Case Studies in Software Engineering

Design Walkthrough

Group ID: 2021S2_REG_WE_57

Group Members:

Id Number	Name
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Contributions

IT19014128 –

- Recharge account sequence diagram.
- Account, BusStop, Journey classes.
- Contributing for and combining the use case diagram.
- Mobile app related wireframes and interfaces.

IT19180526 (S.A.N.L.D. Chandrasiri) –

- SD_Journey_Start Sequence Diagram.
- Driver, Validity classes.
- Contributing for the use case diagram.
- Interfaces related to the reader mounted in the bus.

IT19240848 (H.G. Malwatta) –

- Passenger_out sequence diagram.
- Combining the class diagram.
- JourneyController class diagram.
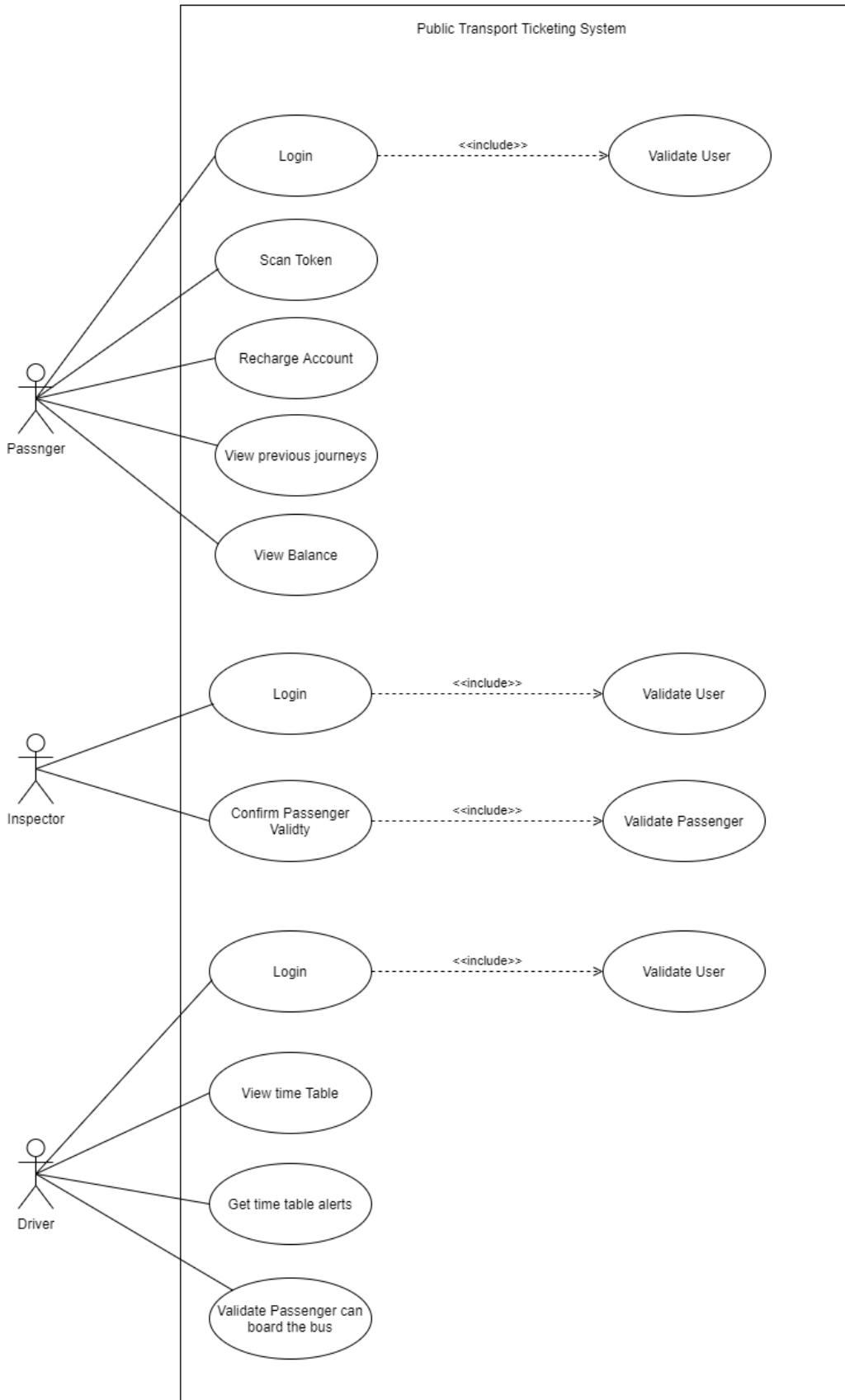- Web application wireframes

Scenarios and assumptions

Scenarios

The 3 scenarios considered for this design walkthrough were,

1. Getting in a bus (boarding a bus)
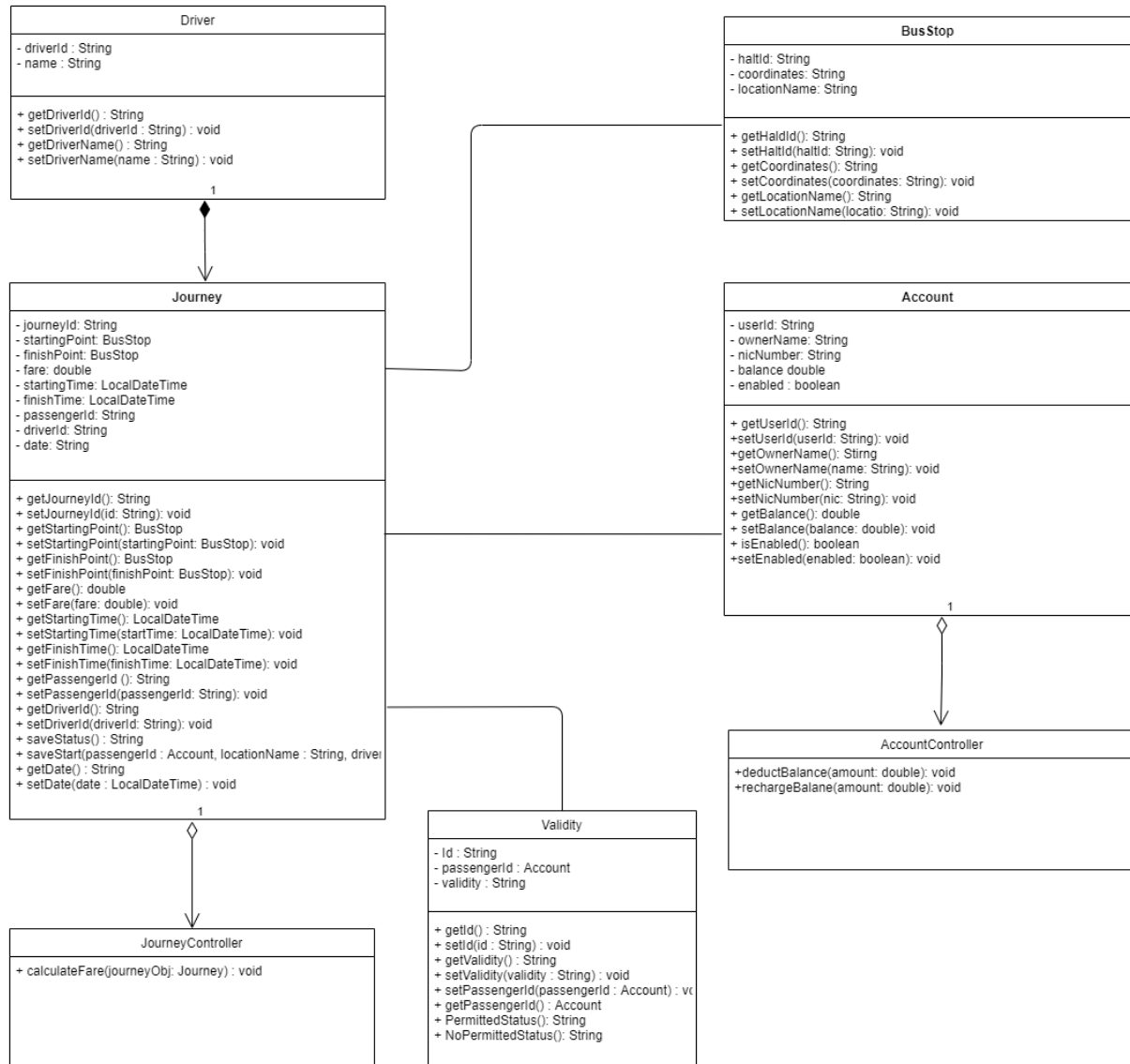2. Getting off a bus.
3. Recharging the account

Assumptions

- The digital token is a QR code generated by a mobile application installed in a smart phone. The mobile application can be used for recharging the account and viewing the journeys. The generated QR code is scanned by the reader mounted in the bus at boarding and getting off.
- Fixed rate is available for the price per kilometer.
- The user must have balance in his/ her account to reach the destination of the bus route even they are planning to get off in a bus stop in the middle.

Use case diagram

Public Transport Ticketing System

Passnger

Login --- <<include>> ---> Validate User

Scan Token

Recharge Account

View previous journeys

View Balance

Inspector

Login --- <<include>> ---> Validate User

Confirm Passenger Validty --- <<include>> ---> Validate Passenger

Driver

Login --- <<include>> ---> Validate User

View time Table

Get time table alerts

Validate Passenger can board the bus

Class diagram

Driver

- driverId : String
- name : String

+ getDriverId() : String
+ setDriverId(driverId : String) : void
+ getDriverName() : String
+ setDriverName(name : String) : void

1

BusStop

- haltId: String
- coordinates: String
- locationName: String

+ getHaltId(): String
+ setHaltId(haltId: String): void
+ getCoordinates(): String
+ setCoordinates(coordinates: String): void
+ getLocationName(): String
+ setLocationName(locatio: String): void

Journey

- journeyId: String
- startingPoint: BusStop
- finishPoint: BusStop
- fare: double
- startingTime: LocalDateTime
- finishTime: LocalDateTime
- passengerId: String
- driverId: String
- date: String

+ getJourneyId(): String
+ setJourneyId(id: String): void
+ getStartingPoint(): BusStop
+ setStartingPoint(startingPoint: BusStop): void
+ getFinishPoint(): BusStop
+ setFinishPoint(finishPoint: BusStop): void
+ getFare(): double
+ setFare(fare: double): void
+ getStartingTime(): LocalDateTime
+ setStartingTime(startTime: LocalDateTime): void
+ getFinishTime(): LocalDateTime
+ setFinishTime(finishTime: LocalDateTime): void
+ getPassengerId (): String
+ setPassengerId(passengerId: String): void
+ getDriverId(): String
+ setDriverId(driverId: String): void
+ saveStatus() : String
+ saveStart(passengerId : Account, locationName : String, driver
+ getDate() : String
+ setDate(date : LocalDateTime) : void

1

Account

- userId: String
- ownerName: String
- nicNumber: String
- balance double
- enabled : boolean

+ getUserId(): String
+setUserId(userId: String): void
+getOwnerName(): Stirng
+setOwnerName(name: String): void
+getNicNumber(): String
+setNicNumber(nic: String): void
+ getBalance(): double
+ setBalance(balance: double): void
+ isEnabled(): boolean
+setEnabled(enabled: boolean): void

1

AccountController

+deductBalance(amount: double): void
+rechargeBalane(amount: double): void

JourneyController

+ calculateFare(journeyObj: Journey) : void

Validity

- Id : String
- passengerId : Account
- validity : String

+ getId() : String
+ setId(id : String) : void
+ getValidity() : String
+ setValidity(validity : String) : void
+ setPassengerId(passengerId : Account) : vo
+ getPassengerId() : Account
+ PermittedStatus(): String
+ NoPermittedStatus(): String

Sequence Diagrams
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Recharge account sequence diagram

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Journey_Start sequence diagram

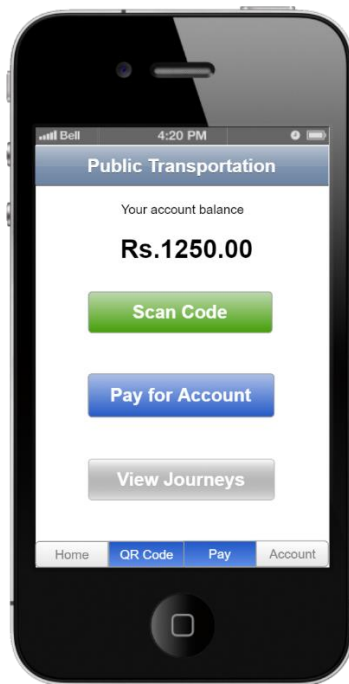IT19240848 - H.G. Malwatta

Passenger_out sequence diagram

Wireframes and interfaces

Mobile Application related interfaces

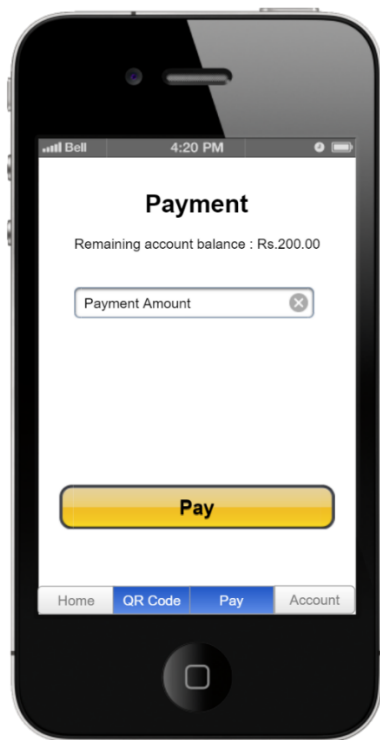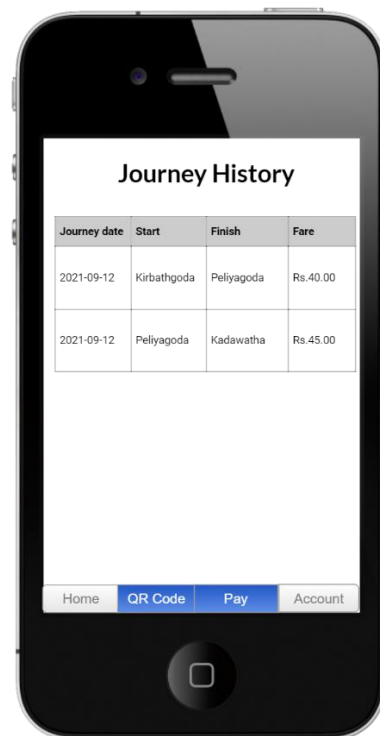IT19014128 - A.M.W.W.R.L. Wataketiya
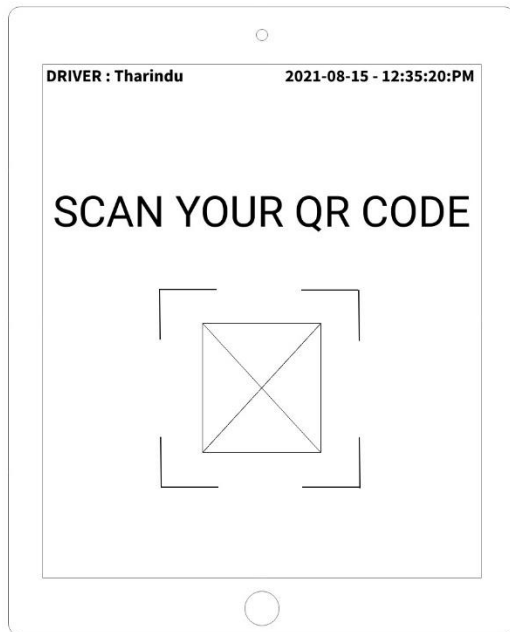
Home Page

QR code page
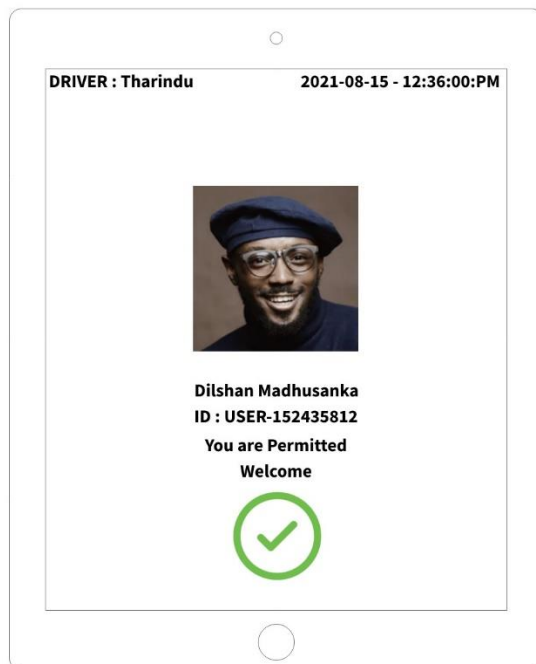
Payment Page

Journey History Page

Bus mounted reader interfaces
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Scan QR code

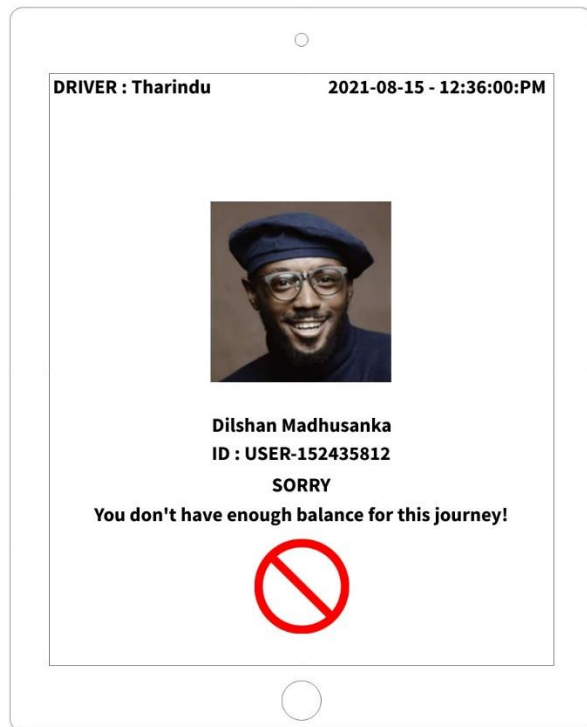Entry approved page

Entry denied page

DRIVER : Tharindu   2021-08-15 - 12:36:00:PM

Dilshan Madhusanka
ID : USER-152435812
SORRY
You don't have enough balance for this journey!

Payment successful page

DRIVER : Tharindu   2021-08-15 - 13:35:20:PM

Dilshan Madhusanka
ID : USER-152435812
Journey Start : Paliyahoda Bridge
Journey End : Colombo Port
Journey Start Time : 12:35:20:PM
Journey End Time : 13:35:20:PM
Distance : 6.9KM
Total Charge : Rs. 45.00
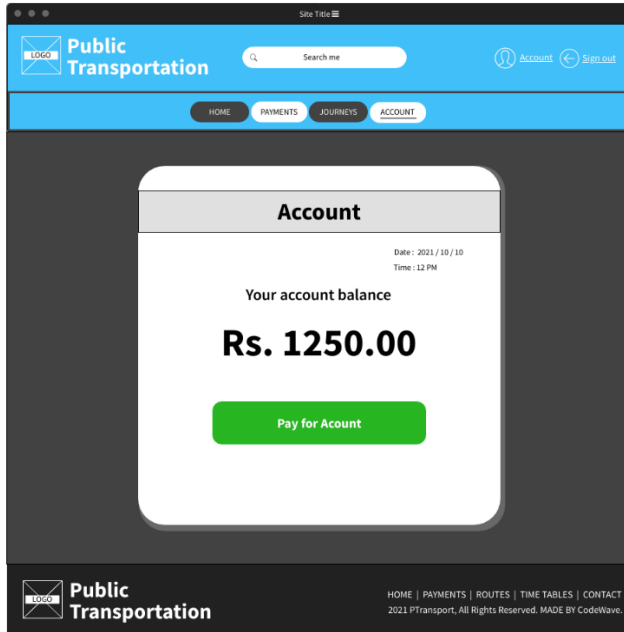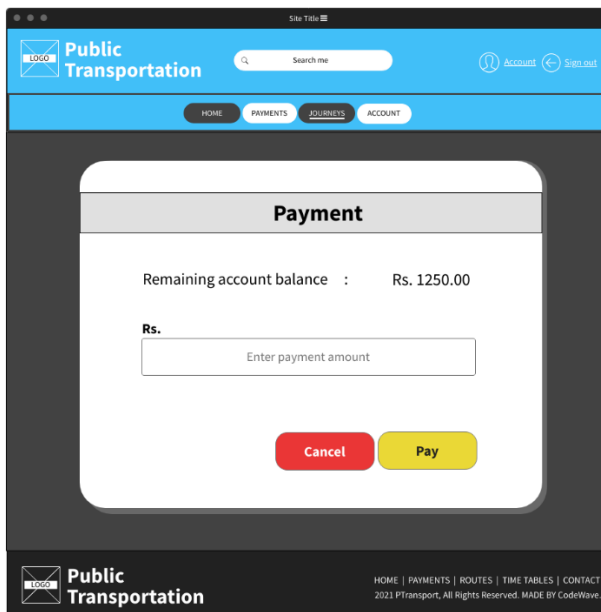**Charge Paid Successfully**
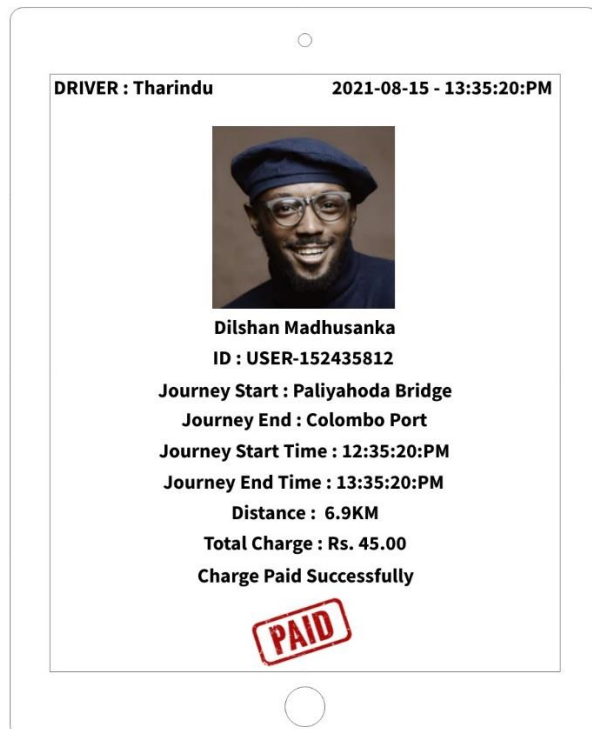
Website interfaces

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Account balance page

Payment Page

Journey history page

Site Title ☰

Public Transportation

🔍 Search me

👤 Account ← Sign out

HOME PAYMENTS JOURNEYS ACCOUNT

Journey History

Start Journey	End Journey	Fare(Rs.)
Ja-Ela	Gampha	45.00
Kandana	Wattala	25.00
Colombo	Galle	220.00

Public Transportation

HOME | PAYMENTS | ROUTES | TIME TABLES | CONTACT
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