FINAL REPORT

PROJECT: DESIGNING AND DEVELOPING A SOFTWARE SYSTEM FOR TOLL COLLECTION FOR PADMA MULTIPURPOSE BRIDGE

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CSE327 SEC-7

INTRODUCTION:

Padma bridge toll management system has been designed to collect toll from registered and non registered users. To collect toll rapidly registered users can give toll before they start their journey. Registered user can ask for due also. Non registered users give money at the toll plaza. The operators receives money and check all the payment status of users. The supervisors of toll management system supervise the whole procedure.

USE CASES:

OPERATOR

1. User will enter the toll plaza.
2. Operator ask number plate.
3. There is a specific code in every number plate to identify the vehicle's class. Operator match with the original view of vehicle.
4. Operator input the number plate.
5. System verifies the number plate is registered for Padma bridge payment process.
6. The system checks the weight of the vehicle.
7. The operator input the vehicle class for payment.
8. Operator check the balances and found paid previously.
9. Operator certified its paid.
10. Send message of the payment status to the user.
11. Operator gives a printed receipt to the user.
12. Operator permit to go.
13. The barrier opens automatically.

EXTENSIONS

3a. Operator will not permit to go for mismatch of the original view of vehicle.

1. Operator inform the authority for mismatch.
2. The user is asked to park the vehicle in a specific place.
3. Next vehicle is processed to collect toll.

3b. For special case the vehicle will be permitted to be brought under process.

1. The operator will ask details of the user including name, address, phone, NID.

4a. Show warning for wrong input.

1. The operator will check the number plate and input it again.

5a. For non-registered user operator ask details of user including name, phone number.

6-7a. Warn operator for inconsistent weight

1. The user is asked to park the vehicle in a specific place.
2. Next vehicle is processed to collect toll.

8a. For unpaid status operator get payable amount from the vehicle class.

1. Operator takes money from user.
2. Input the amount of money to the process.
3. The software shows the amount of return.
4. The operator gives back the return to the user.

8b. Registered user can ask for making due for shortage of money.

1. Operator will not permit to cross toll plaza if dew of registered user crosses the certain due limit.
2. The user is asked to park the vehicle in a specific place.
3. Next vehicle is processed to collect toll.

10a. Operator gives massage manually to the user.

11a. Operator print receipt giving transection id.

13a. Operator opens barrier manually for disfunction opening barrier.

User's use case:

1. User enters the Toll plaza.
2. User opens the Toll Plaza app.
3. The user signs in by entering vehicle Id and password.
4. The user scans the generated QR code .
5. The user completes the payment through the mobile banking systems.
6. The User leaves the toll plaza after the barrier is lifted.

EXTENSIONS

3a. Shows warning for entering wrong ID and password,

1. The user Enter the correct ID and password

3b. Taps on Forgot password.

1. Enters vehicle's number plate and phone number.
2. User gets a OTP message
3. User enters the correct otp.

   3a) Shows a warning message for entering the wrong OTP.
4. User enters the new password

3c. The user taps on Sign-Up.

1. The user provides the required information about himself/herself and the vehicle.
2. The user gets an ID for his vehicle and sets a password.
3. The user signs in with his vehicle ID and password

4a. Chooses to manually enter the uniquely generated transaction id.

1. Enter the transaction id manually.

5a. shows insufficient balance to complete the transaction

1. The user gives cash money to the operator.
2. The user receives the change.

USER CASE: **SUPERVISOR OF TOLL PLAZA**

1. Supervisor will click on admin button in login interface.
2. Supervisor Enter Username and Password.
3. System Grants Access To User
4. System Shows Supervisor Toll Booths Are Open.
5. Supervisor Checks Account Balance Of Toll Booths That Are Open.
6. Supervisor Checks Payments Collected In Cash Of Toll Booths That Are Opens
7. Supervisor matches the payment deposited in cash with the payment value stored for cash.
8. Supervisor sets payment in cash successfully done for the specific toll.
9. Supervisor checks comment made by toll operator.
10. Supervisor sees no comment made by toll operator.
11. Supervisor exit the system.

EXTENSIONS

3a. System denies access to Supervisor

1. System tell the User to renter password and username.

4a. System shows user toll booth that are closed

1. Supervisor checks traffic flow in bridge
2. Traffic Is Larger Than Desired Amount Supervisor Opens Extra Toll booths

2a) Traffic Is Smaller Than Desired Amount Supervisor Will Keep The Extra Toll Booths Closed

5a. Supervisor Checks Payments Collected In BKASH Of Toll Booths That Are Opens

1. Supervisor matches payment in Bkash account with payment value stored for Bkash
2. Supervisor sets payment successfully done in Bkash for specific toll.

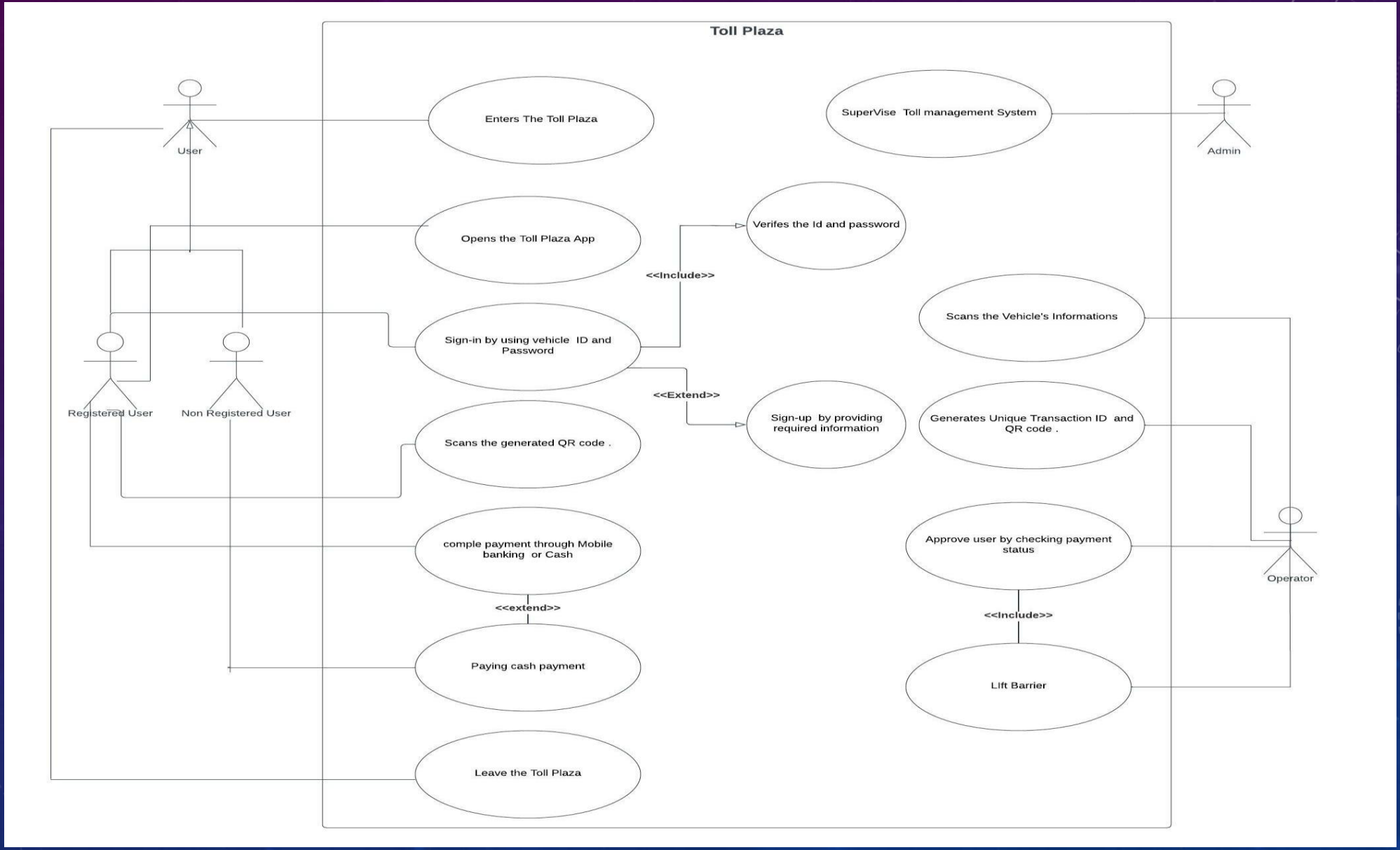
5b. Supervisor Checks Payments Collected In Card Of Toll Booths That Are Opens

1. Supervisor matches balance in bank account with payment value stored for card payment
2. Supervisor sets payment successfully done in card payment for specific toll.

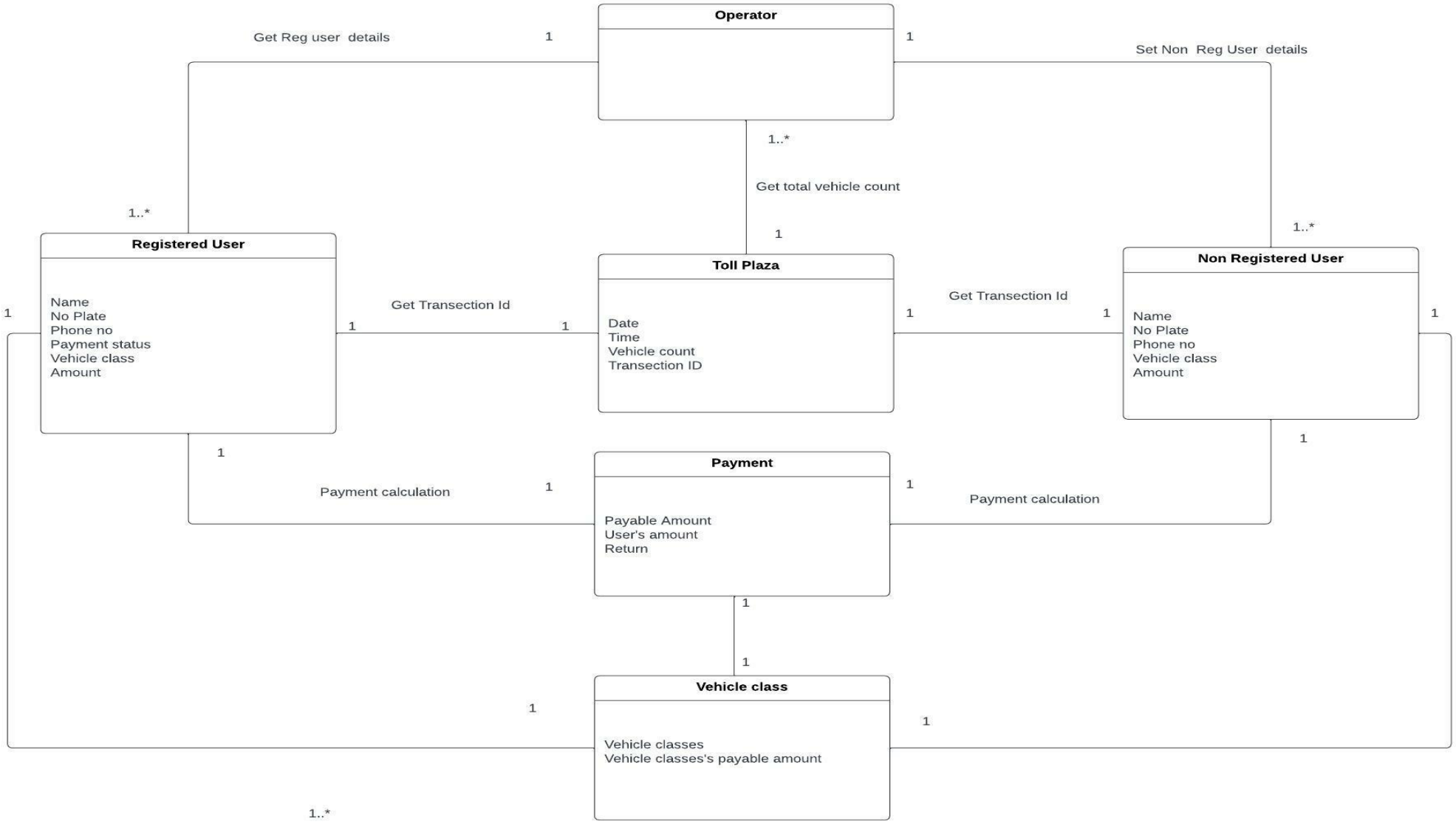
9a. Supervisor find comment made by toll operator

1. Supervisor acts upon accordingly to comment made by user

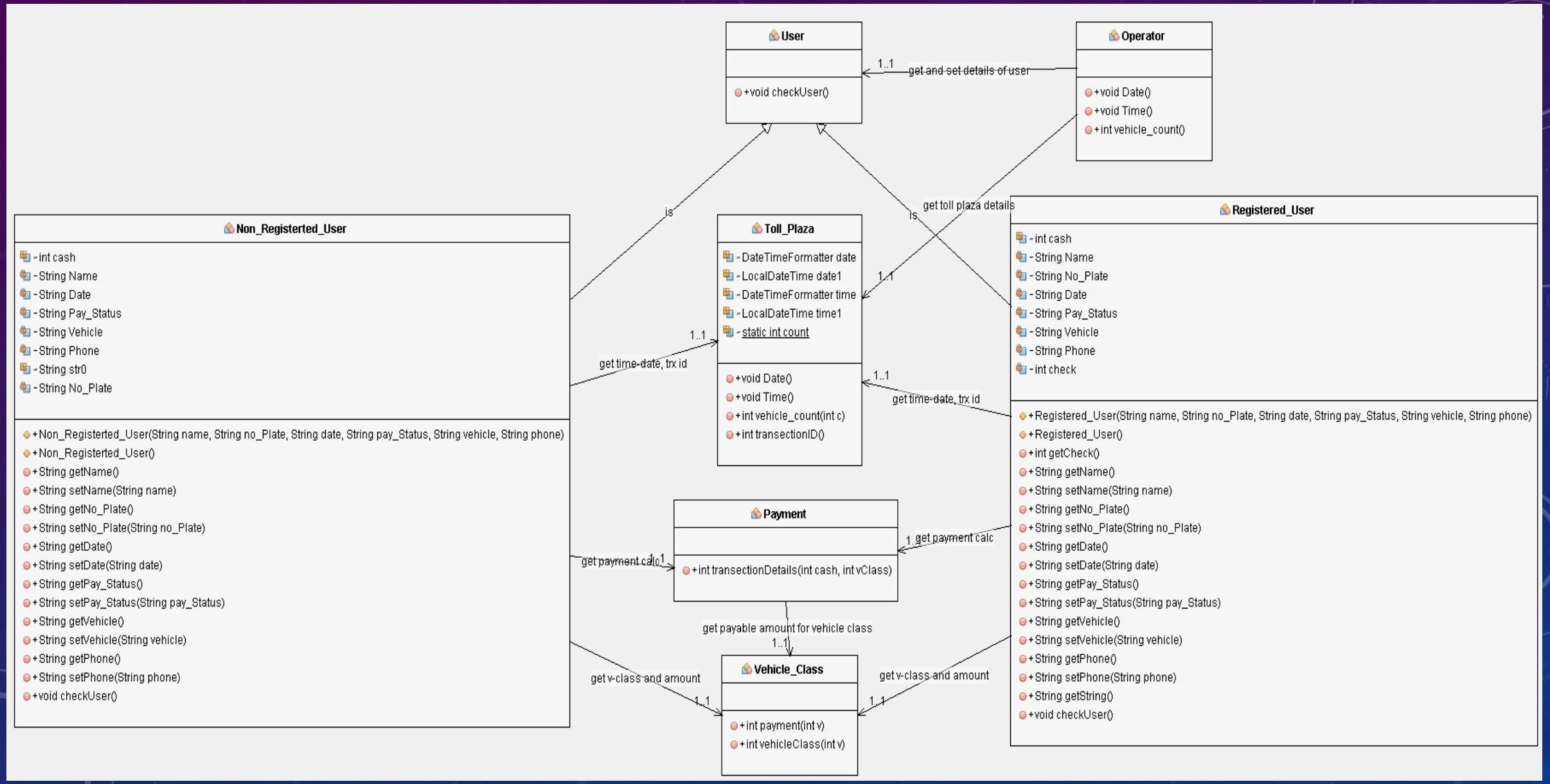
USE CASE DIAGRAM



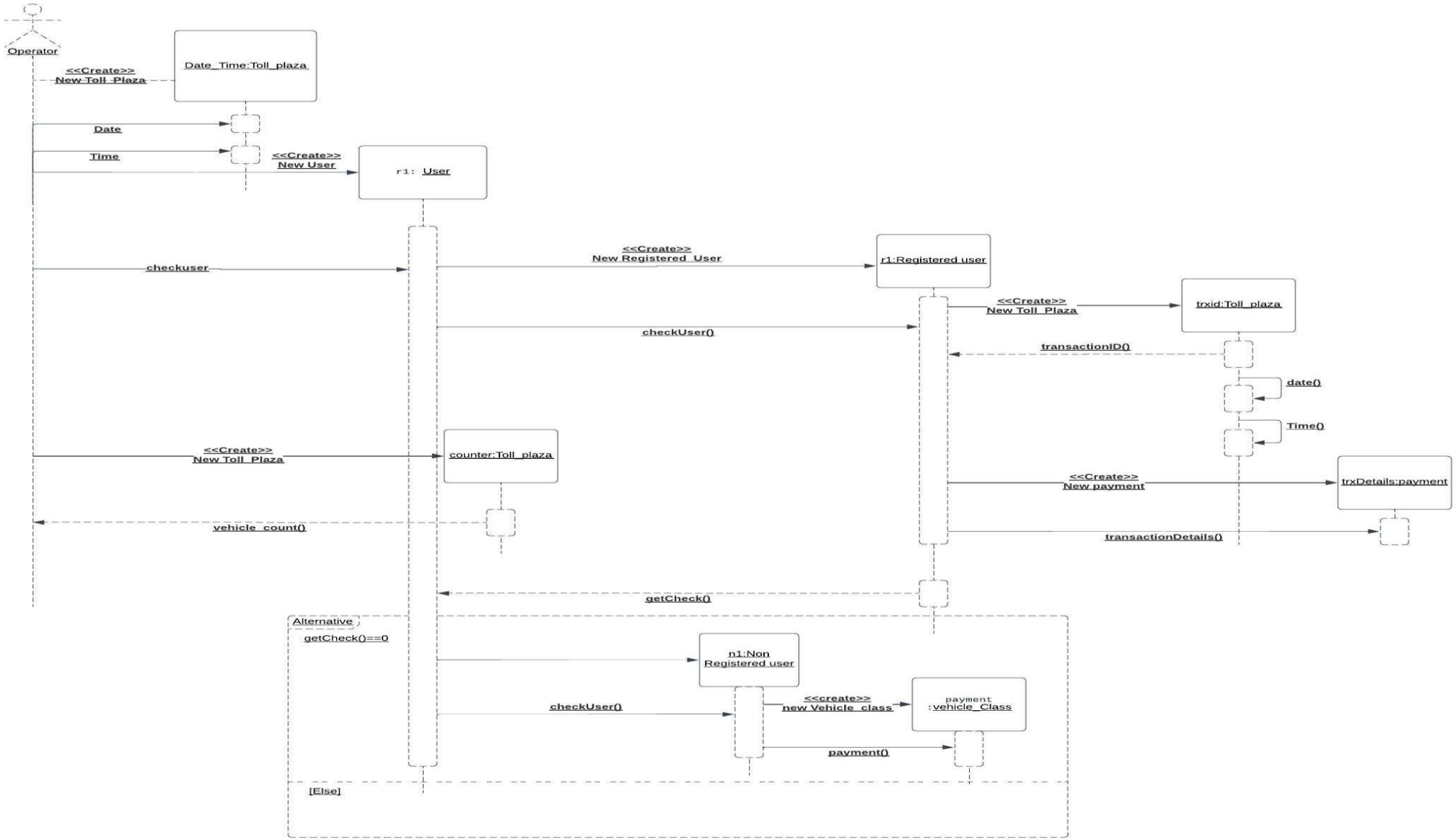
DOMAIN MODEL



CLASS DIAGRAM



SEQUENCE DIAGRAM



CODE SNAPSHOTS

```java
package padma_bridge_toll;
import java.util.ArrayList;
import java.util.Scanner;
public class main {

	public static void main(String[] args) {
		// TODO Auto-generated method stub




		/*int count=1;*/
		while (true) {

			Toll_Plaza date_time = new Toll_Plaza();
			date_time.Date();
			date_time.Time();
			User r1 = new User();
			r1.checkUser();
			int v=1;
			/*int total_vehicle=count++;
			System.out.println(total_vehicle);*/

			Toll_Plaza count = new Toll_Plaza();
			int c = count.vehicle_count(v);
			System.out.println("\nToday Vehicle count: " + c+"\n");


		}
```

MAIN CLASS

```java
package padma_bridge_toll;
public class User {

	//Checking whether Is Registered Or Non Registered
	public void checkUser()
	{
		Registered_User r1 = new Registered_User();
		r1.checkUser();

		if(r1.getCheck() == 0)
		{
			System.out.println("Enter User Details");
			Non_Registerted_User n1 = new Non_Registerted_User()
			n1.checkUser();
			//System.out.println(n1.getString());
		}

	}


}
```

USER CLASS

```java
package padma_bridge_toll;

import java.util.ArrayList;
import java.util.Scanner;

public class Registered_User  extends User{

   int cash;
        private String Name;
        private String No_Plate;
        private String Date;
        private String Pay_Status;
        private String Vehicle;
        private String Phone;
        private int check = 0;

        public int getCheck() {
                return check;
        }

        public Registered_User(String name, String no_Plate, String date, String pay_Status, String vehicle, String phone) {
                super();
                Name = name;
                No_Plate = no_Plate;
                Date = date;
                Pay_Status = pay_Status;
                Vehicle = vehicle;
                Phone = phone;
        }

        //Creating a empty constructor to call constructor that doesn't require variables

        public Registered_User() {
                // TODO Auto-generated constructor stub
        }

        public String getName() {
                return Name;
        }
        public void setName(String name) {
                Name = name;
        }
```

REGISTERED USER CLASS

```java
package padma_bridge_toll;
import java.util.ArrayList;
import java.util.Scanner;

public class Non_Registerted_User extends User{

        int cash;
        private String Name;
        private String Date;
        private String Pay_Status;
        private String Vehicle;
        private String Phone;
        String str0,str1,str2,str3,str4,str5;
        public String getName() {
                return Name;
        }
        public void setName(String name) {
                Name = name;
        }
        public String getNo_Plate() {
                return No_Plate;
        }
        public void setNo_Plate(String no_Plate) {
                No_Plate = no_Plate;
        }
        public String getDate() {
                return Date;
        }
        public void setDate(String date) {
                Date = date;
        }
        public String getPay_Status() {
                return Pay_Status;
        }
        public void setPay_Status(String pay_Status) {
                Pay_Status = pay_Status;
        }
        public String getVehicle() {
                return Vehicle;
        }
        public void setVehicle(String vehicle) {
                Vehicle = vehicle;
        }
```

NON REGISTERED USER CLASS

```java
package padma_bridge_toll;


import java.time.format.DateTimeFormatter;
import java.time.LocalDateTime;
public class  Toll_Plaza {
    DateTimeFormatter date = DateTimeFormatter.ofPattern("dd/MM/yyyy");
   LocalDateTime date1 = LocalDateTime.now();

   DateTimeFormatter time = DateTimeFormatter.ofPattern("HH:mm:ss");
   LocalDateTime time1 = LocalDateTime.now();

   public void Date() {
    System.out.println(date.format(date1));
   }

  public void Time() {
    System.out.println(time.format(time1));
  }


    /*LocalDate Date = LocalDate.now();
    System.out.println(Date);

    LocalTime Time = LocalTime.now();
    System.out.println(Time);*/









  static int count=0;

  public  int vehicle_count(int c){
    //int count=1;
    count=count+c;
    return count;
```

TOLL PLAZA CLASS

```java
package padma_bridge_toll;


public class Vehicle_Class {


    public int payment(int v){
        int pay;

        switch (v) {
            case 1:
                pay =100;

                break;
            case 2:
                pay =750;

                break;
            case 3:
                pay =1200;

                break;
            case 4:
                pay =1300;

                break;
            case 5:
                pay =1400;

                break;
            case 6:
                pay =2000;

                break;
            case 7:
                pay =2400;

                break;
            case 8:
                pay =1800;

                break;
```

VEHICLE USER CLASS

```java
package padma_bridge_toll;

public class Payment {
    public void transectionDetails(int cash, int vClass){
        Vehicle_Class payment = new Vehicle_Class();
                int pay = payment.payment(vClass);
                int return1 = cash - pay;

                System.out.println("Cash:"+ cash);
                System.out.println("Payable amount:"+ pay);
                System.out.println("Return:"+ return1);

    }
}
```

PAYMENT CLASS

CONSOLE:

```
03/09/2022
15:47:59
Enter user car number0004

Name: Khan
Number plate: 0004
Phone number: 01911424
Vehicle Class: Microbus
Payable amount: 1300
Payment status: Paid


Receipt


Transaction Id: 100001
Date: 03/09/2022
Time: 15:48:06
Vehicle Class: Microbus
Payment method: Online
Payment status: Paid
```

PAID REGISTERED USER

```
Enter user car number0003

Name: John
Number plate: 0003
Phone number: 0181111
Vehicle Class: Pickup
Payable amount: 1200
Payment status: NonPaid
Enter User amount:
1500


Receipt


Transaction Id: 100003
Date: 03/09/2022
Time: 15:51:15
Vehicle Class: Pickup
Payment method: Cash
Cash:1500
Payable amount:1200
Return:300
Payment status: Paid

Registerted User Found

Today Vehicle count: 3
```

UNPAID REGISTERED USER

```
Today Vehicle count: 1

03/09/2022
15:48:06
Enter user car number6678

No Registerted User Found
Enter User Details
Enter User Name: alif
Enter User Number Plate: 6678
Enter User Phone Number: 0189353575
Enter Vehicle Class: 12
Payable Amount: 6000
Enter User amount:
6000


Receipt


Transaction Id: 100002
Date: 03/09/2022
Time: 15:49:52
Vehicle Class: Trailer (4 axle)
Payment method: Cash
Cash:6000
Payable amount:6000
Return:0
Payment status: Paid
```

UNPAID NON REGISTERED USER

CONCLUSION & FUTURE WORK

This system has been made only for the operators while they receiving money and checking payment status. Our future target is to make a mobile application where users can register and pay money using different gateway like internet and mobile banking. We are also planning to make system for the security officers of Padma bridge to handle any problems of the bridge. Furthermore we have plan to make a system where user can get facilities for refreshment during long journey. It will include food management and payment, prayer hall timing etc. We are planning to develop these whole systems in decent manner which would be user friendly, realistic and consistent with the environment.

Github link

https://github.com/ALIF-AL-RAZI/padma-bridge-toll-management

THANKS