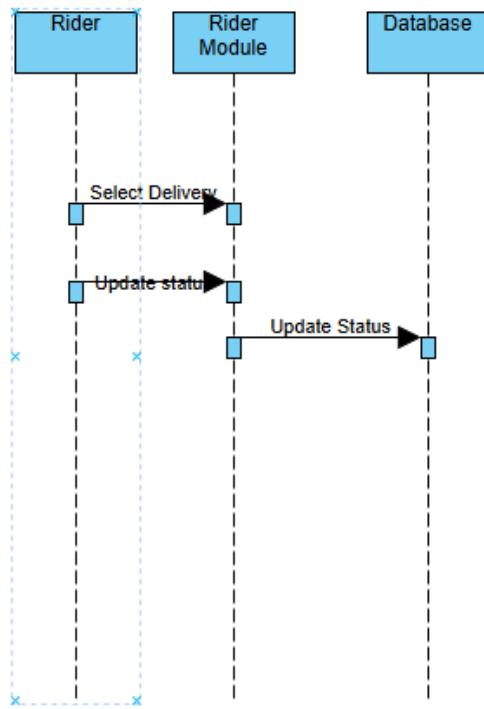
Register Business Client



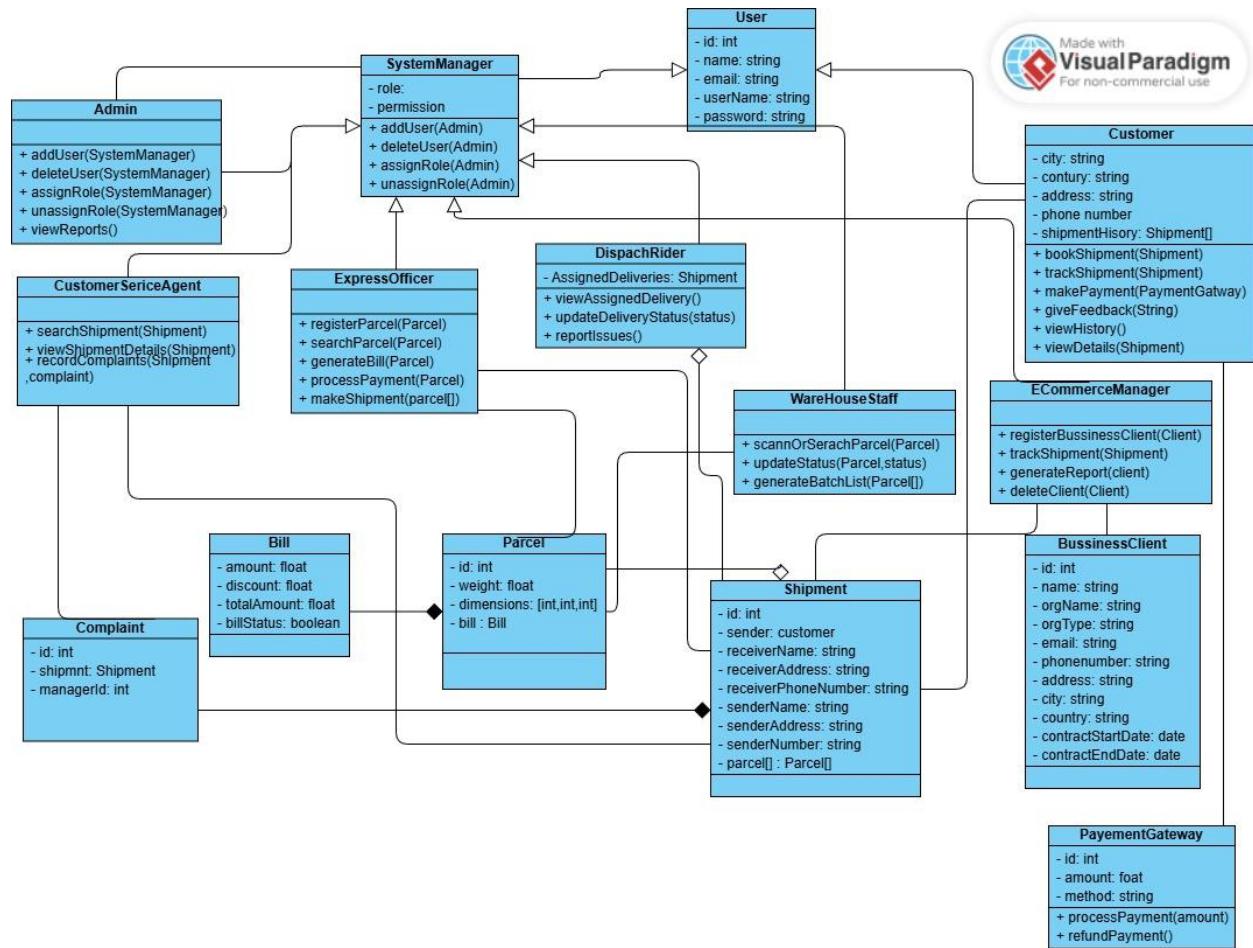
SCD



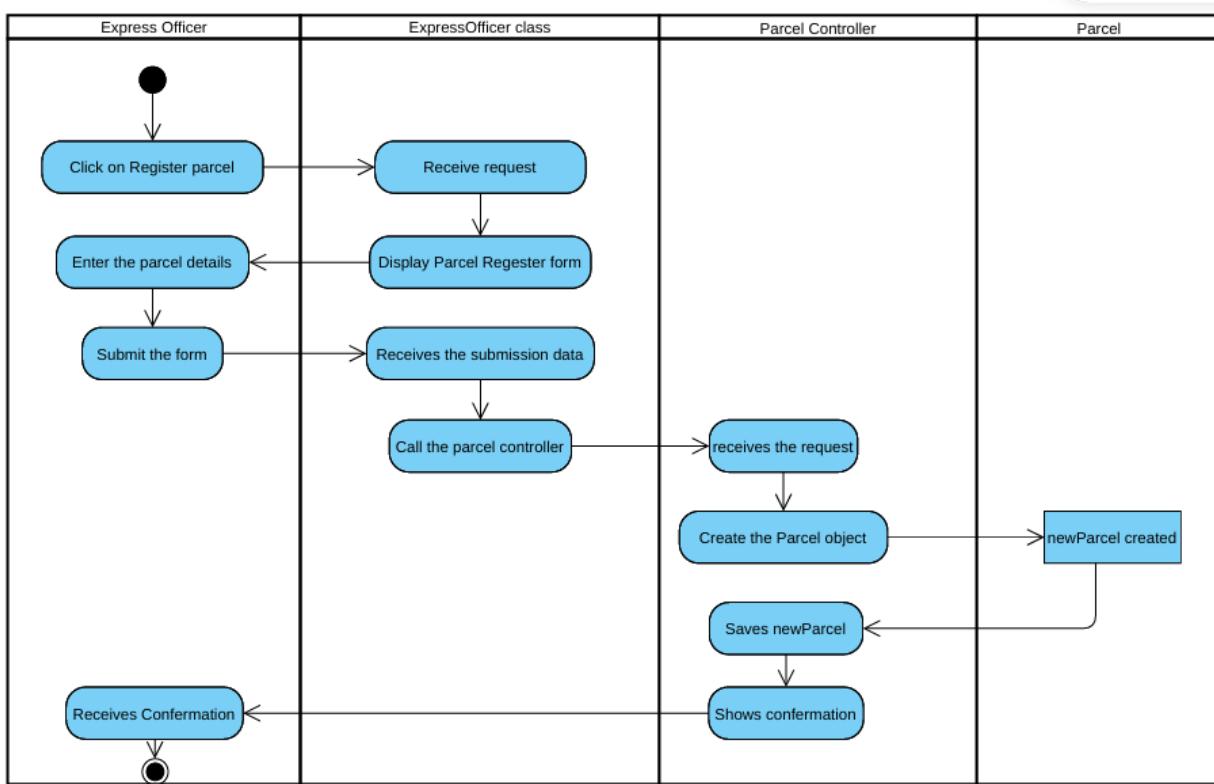
Update parcel status

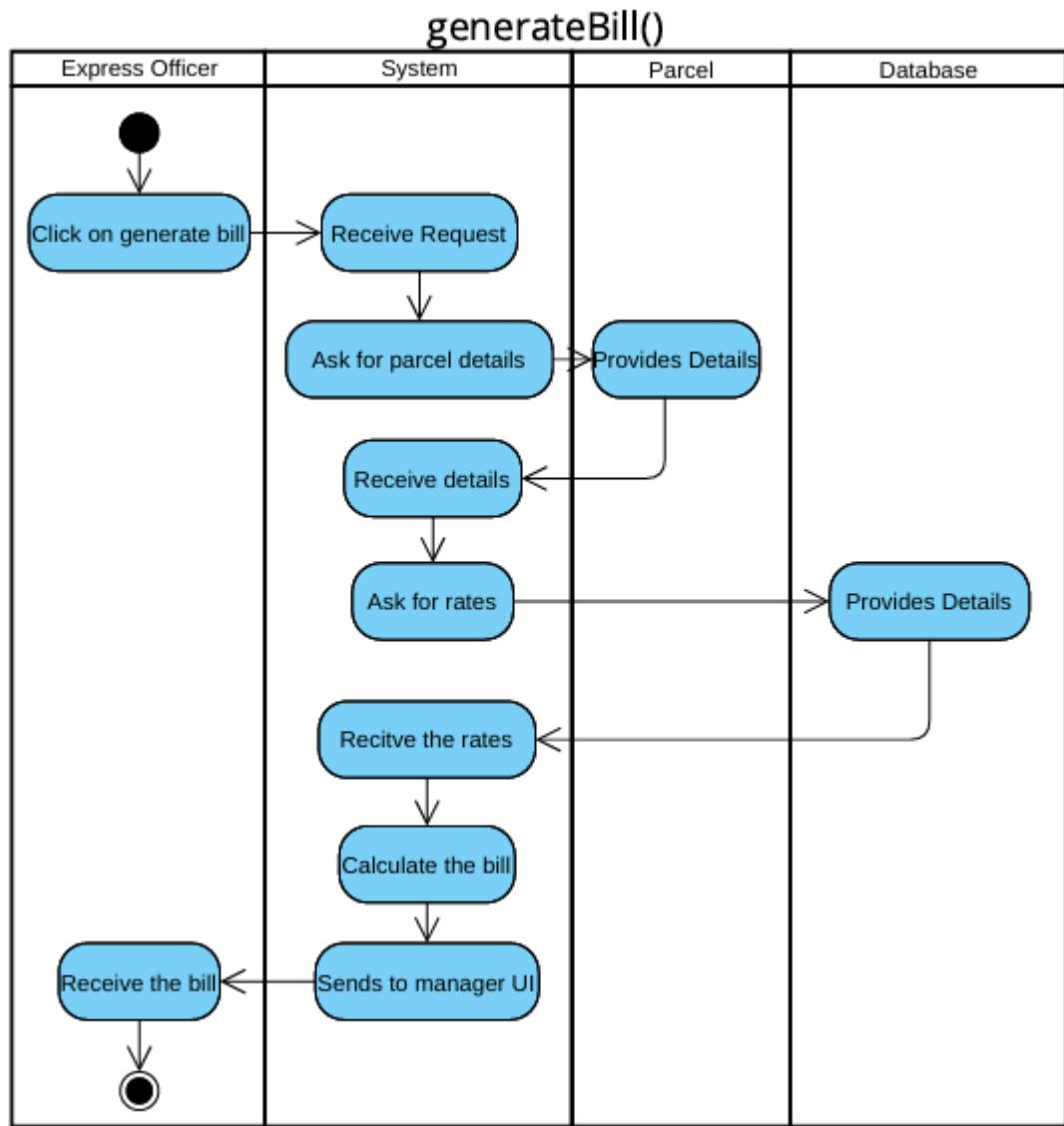


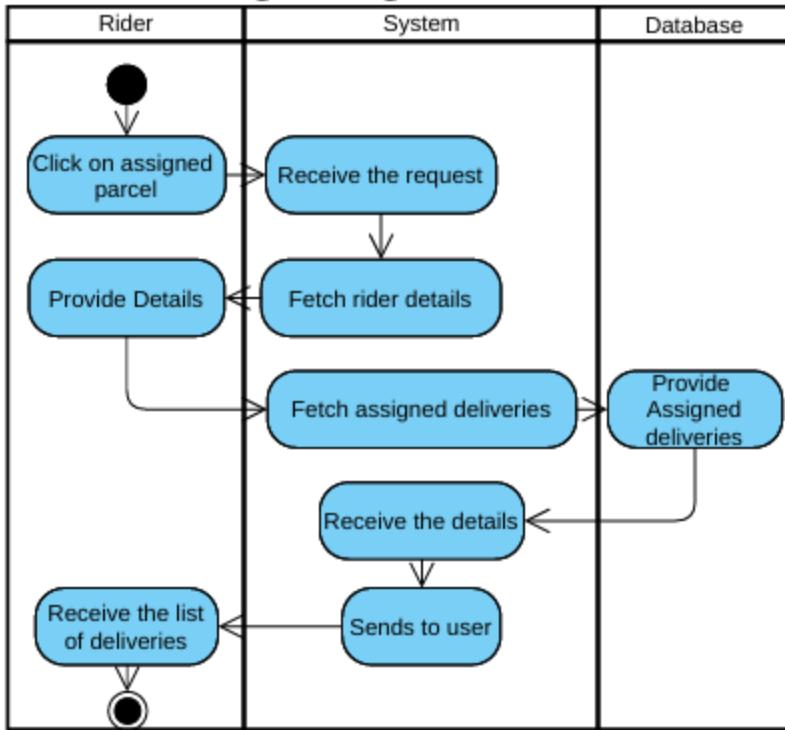
Class Diagram:

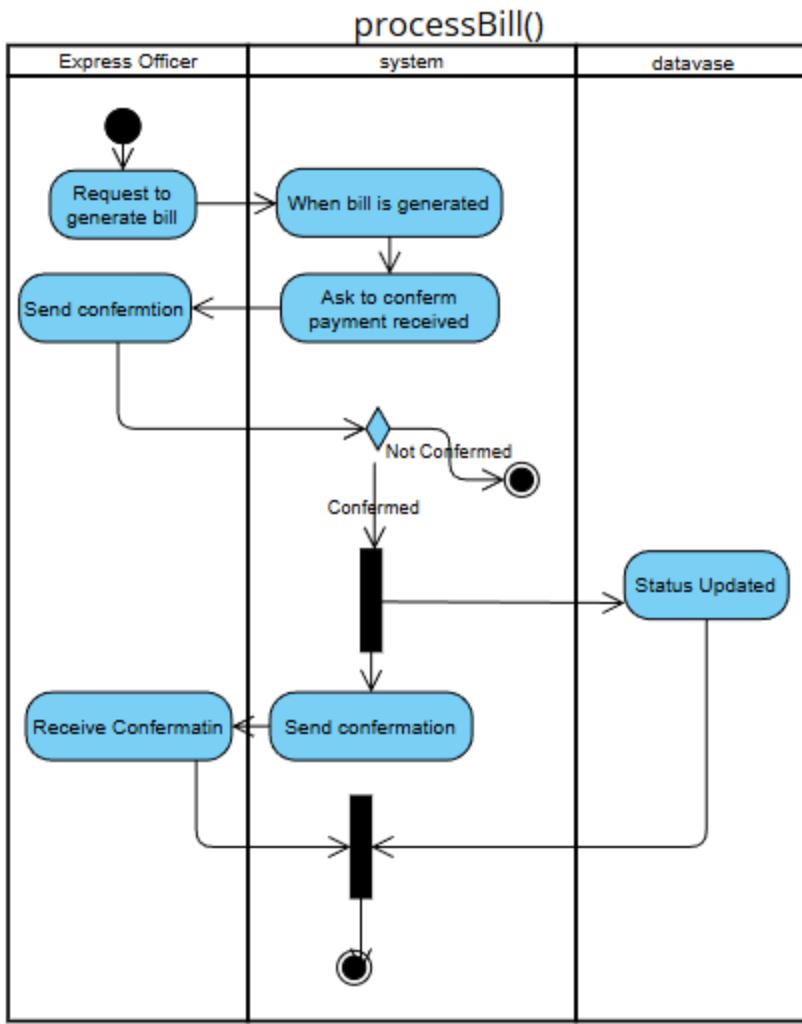


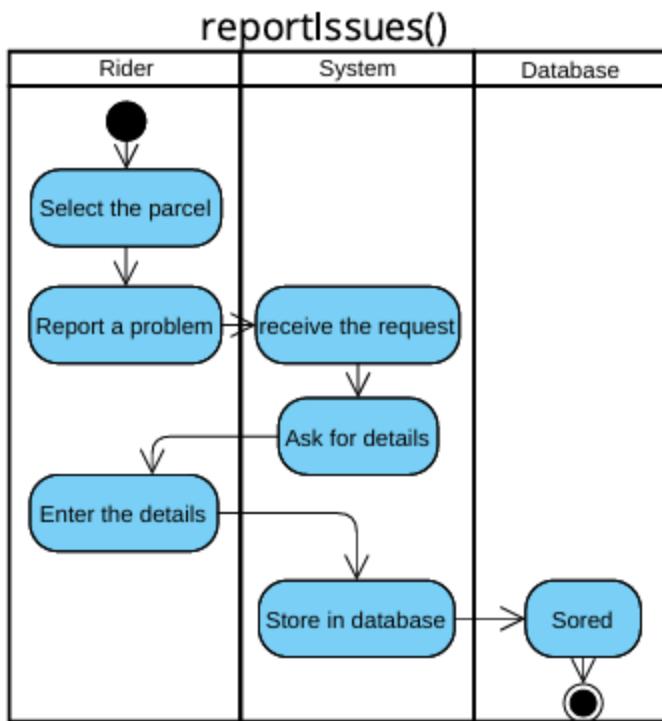
Activity Diagram:



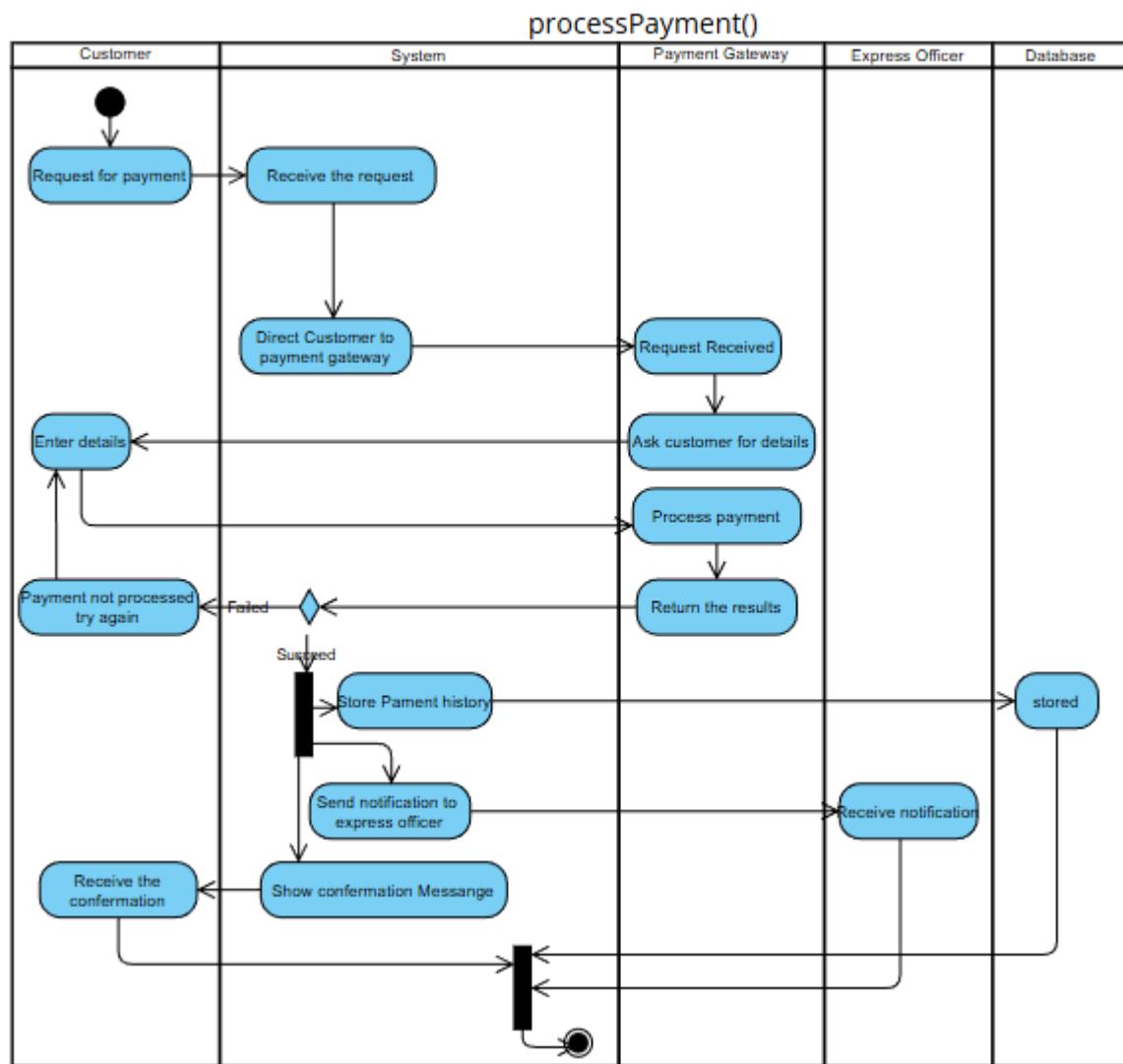


getAssignedParcel()

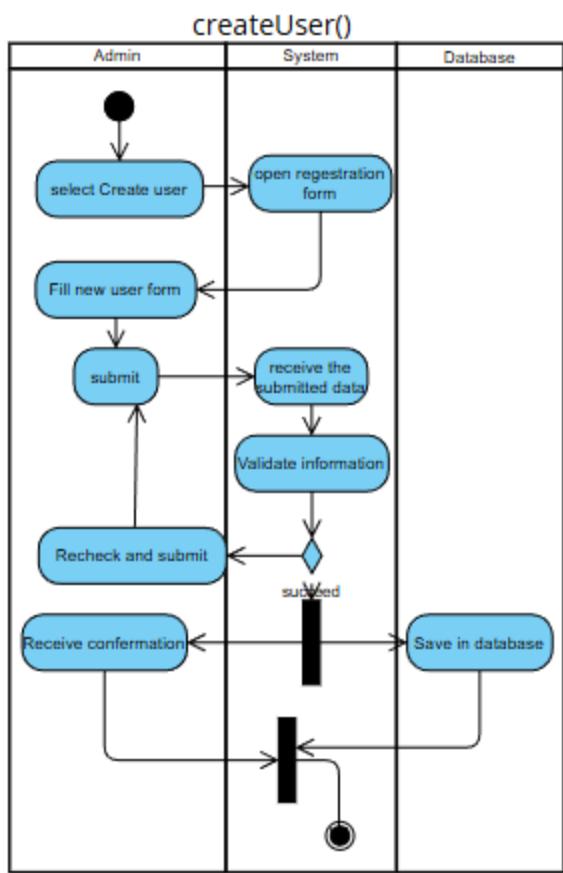


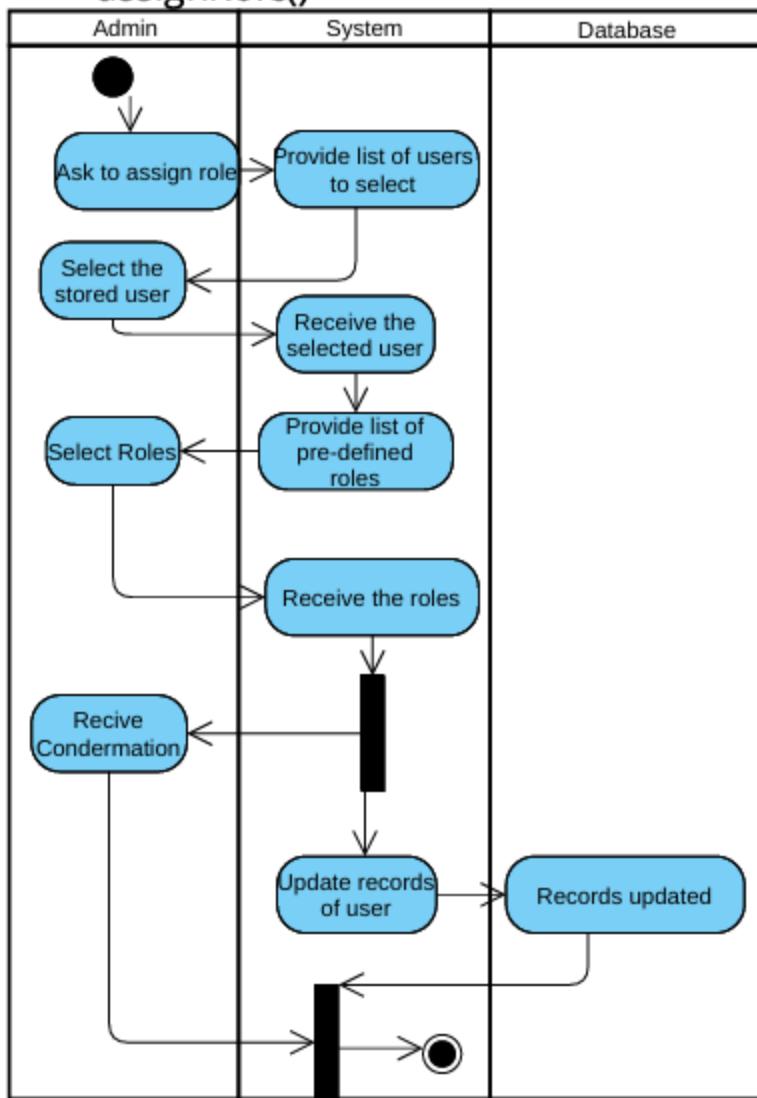


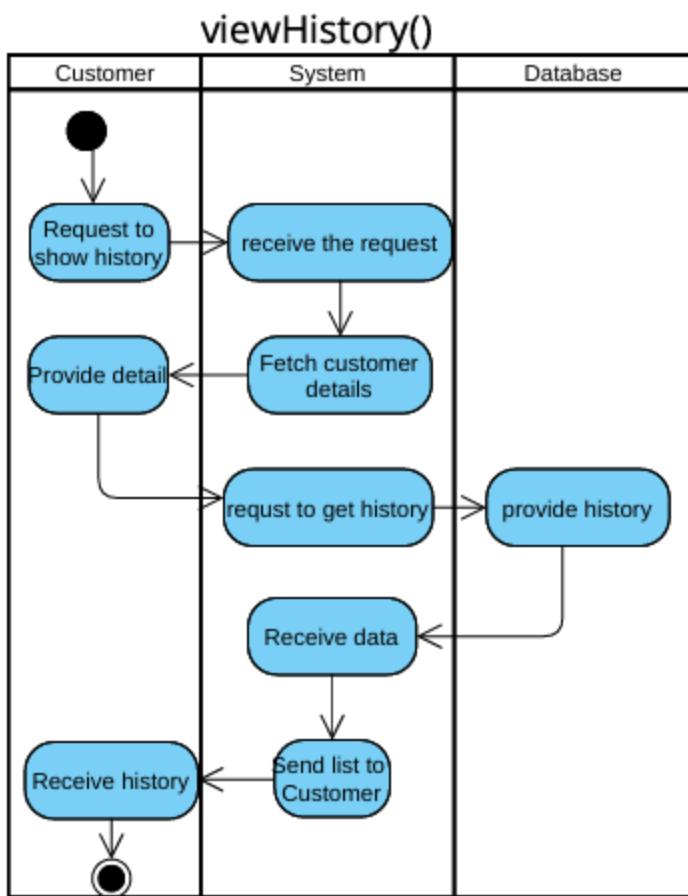
SCD



SCD

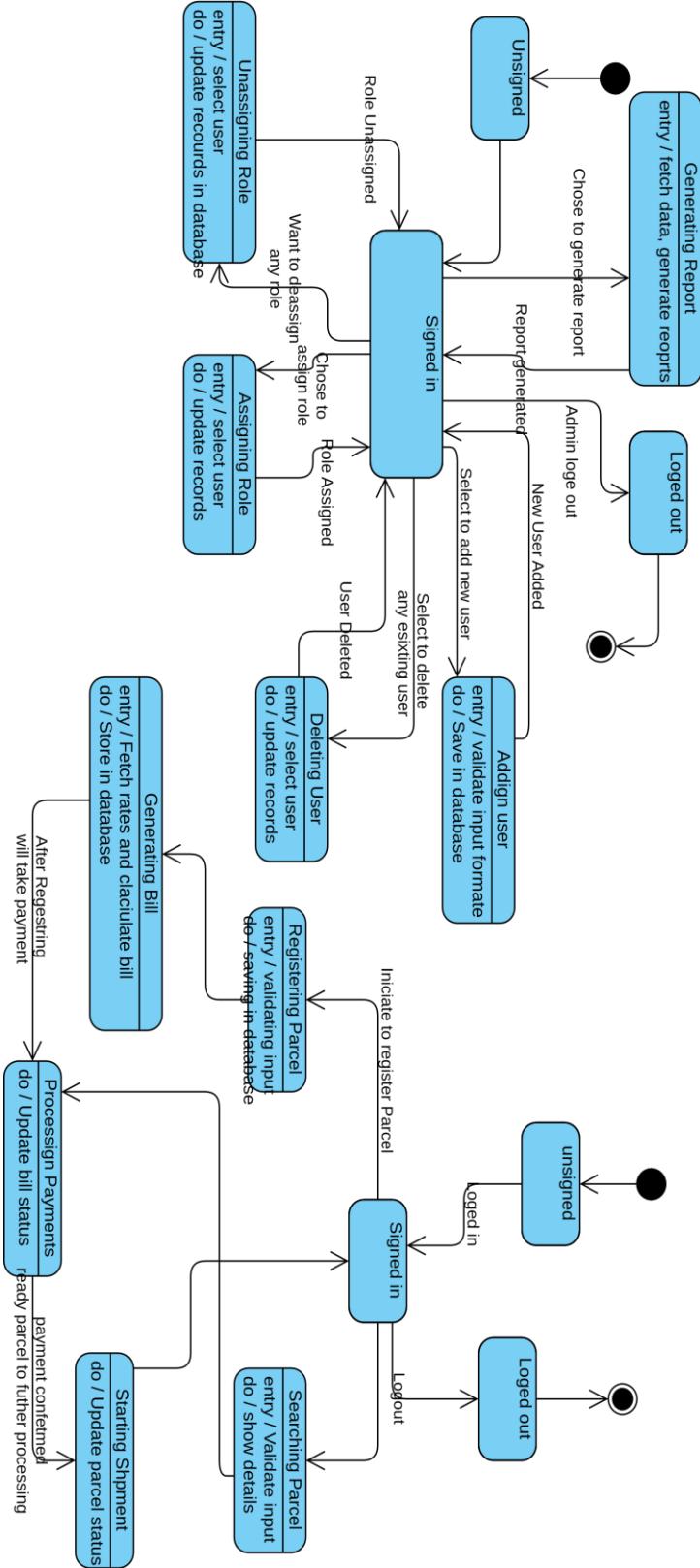


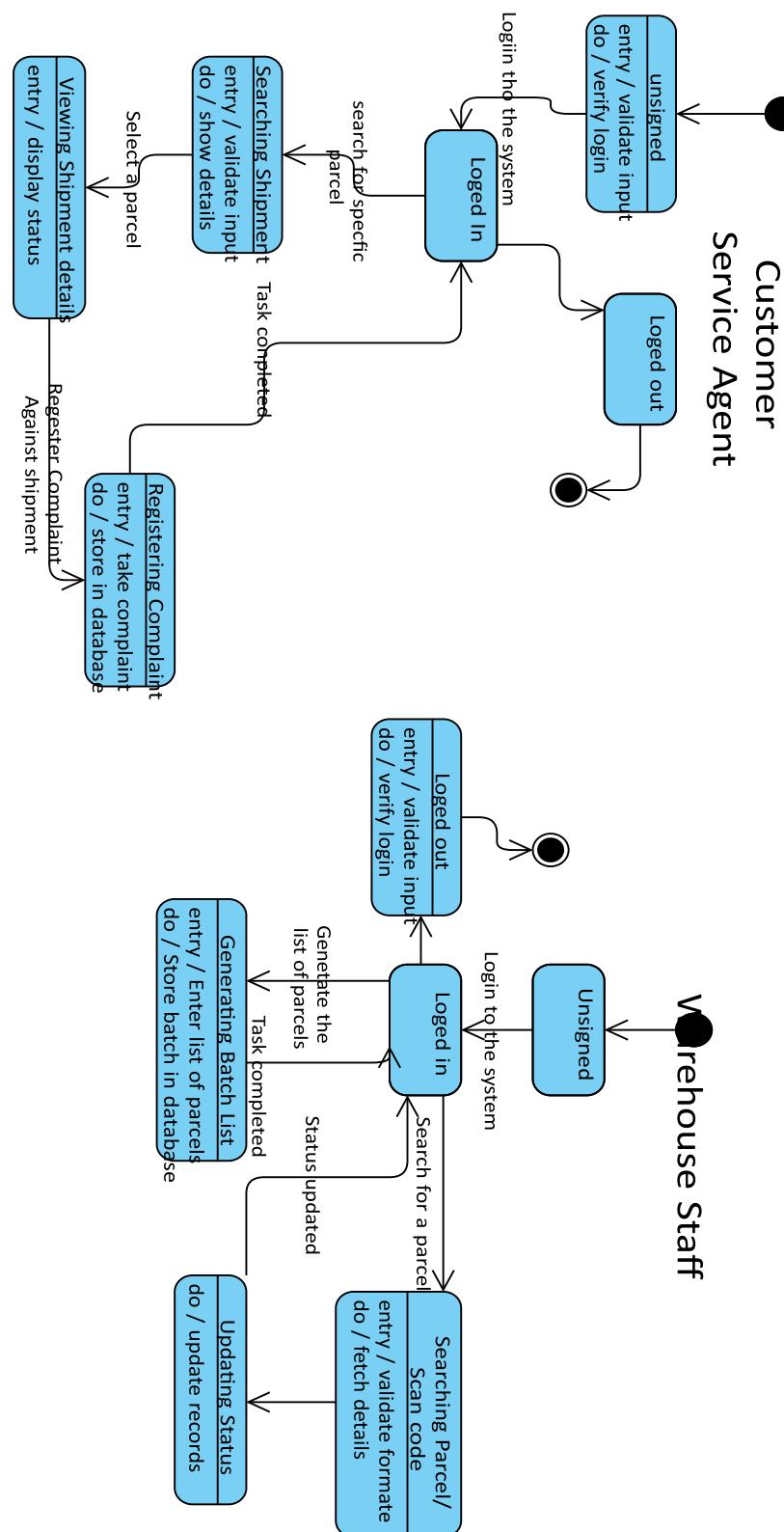
assignRole()



SCD

State Diagram:





SCD

