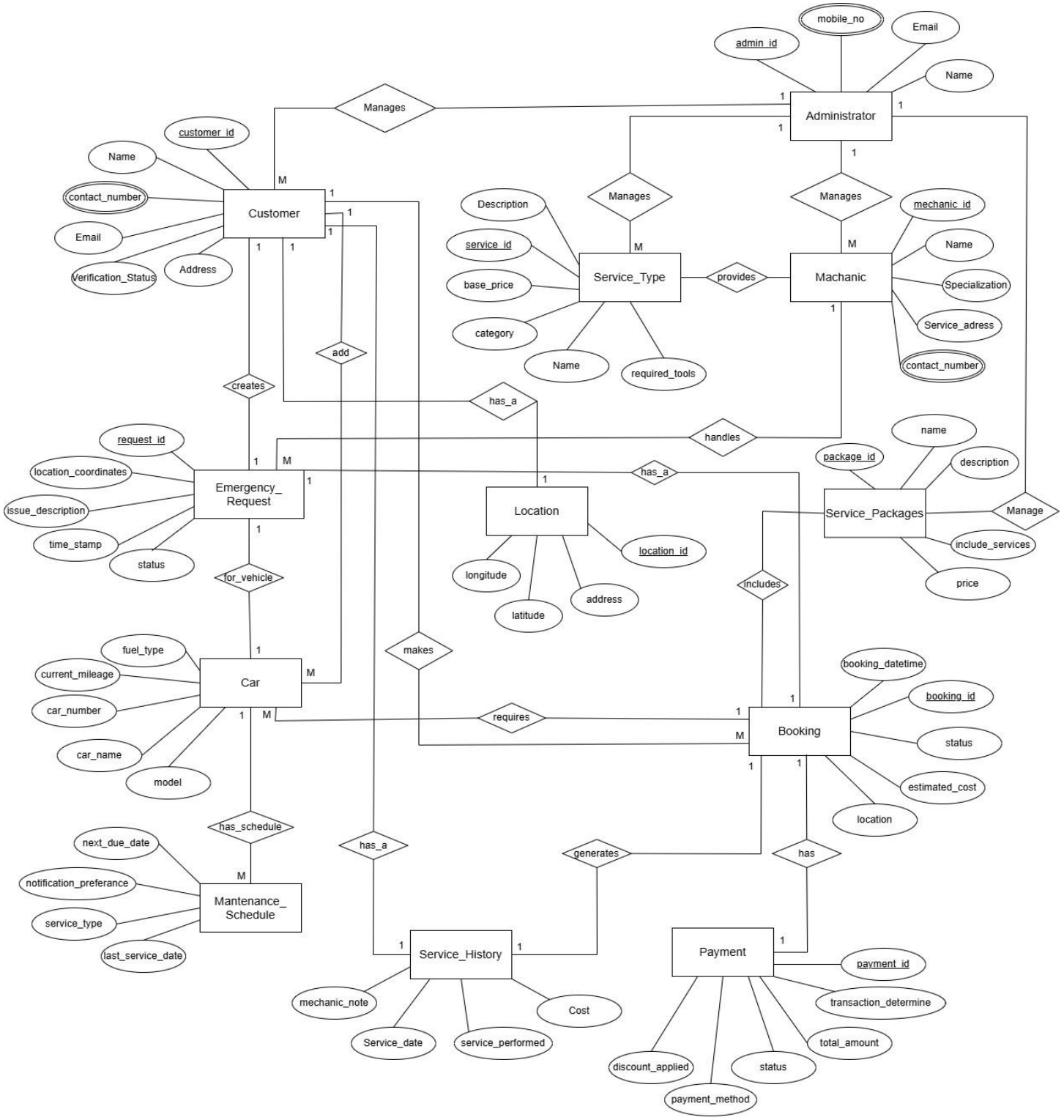
3.2 E-R Diagram:



3.3 Table Structure

Customer Table

Column Name	Data Type	Constraints
customer_id	INT	PRIMARY KEY
name	VARCHAR(100)	NOT NULL
contact_number	VARCHAR(15)	NOT NULL
email	VARCHAR(100)	NOT NULL
address	TEXT	
verification_status	BOOLEAN	DEFAULT FALSE

Car Table

Column Name	Data Type	Constraints
car_number	VARCHAR(20)	PRIMARY KEY
car_name	VARCHAR(100)	NOT NULL
model	VARCHAR(50)	
fuel_type	VARCHAR(20)	
current_mileage	FLOAT	
customer_id	INT	FOREIGN KEY → Customer(customer_id)

Location Table

Column Name	Data Type	Constraints
location_id	INT	PRIMARY KEY
longitude	DOUBLE	NOT NULL
latitude	DOUBLE	NOT NULL
address	TEXT	

Emergency_Request Table

Column Name	Data Type	Constraints
request_id	INT	PRIMARY KEY
location_coordinates	VARCHAR(100)	
issue_description	TEXT	
time_stamp	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
status	VARCHAR(20)	
car_number	VARCHAR(20)	FOREIGN KEY → Car(car_number)

Maintenance_Schedule Table

Column Name	Data Type	Constraints
schedule_id	INT	PRIMARY KEY
next_due_date	DATE	
notification_preference	VARCHAR(50)	
last_service_date	DATE	
service_type	VARCHAR(50)	
car_number	VARCHAR(20)	FOREIGN KEY → Car(car_number)

Service_History Table

Column Name	Data Type	Constraints
history_id	INT	PRIMARY KEY
service_date	DATE	
service_performed	TEXT	
mechanic_note	TEXT	
cost	FLOAT	
car_number	VARCHAR(20)	FOREIGN KEY → Car(car_number)
mechanic_id	INT	FOREIGN KEY → Mechanic(mechanic_id)

Payment Table:

Column Name	Data Type	Constraints
payment_id	INT	PRIMARY KEY
transaction_datetime	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
total_amount	FLOAT	
discount_applied	FLOAT	
payment_method	VARCHAR(50)	
status	VARCHAR(20)	
history_id	INT	FOREIGN KEY → Service_History(history_id)

Administrator Table

Column Name	Data Type	Constraints
admin_id	INT	PRIMARY KEY
name	VARCHAR(100)	NOT NULL
email	VARCHAR(100)	UNIQUE
mobile_no	VARCHAR(15)	

Mechanic Table

Column Name	Data Type	Constraints
mechanic_id	INT	PRIMARY KEY
name	VARCHAR(100)	
specialization	VARCHAR(100)	
service_address	TEXT	
contact_number	VARCHAR(15)	
admin_id	INT	FOREIGN KEY → Administrator(admin_id)

Service_Type Table

Column Name	Data Type	Constraints
service_id	INT	PRIMARY KEY
description	TEXT	
base_price	FLOAT	
category	VARCHAR(50)	
required_tools	TEXT	
admin_id	INT	FOREIGN KEY → Administrator(admin_id)

Service_Packages Table

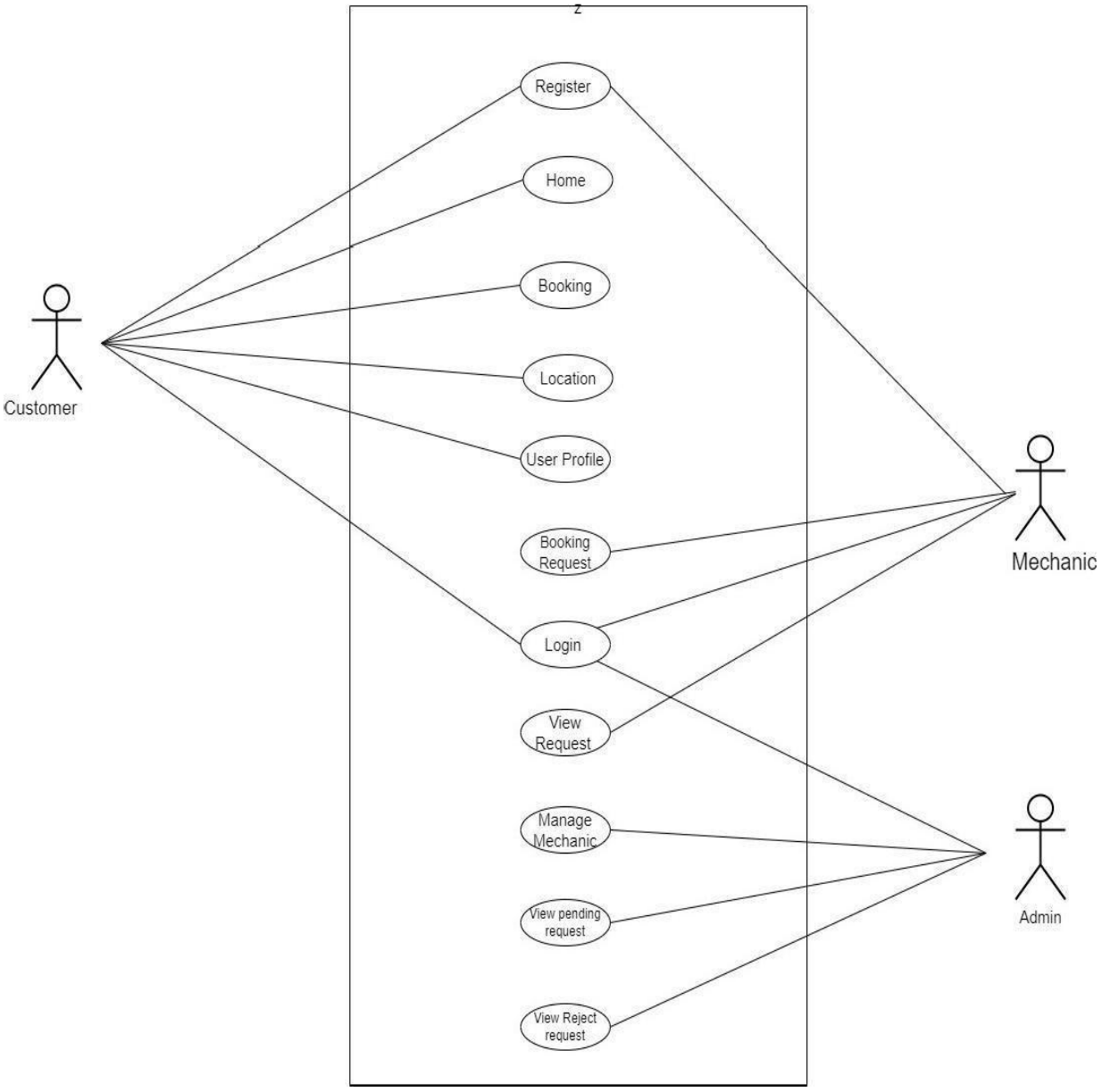
Column Name	Data Type	Constraints
package_id	INT	PRIMARY KEY
name	VARCHAR(100)	
description	TEXT	
price	FLOAT	
include_services	TEXT	

Booking Table

Column Name	Data Type	Constraints
booking_id	INT	PRIMARY KEY
booking_datetime	TIMESTAMP	
status	VARCHAR(20)	
estimated_cost	FLOAT	
location_id	INT	FOREIGN KEY → Location(location_id)
customer_id	INT	FOREIGN KEY → Customer(customer_id)
package_id	INT	FOREIGN KEY → Service_Packages(package_id)
mechanic_id	INT	FOREIGN KEY → Mechanic(mechanic_id)

3.4 Use Case Diagrams:

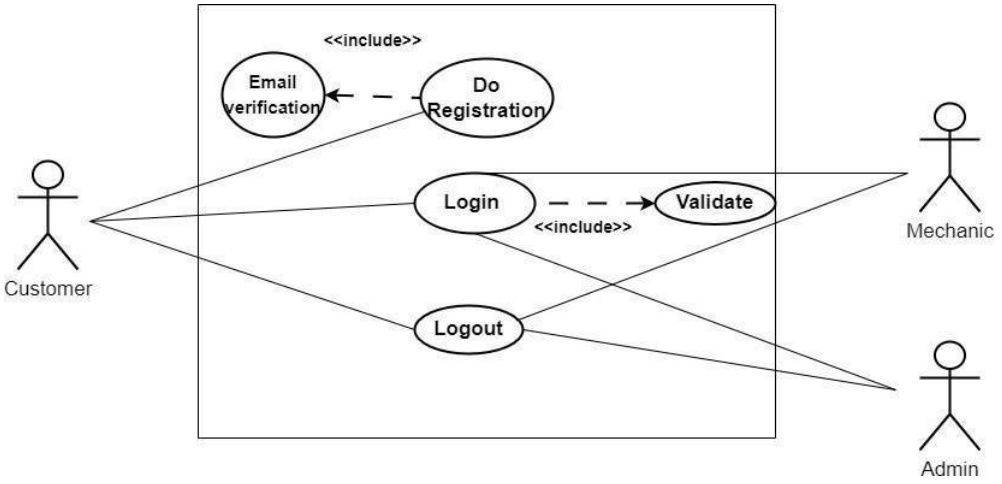
- **Global Use Case:**



- Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin, Mechanic, Customer
Short description	Customer can call for help in case of car breakdown
Pre-condition	must have login must be registered
Post condition	Email will be checked by user
Basic Flow	Register Login Home Booking Location User Profile Request View Request Manage Mechanic View Request Pending View Request Pending Logout
Relationship:	We must verify the pass word and username included We must verify the Customer details included Must verify the key words included

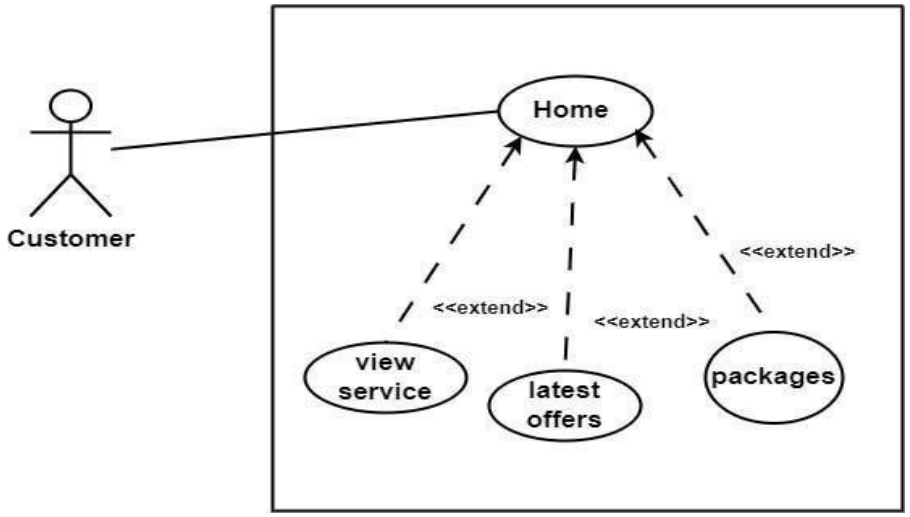
- **Login Use Case**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Customer, Admin, Mechanic
Short description	Customer, Admin, Mechanic needs to register and login
Pre-condition	User should register
Post condition	Email will be checked by user
Basic Flow	Do Registration Login Logout

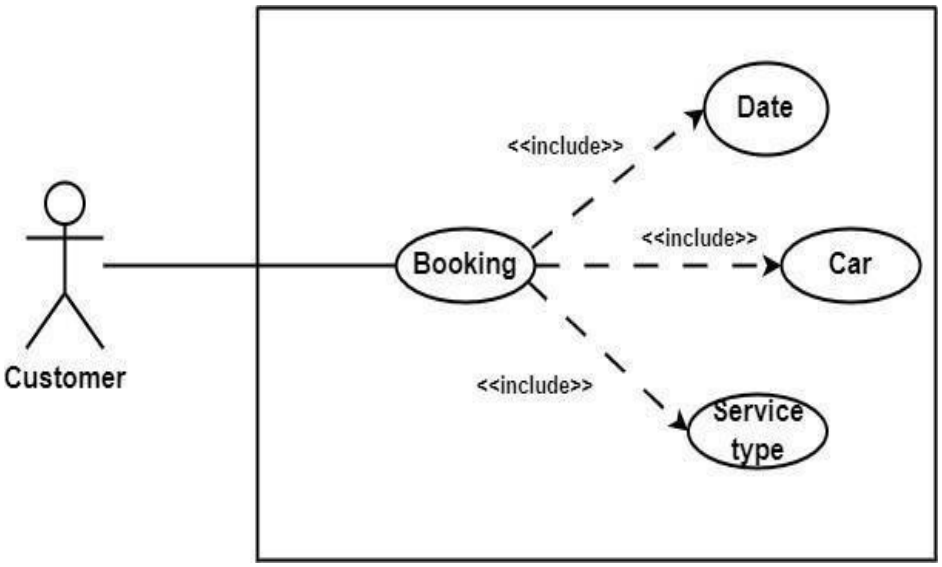
- **Customer home Use Case:**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin
Short description	Customer can assess the app dashboard
Pre-condition	must have login must be registered
Post condition	Customer can assess all the required functions
Basic Flow	Home

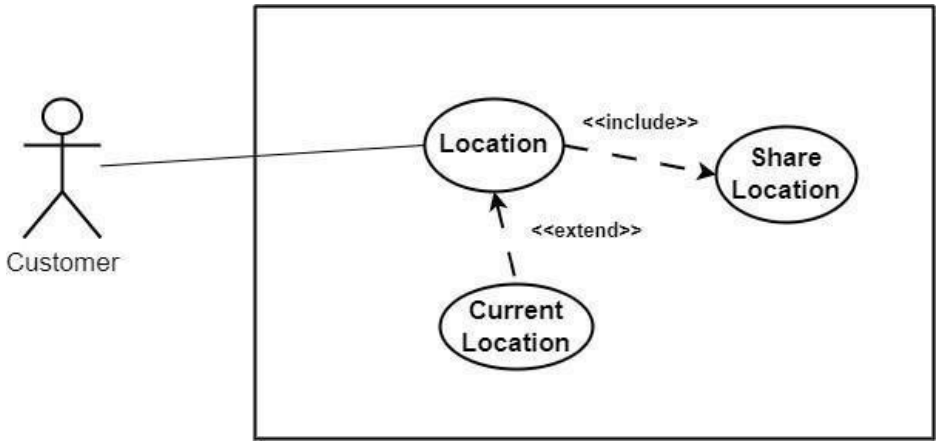
- **Customer Booking**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin
Short description	Customer can assess the app dashboard
Pre-condition	must have login must be registered
Post condition	Customer can assess all the required functions
Basic Flow	Booking

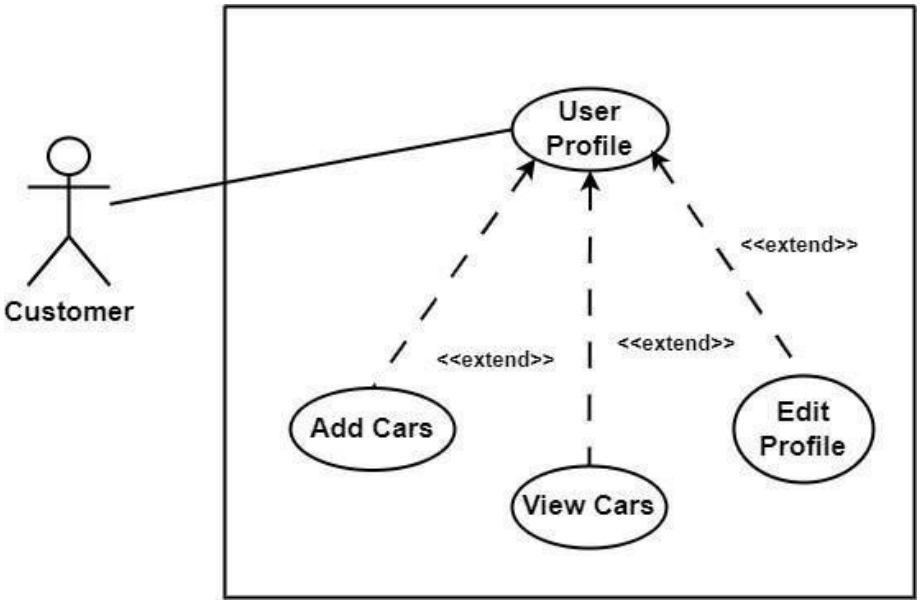
- **Customer Location:**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin
Short description	Customer can assess the app dashboard
Pre-condition	must have login must be registered
Post condition	Customer can assess all the required functions
Basic Flow	Location

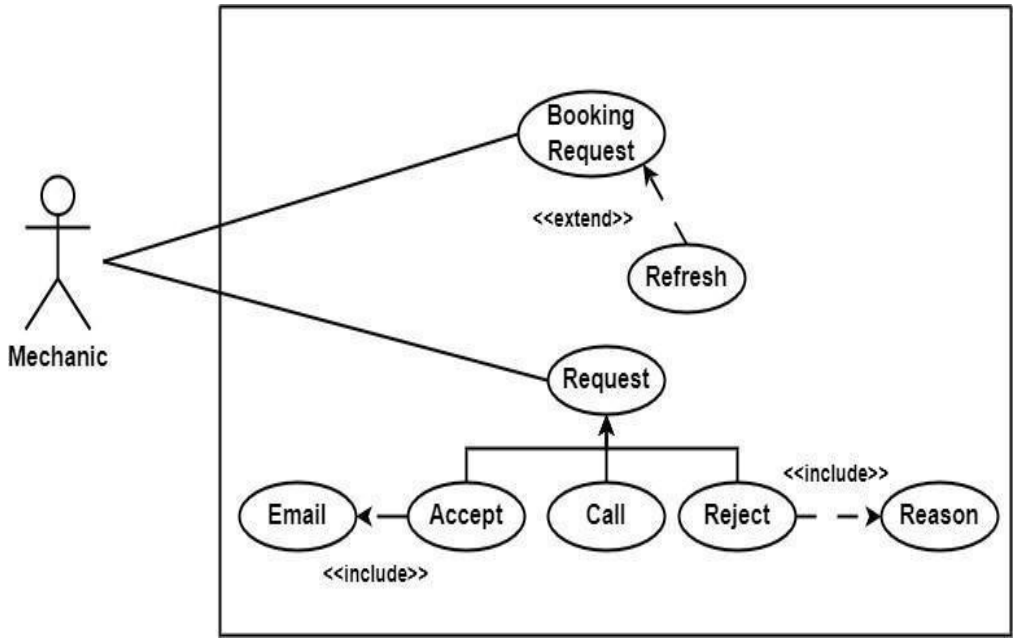
- **Customer User Profile:**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin
Short description	Customer can assess the app dashboard
Pre-condition	must have login must be registered
Post condition	Customer can assess all the required functions
Basic Flow	User Manual

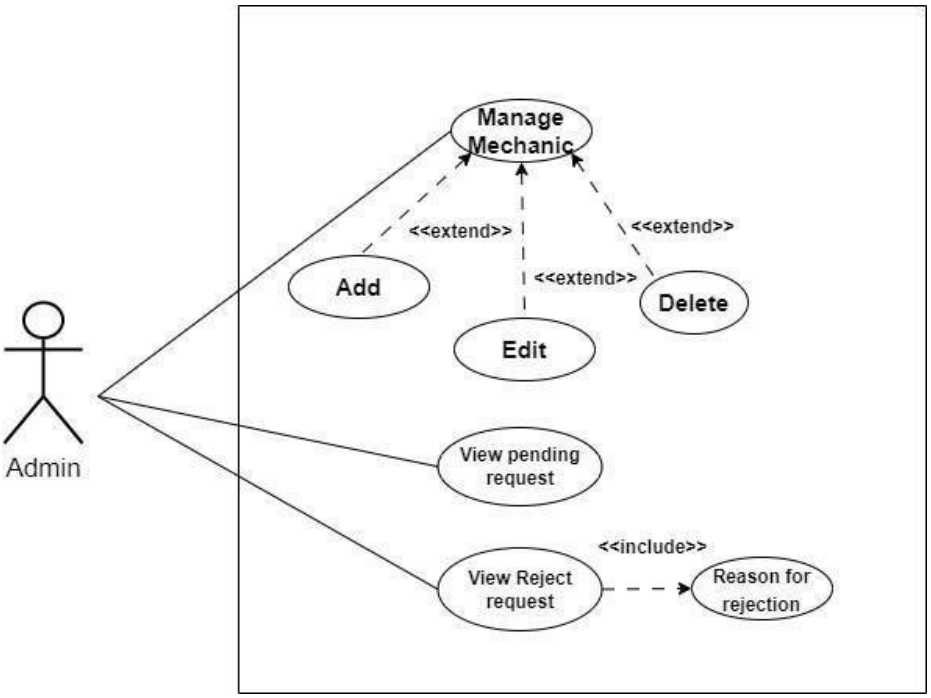
- **Mechanic Use Case:**



Use case description:

Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Mechanic
Short description	Mechanic can Access the system for his part of work
Pre-condition	must have login must be registered
Post condition	mechanic can assess all the required functions
Basic Flow	Booking Request

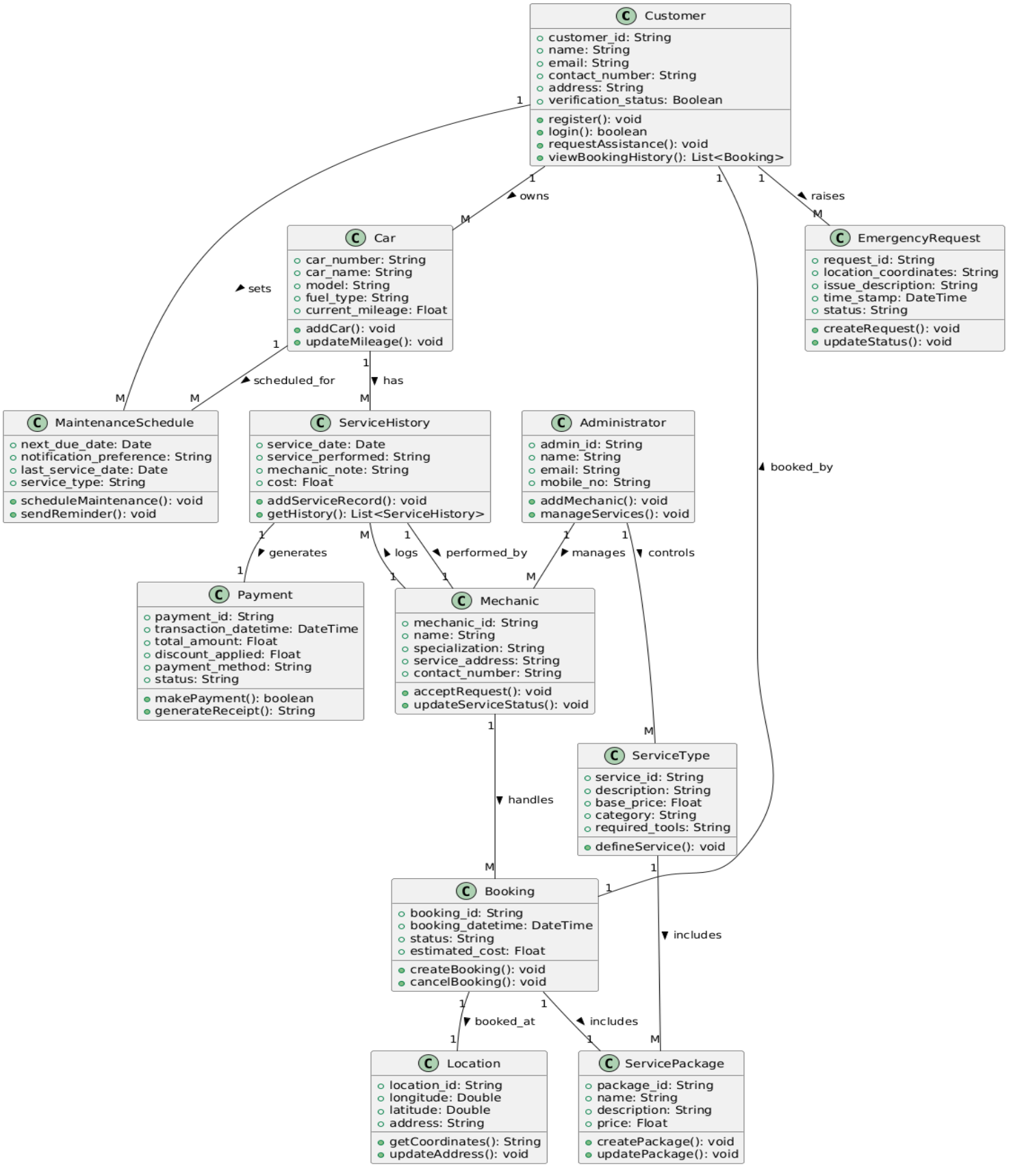
- **Admin Use case:**



Use case description:

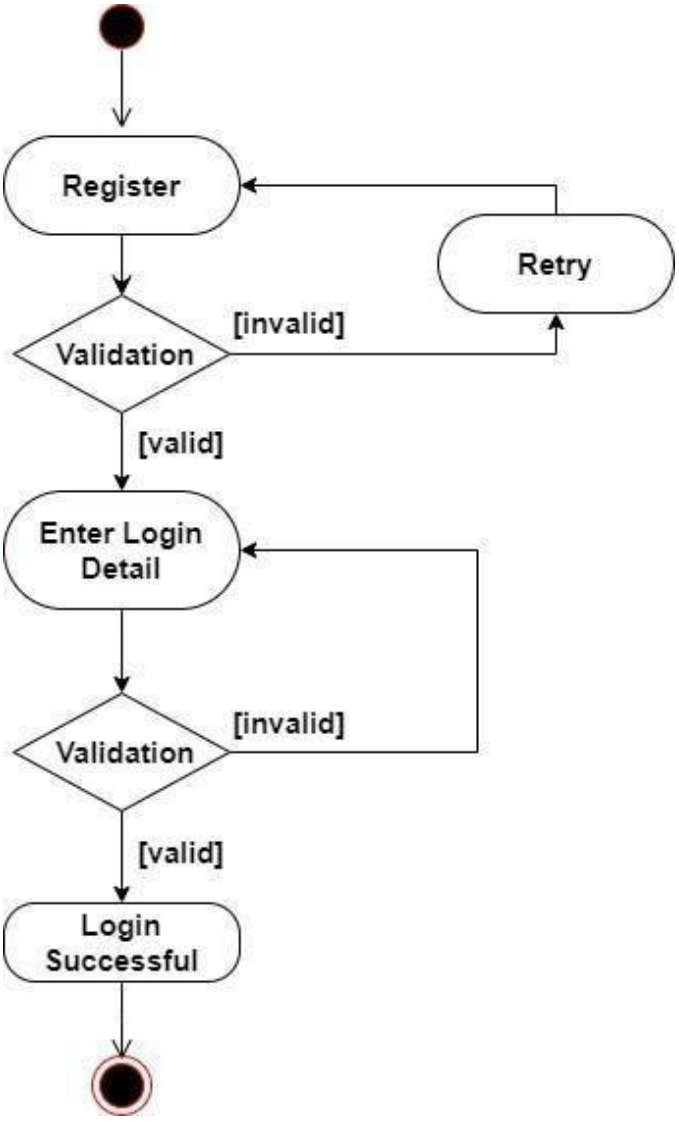
Use case name	On Road Vehicle Breakdown Help Assistance
Actor	Admin
Short description	Admin can access the system for his part of work
Pre-condition	Admin must login
Post condition	admin can assess all the required functions
Basic Flow	Manage Mechanic View Pending Request View Reject Request

3.5 Class Diagram:

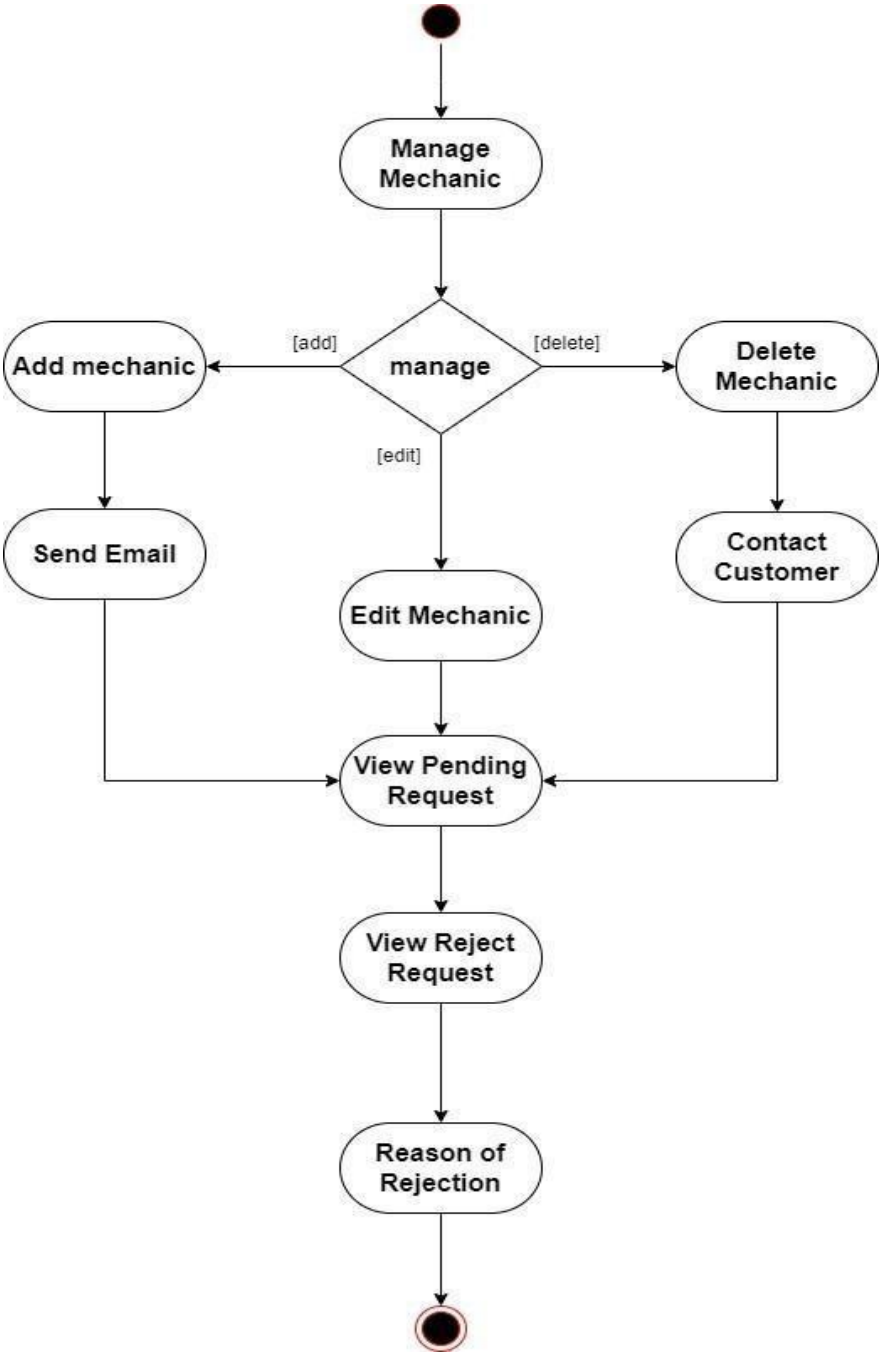


3.6 Activity Diagrams:

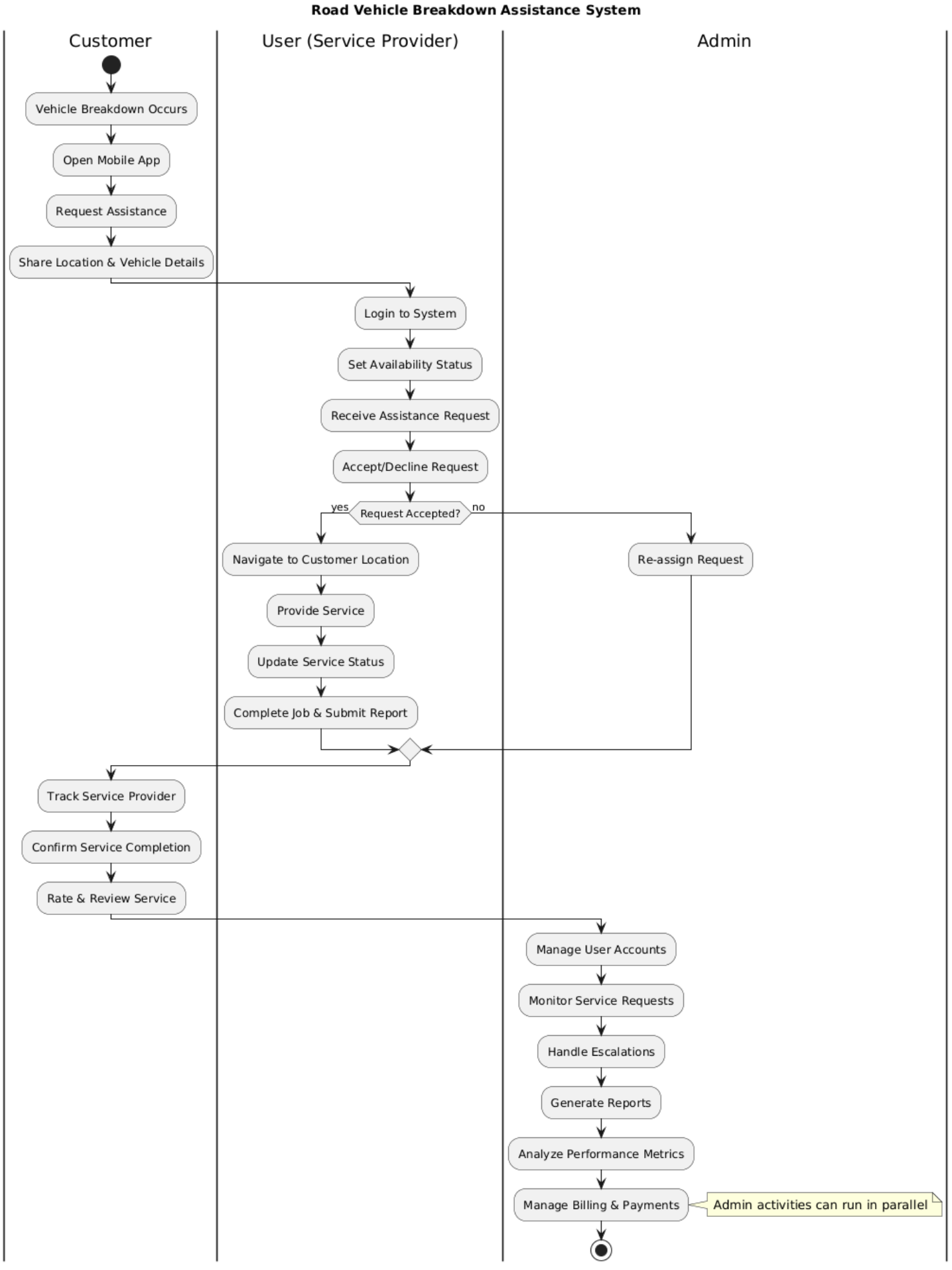
- **Login Activity Diagram:**



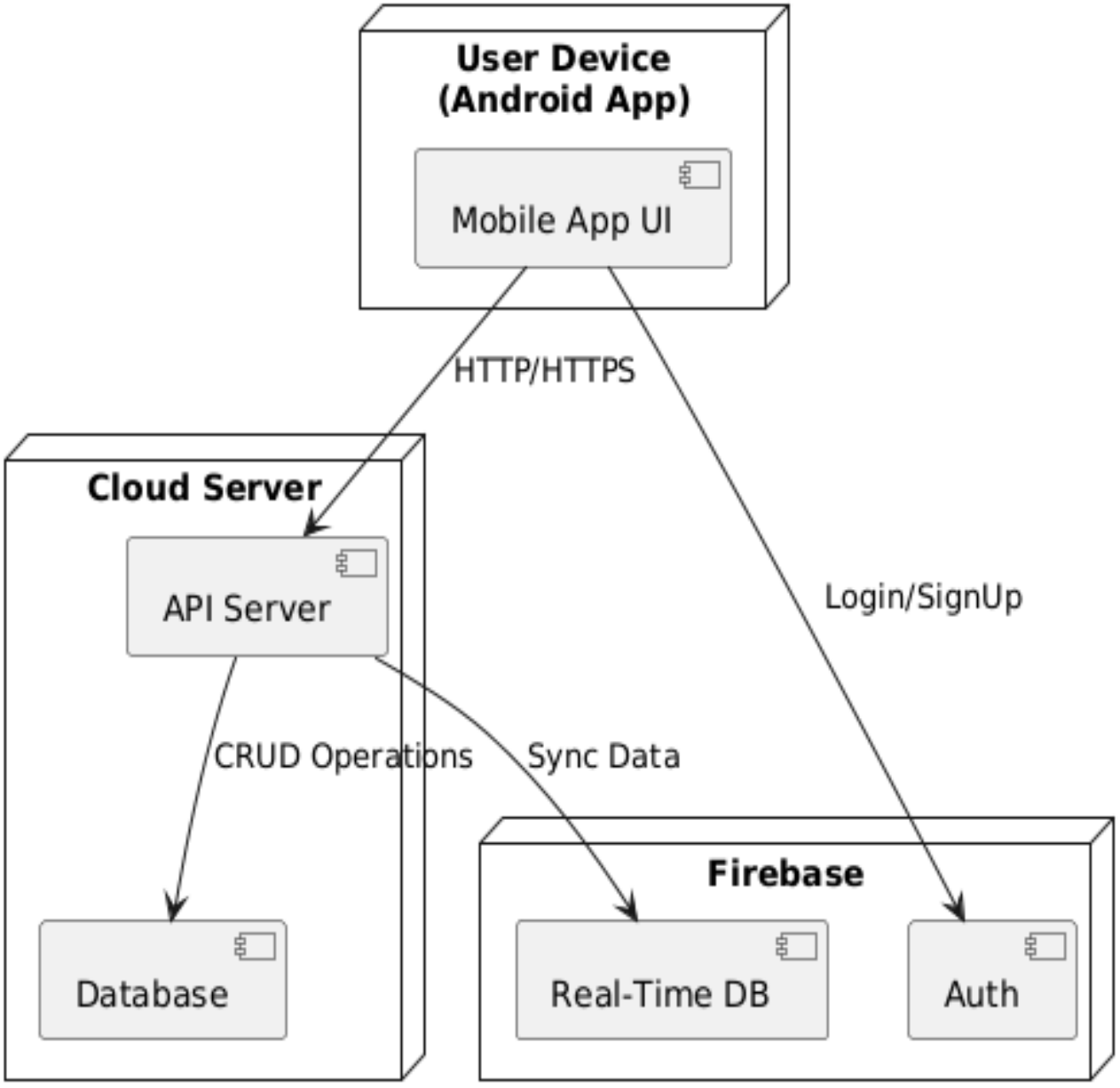
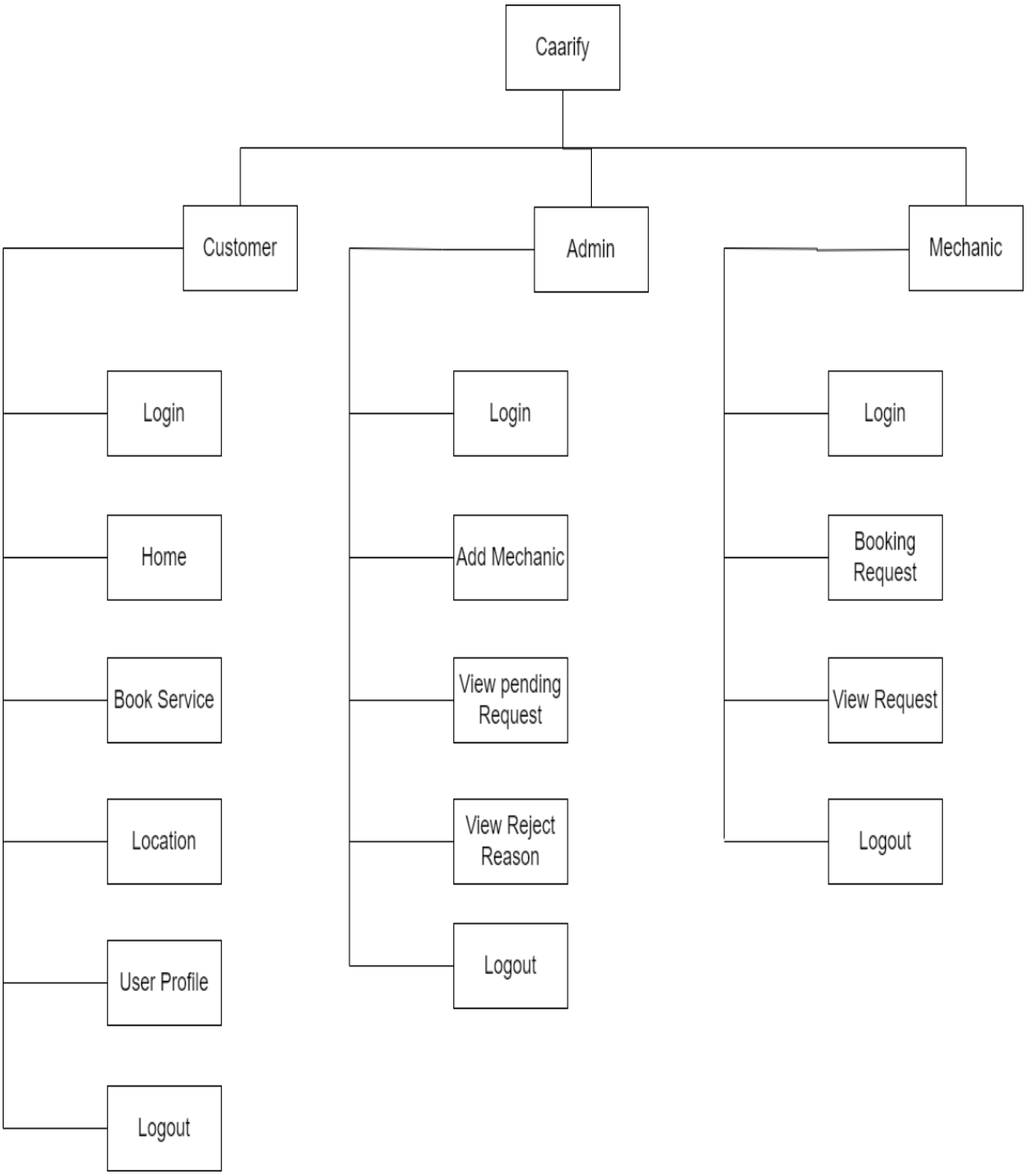
- **Admin:**


Manage Mechanic
manage
[add]
[delete]
[edit]
Add mechanic
Delete Mechanic
Send Email
Contact Customer
Edit Mechanic
View Pending Request
View Reject Request
Reason of Rejection

Full Activity Diagram



3.7 Deployment Diagram



3.8 Module Hierarchy Diagram: