

Ticketing System for Public Transportation Network

Group Number: CSSE_WE_05

Batch: WE

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Individual Contribution

Name	ID Number	Contribution
Hewage H.A.S.S.	IT17094078	<ul style="list-style-type: none"> • Final document creation. • Use case scenario for foreign passengers • High fidelity wireframe for user guide. • Sequence Diagram – Passenger requests loan
Wijesundara W.G.M.V.S.	IT17035118	<ul style="list-style-type: none"> • Use case scenario for scan QR code • High fidelity wireframe for scan QR code • Sequence Diagram for scan QR code • Class diagram creation
Samarakoon P. G. C. B.	IT17091626	<ul style="list-style-type: none"> • Use case scenario for plan time table • High fidelity wireframe for plan time table • Sequence Diagram for plan time table
K.M.J.B. Jayarathna	IT17157124	<ul style="list-style-type: none"> • Low Fidelity wireframe for claim expenses

Introduction

In this system individual passengers will be given a QR code, that they will present to a digital reader when they are getting into a bus as well as when they get out of the bus when it arrives the destination. The QR code will be generated after purchasing a ticket online or after accepting the travel destination by the user. The QR reader in the bus where the passenger presents the QR, will give audio and a visual feedback that the token has been read successfully.

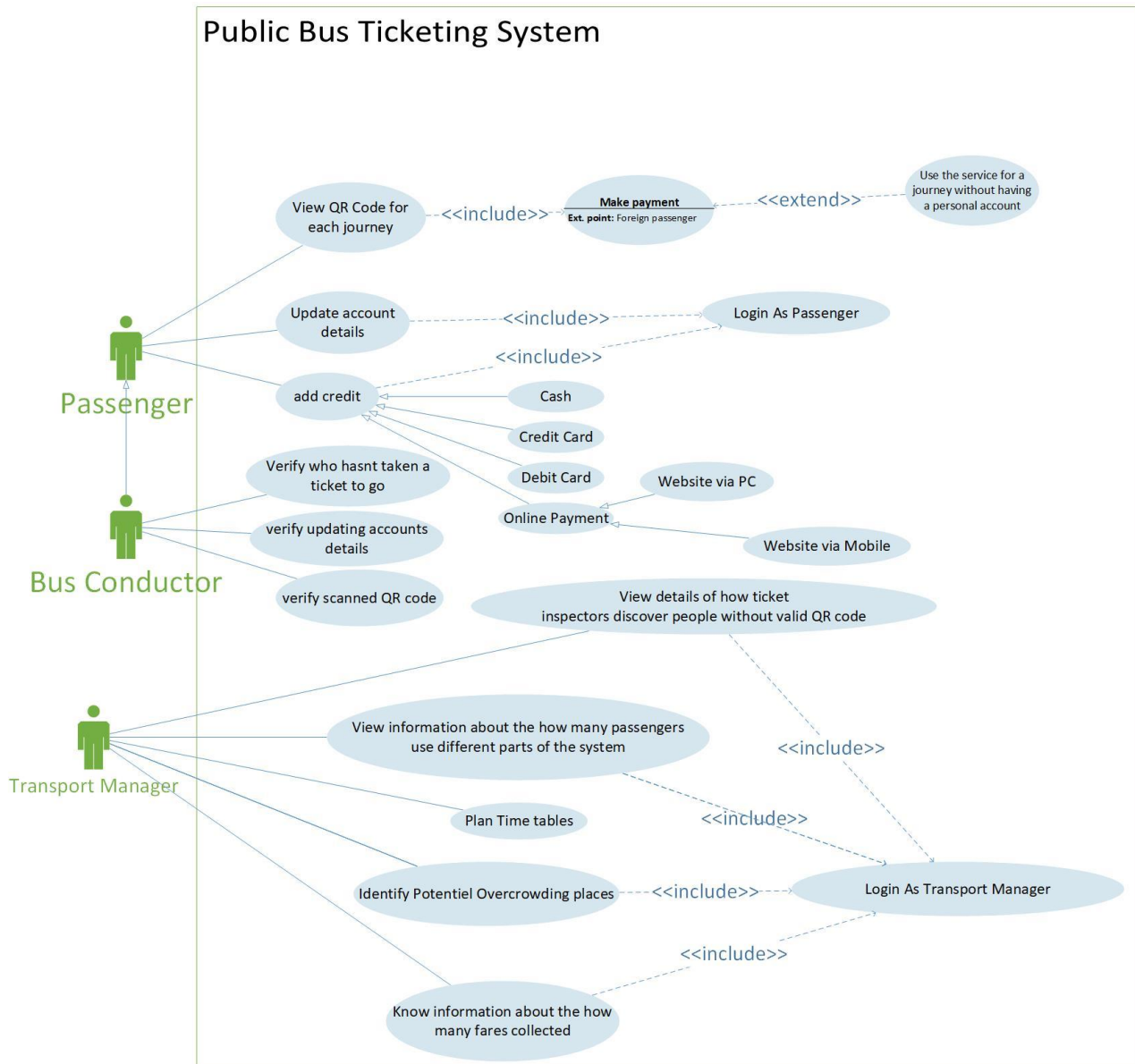
Instead of manually checking the of the QR the Inspectors will use QR readers that enable them to check that passengers have properly used their QR for the journey. When a passenger gets a QR code, they will hold an account with public transport provider. Each account will have an initial credit when they first get the QR code. There will be pay stations in the major bus stations where they can add credit to the account using cash, debit or credit cards. Also, passengers will be able to add credit online by visiting the transport service provider's website. For some passengers, it may be necessary to be able to look up the journeys they have taken and the fares they have paid so that they can claim expenses back from their employers.

System will calculate the fare based on the starting point and the ending point, where the money will get deducted from the account when the passenger used the QR to get out from the bus. Also, when it comes to visitors like foreigners who visit the country temporary can request a different account to travel in buses since they won't have any personal accounts.

Public transport managers can view information from the digital ticketing system. For example, to plan timetables, or to identify potential overcrowding on parts of the network, they will need to know information about how many passengers use different parts of the network at different times of day and on different days of the week. To plan the finances, they can view information about the fares collected from passengers and how these relate to journeys that have been taken. They can also view information about how often the ticket inspectors discover people travelling without a valid QR, as this information may affect whether additional inspectors should be employed. The system can provide statistical reports to the public transport managers to analyze different situations.

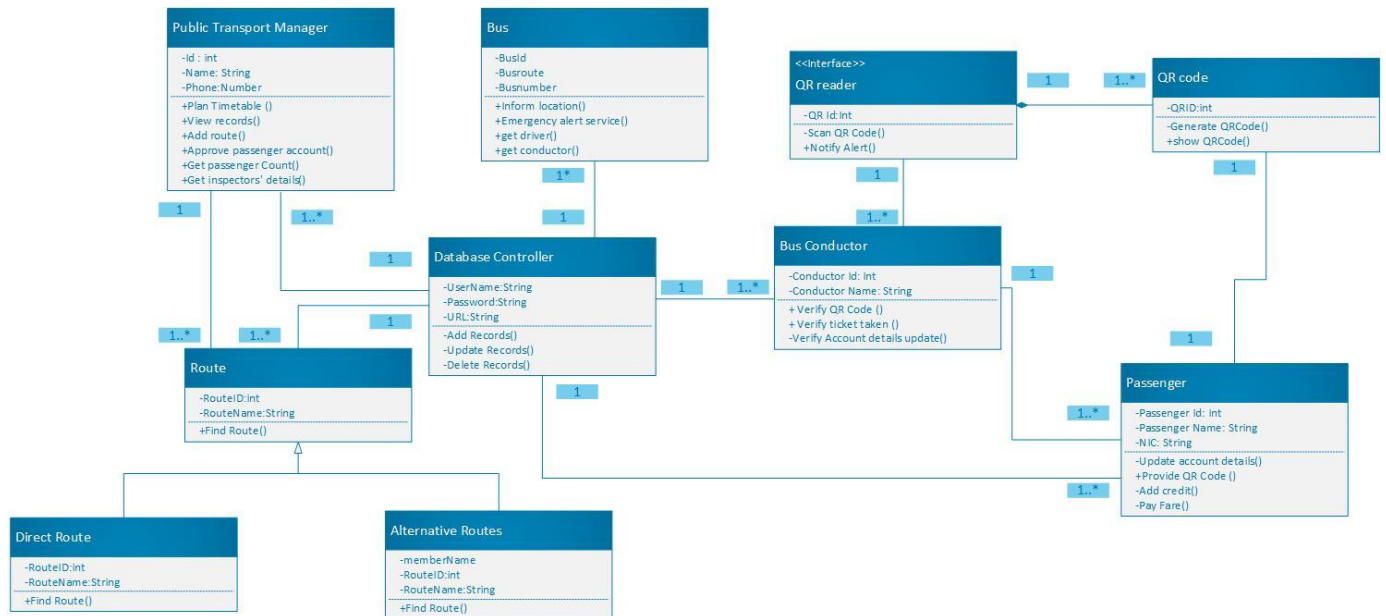
The application will have a web interface and a mobile interface. The transport manager will use the web interface and passengers can use mobile user interface on the way.

Use Case Diagram

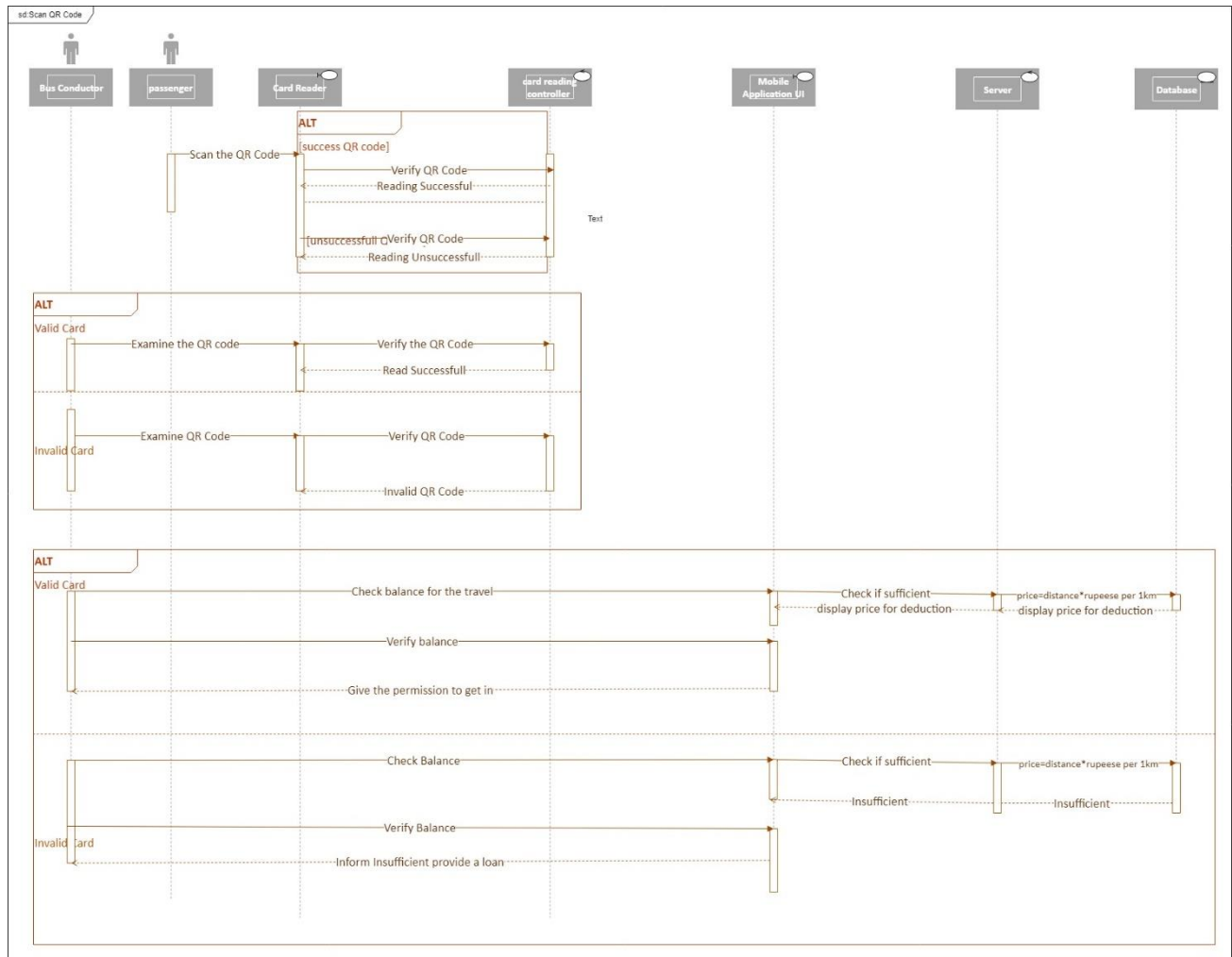


Assumptions:

Class Diagram

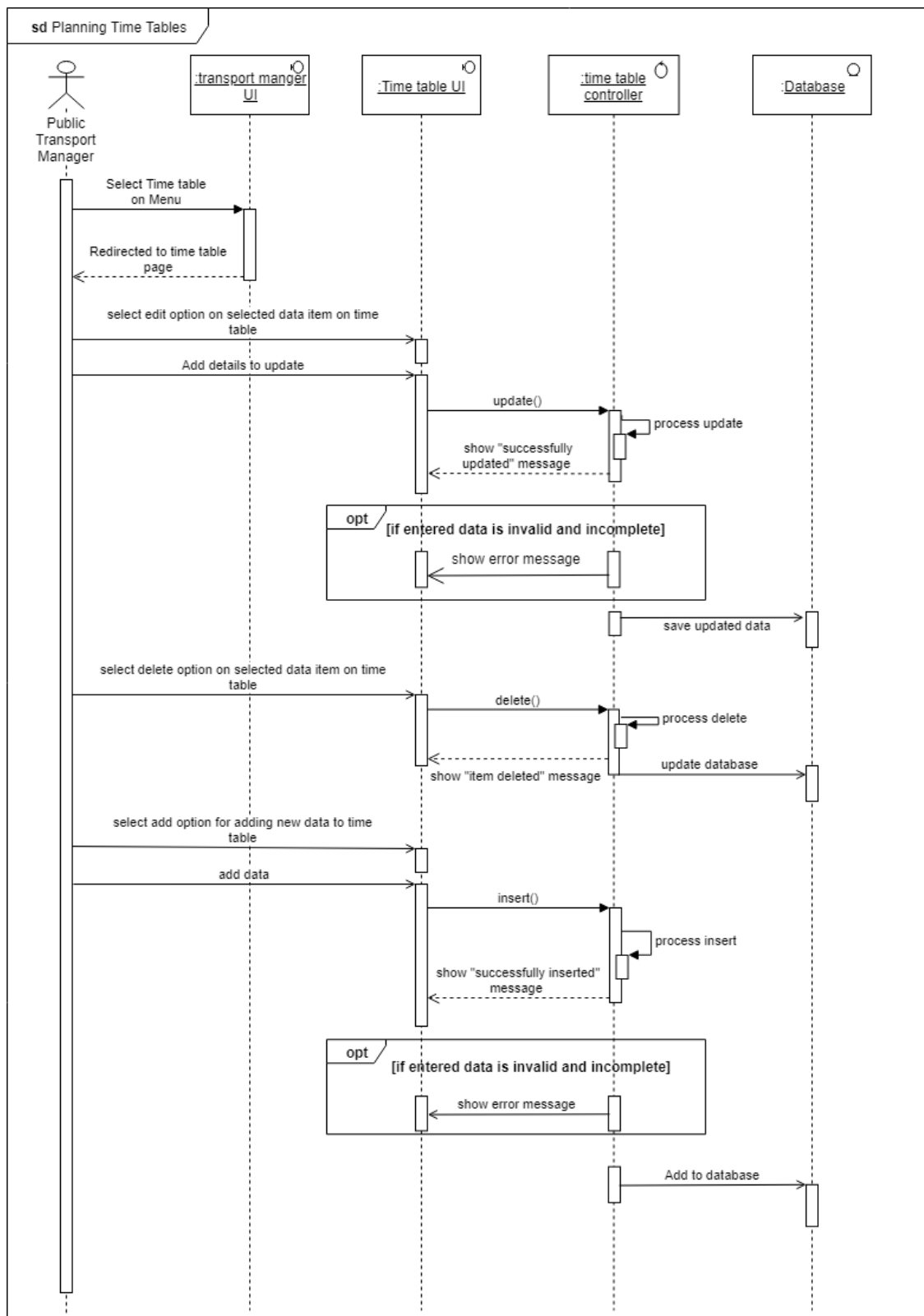


Sequence Diagram – Scan QR Code



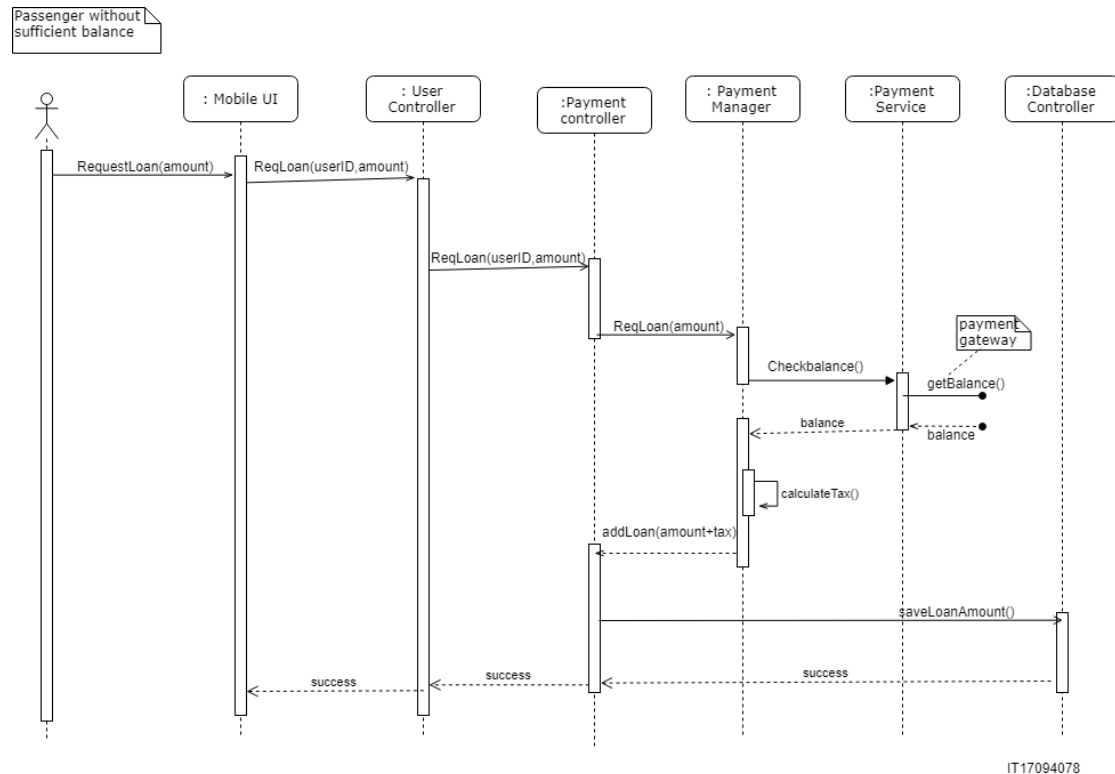
IT17035118

Sequence Diagram – Plan Time Tables



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Sequence Diagram – Passenger requests a Loan



Use Case Scenario: Getting the Ticket for ride.

IT17035118

Wijesundara W.G.M.V.S.

Use Case ID	001	
Use Case Name	Getting the Ticket for ride	
Summary	Before start the journey Passenger need to provide his/her QR code to scan to prove as a valid passenger using the QR code scanner then he/she can get in the bus to continue his/her journey	
Characters	Passenger , Bus Conductor	
Pre-Condition	Scan the QR Code	
Primary Actor	Passenger	
Main Success Scenario Steps	Steps	Actions
	1.	Present the digital card token in front of the QR code reader
	2.	If valid passenger prompt an audio and visual feedback as reading success
	3.	Enter the destination using mobile phone application interface
	4.	Click the proceed button
	5.	Pay fare using payment section
	6.	Get The notification about the deduction of the account balance
Extensions	Steps	Branching actions
	2.a	if invalid passenger prompt an alarm card reading unsuccessful
	5.a	if insufficient fare select to proceed to a loan

Assignment

SE3070 – Case Studies in Software Engineering

Year 3, Semester II, 2019

IT17091626 P. G. C. B. Samarakoon		Use Case Scenario : Plan Time Table	
Number	001		
Name	Plan Time Table		
Summary	Public Transport Manager plan time tables according to the information about how many passengers use different parts if the network at different times of day and on different days of the week.		
Priority			
Preconditions	Public Transport Manager has logged into web application		
Postconditions	Public Transport Manager has successfully planed time tables		
Primary Actor(s)	Public Transport Manager		
Trigger	User has chosen to plan time tables		
Main Scenario	Step	Action	
	1	System display Menu for Transport Manager’s services.	
	2	Transport Manager select “Time tables” from menu	
	3	System display existing time tables.	
	4	Transport Manager click “Update” icon in selected data row.	
	5	System display selected details on editable form.	
	6	Transport Manager edit data.	
	7	Transport Manager click “Save changes” button	
	8	User redirected to the time table view and display “Data successfully updated” message	
	9	Transport Manger click “Delete” icon in selected data row.	
	10	System display confirmation dialog box.	
	11	Transport Manager click “delete” button in dialog box	
	12	User redirected to the time table view and display “Data item deleted” message	
	13	User click “Add New” button below the existing time table	
	14	User redirected to routes and traffic page which have map details	
	15	Transport Manger set date and time and search for routes and overcrowding parts on network in map view	
	16	System display existing routes and overcrowding area details on map.	
	17	User select desired route	
	18	User click “Passenger Count” button to get details on previously selected route	
	19	System display passenger count in graph view	
	20	Transport manager click “Add” button	
	21	System display form to add details.	
	22	User fill the form and click “Add data” button	
	23	User redirected to the time table view and display “Data added Successfully” message	
Extensions	Step	Branching Action	
	8a	System display message saying that user “didn’t filled all required fields”	
	8b	User redirected to editable form for updating details again	
	18a	If passenger count is not enough for adding new bus to that area user click “Back” button to cancel adding new data.	
	23a	System display message saying that user “didn’t filled all required fields”	
	23b	User redirected to editable form for adding details again	

Assignment

SE3070 – Case Studies in Software Engineering

Year 3, Semester II, 2019

IT17094078 Hewage H.A.S.S. Use Case Scenario : Foreign passenger travels using the application		
Number	002	
Name	Foreign passenger travels using the application	
Summary	A foreign passenger uses the service with a special account activated by giving their passport number.	
Priority	Moderate	
Preconditions	Guest Passenger should install and navigate to the account creation section.	
Postconditions	Registered Foreign passenger will receive an account to use the service.	
Primary Actor(s)	Foreign passenger	
Trigger	Foreign passenger has chosen to create an account.	
Main Scenario	Step	Action
	1	Guest foreign passenger installs the application
	2	Guest foreign passenger navigates through foreign passenger services menu.
	3	Guest foreign passenger selects signup.
	4	Guest foreign passenger creates an account by giving the passport ID.
	5	Guest foreign passenger adds a payment method.
	6	Guest foreign customer confirms account details.
	7	Registered foreign passenger views all the services
	8	Registered foreign passenger selects a travel destination.
	9	Registered foreign passenger views cost details
	10	Registered foreign passenger clicks payout.
	11	Registered foreign passenger selects payment method.
	12	Registered foreign passenger views available balance.
	13	Registered foreign passenger confirms payment.
	14	Registered foreign passenger views the QR code valid only for the journey.
	15	Registered foreign passenger gets into the bus.
	16	Registered foreign passenger shows the QR code to the conductor.
	17	Registered foreign passenger starts the journey.
	18	Registered foreign passenger ends the journey.
	19	Registered foreign passenger shows the QR code to the conductor again.
	20	Registered foreign passenger gets down from the bus.
	21	Registered foreign passenger views the summary of the journey.
Extensions	Step	Branching Action
	3a.	Guest passenger views signups options for foreign passengers.
	5a	System allows this optional step to full filled by later.
	7a	If account details are valid passenger will see a success message.

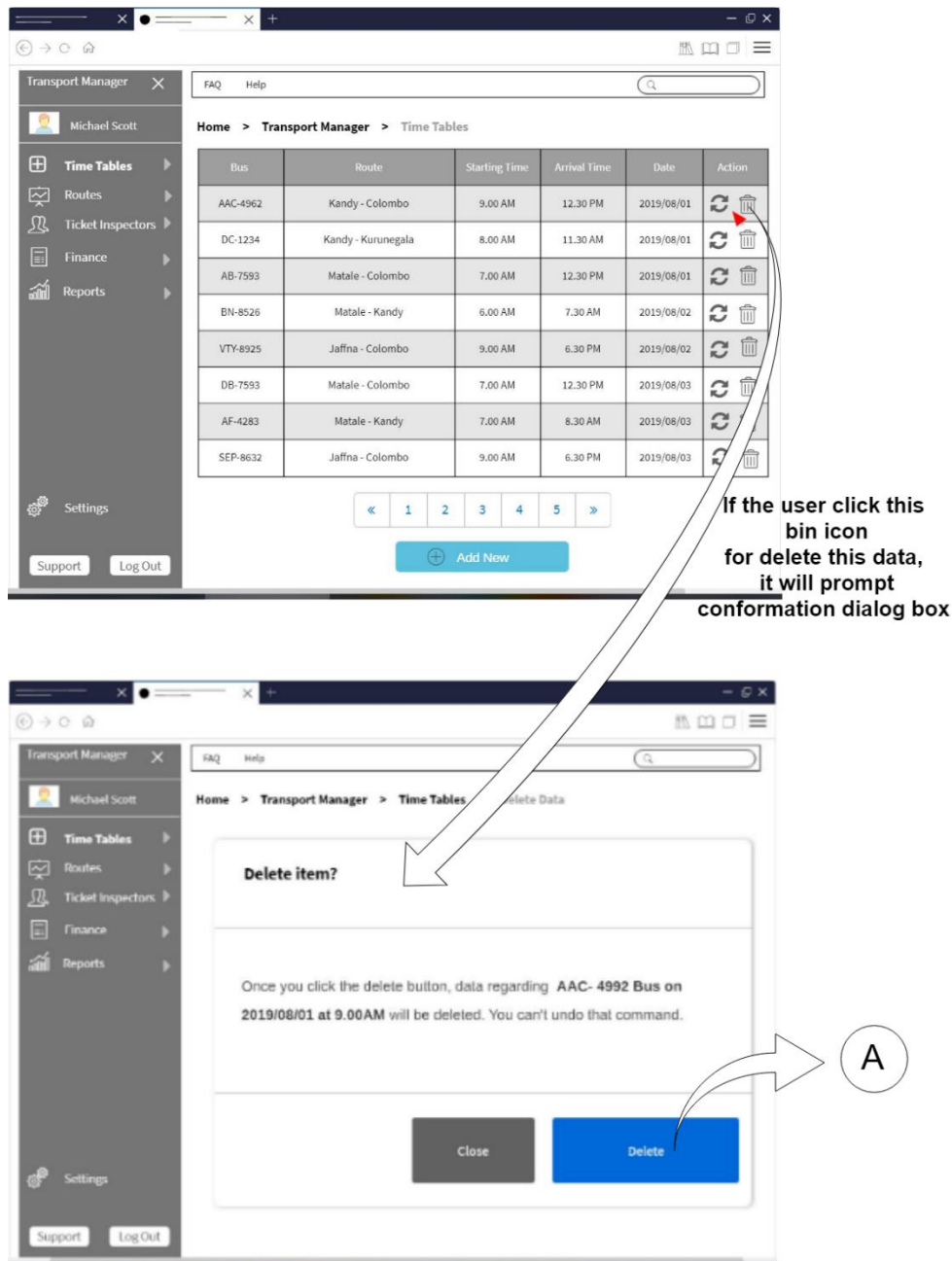
Assignment

SE3070 – Case Studies in Software Engineering

Year 3, Semester II, 2019

	7b	If account details are invalid passenger will see an error message and will be asked to enter details again.
	9a	Cost details will be calculated by using the current location and the destination.

High fidelity wireframe- Transport manager adds new transport service.

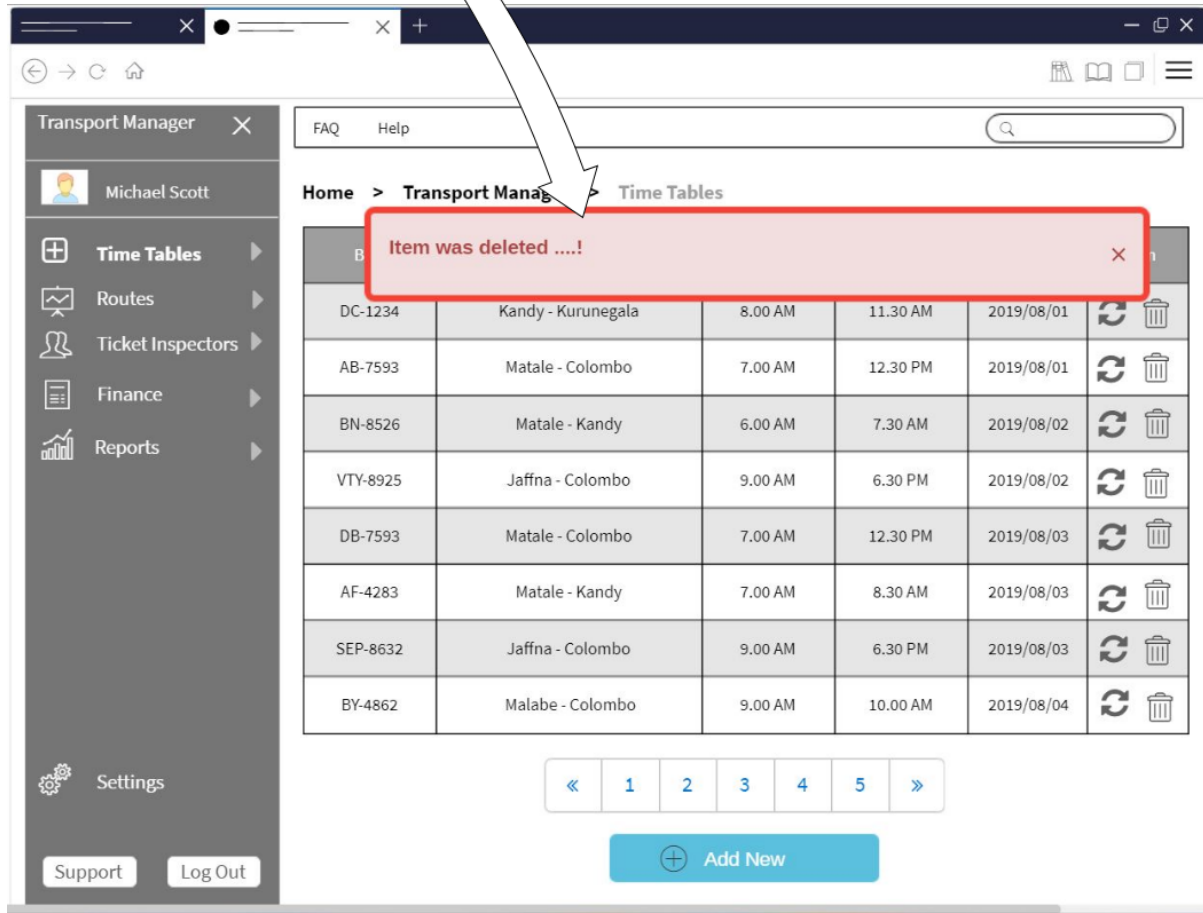


The wireframe shows a web application for 'Transport Manager'. The left sidebar contains navigation links: Time Tables, Routes, Ticket Inspectors, Finance, Reports, Settings, Support, and Log Out. The main content area displays a table of transport services with columns: Bus, Route, Starting Time, Arrival Time, Date, and Action. The table lists several bus routes, including AAC-4962, DC-1234, AB-7593, BN-8526, VTY-8925, DB-7593, AF-4283, and SEP-8632. Each row has a bin icon in the Action column. A red arrow points from the bin icon of the first row to a text box that says: 'If the user click this bin icon for delete this data, it will prompt conformation dialog box'. Below the table is a pagination control showing pages 1 through 5, and an 'Add New' button. Below the table, a 'Delete Data' dialog box is shown. The dialog has the title 'Delete item?' and a message: 'Once you click the delete button, data regarding AAC- 4992 Bus on 2019/08/01 at 9.00AM will be deleted. You can't undo that command.' At the bottom of the dialog are 'Close' and 'Delete' buttons. A red arrow points from the 'Delete' button to a circled letter 'A'.

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A

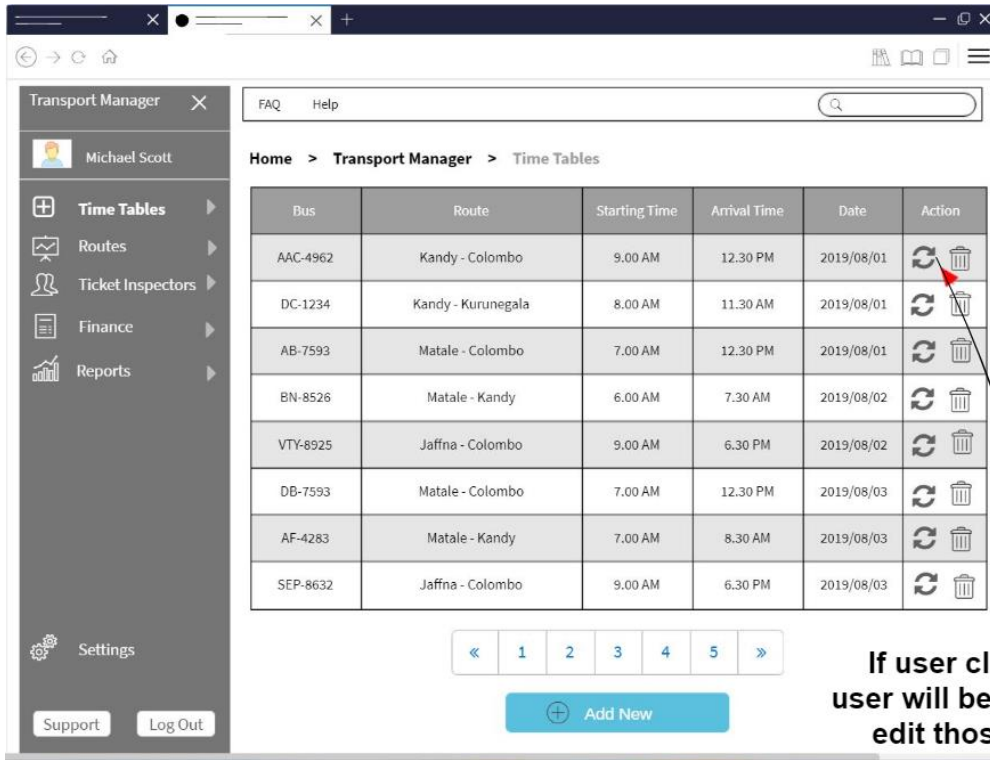
After user click the delete button, data row will be deleted and redirected to time table page. and "item was deleted" notification will be showed to the user



The screenshot shows the Transport Manager application interface. A notification box at the top of the table area displays the message "Item was deleted!". The table below lists various transport routes with columns for ID, Route, Start Time, End Time, Date, and Action. The first row, DC-1234, is highlighted. The interface includes a sidebar with navigation options like Time Tables, Routes, Ticket Inspectors, Finance, and Reports, as well as a top navigation bar with Home, Transport Manager, and Time Tables. A pagination bar at the bottom shows page numbers 1 through 5, and an "Add New" button is located at the bottom right.

ID	Route	Start Time	End Time	Date	Action
DC-1234	Kandy - Kurunegala	8.00 AM	11.30 AM	2019/08/01	
AB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/01	
BN-8526	Matale - Kandy	6.00 AM	7.30 AM	2019/08/02	
VTY-8925	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/02	
DB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/03	
AF-4283	Matale - Kandy	7.00 AM	8.30 AM	2019/08/03	
SEP-8632	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/03	
BY-4862	Malabe - Colombo	9.00 AM	10.00 AM	2019/08/04	

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Transport Manager

Michael Scott

Time Tables

Routes

Ticket Inspectors

Finance

Reports

















Settings

Support

Log Out

FAQ Help

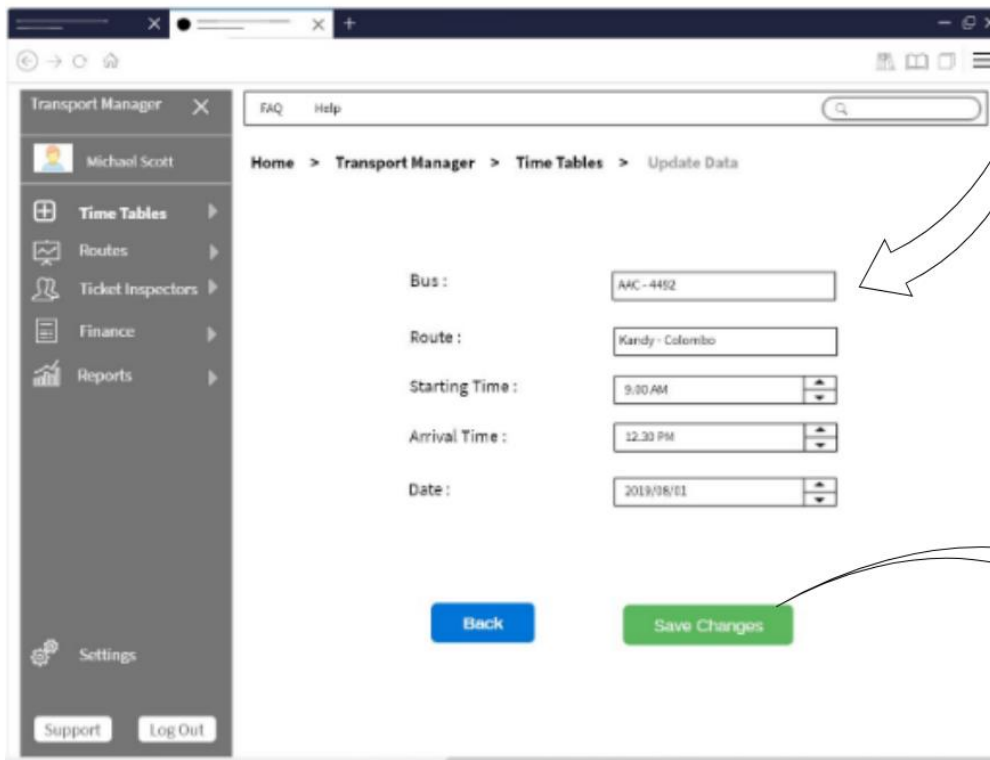
Home > Transport Manager > Time Tables

Bus	Route	Starting Time	Arrival Time	Date	Action
AAC-4962	Kandy - Colombo	9.00 AM	12.30 PM	2019/08/01	 
DC-1234	Kandy - Kurunegala	8.00 AM	11.30 AM	2019/08/01	 
AB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/01	 
BN-8526	Matale - Kandy	6.00 AM	7.30 AM	2019/08/02	 
VTY-8925	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/02	 
DB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/03	 
AF-4283	Matale - Kandy	7.00 AM	8.30 AM	2019/08/03	 
SEP-8632	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/03	 

« 1 2 3 4 5 »

+ Add New

If user click this edit button user will be directed to a form for edit those selected details.



Transport Manager

Michael Scott

Time Tables

Routes

Ticket Inspectors

Finance

Reports

Settings

Support

Log Out

FAQ Help

Home > Transport Manager > Time Tables > Update Data

Bus : AAC-4452

Route : Kandy - Colombo

Starting Time : 9:30 AM

Arrival Time : 12:30 PM

Date : 2019/08/01

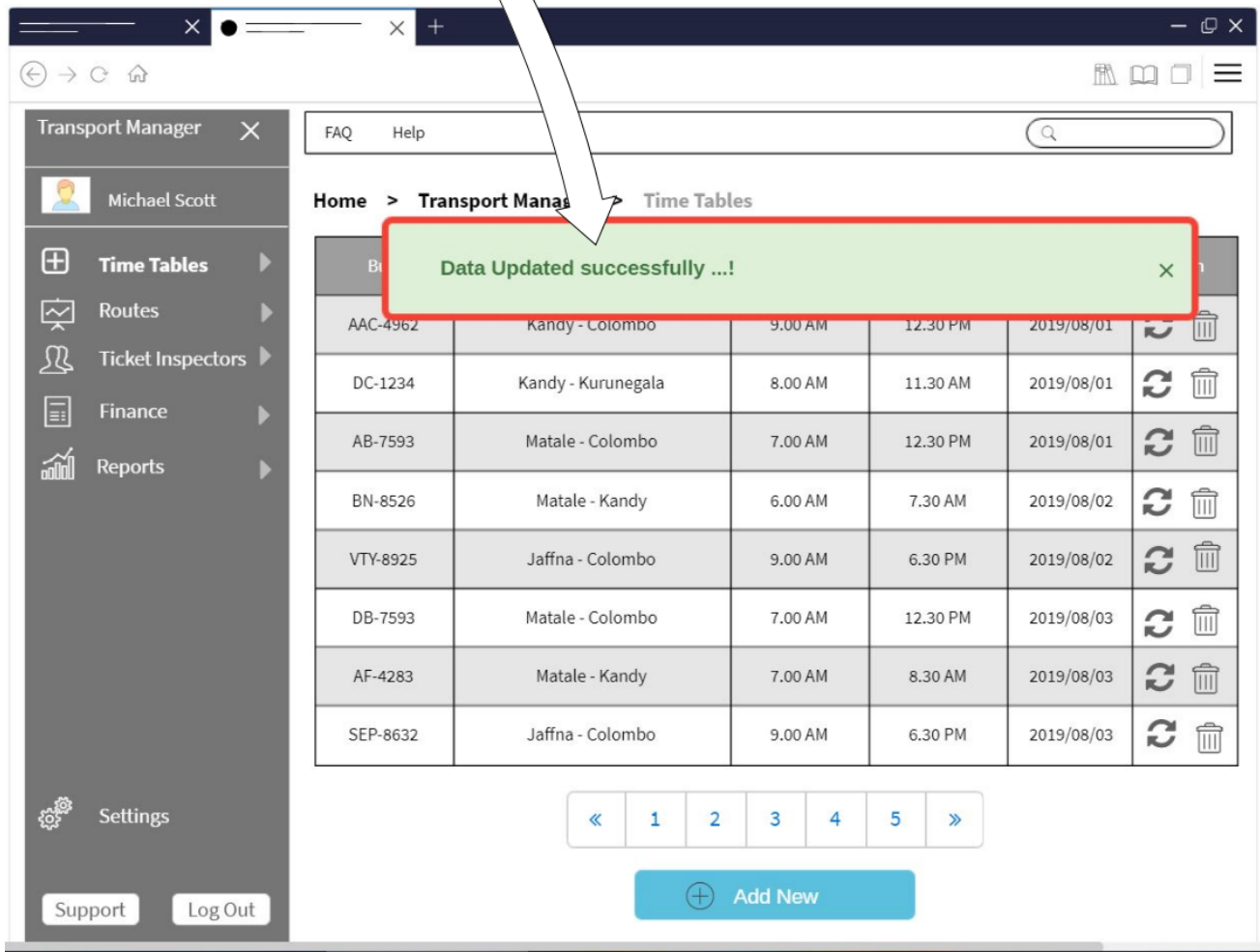
Back

Save Changes

If user click this edit button user will be directed to a form for edit those selected details.

B

After user click the save changes button, data will be updated and redirected to time table page. and "Data updated successfully" notification will be shown to the user.

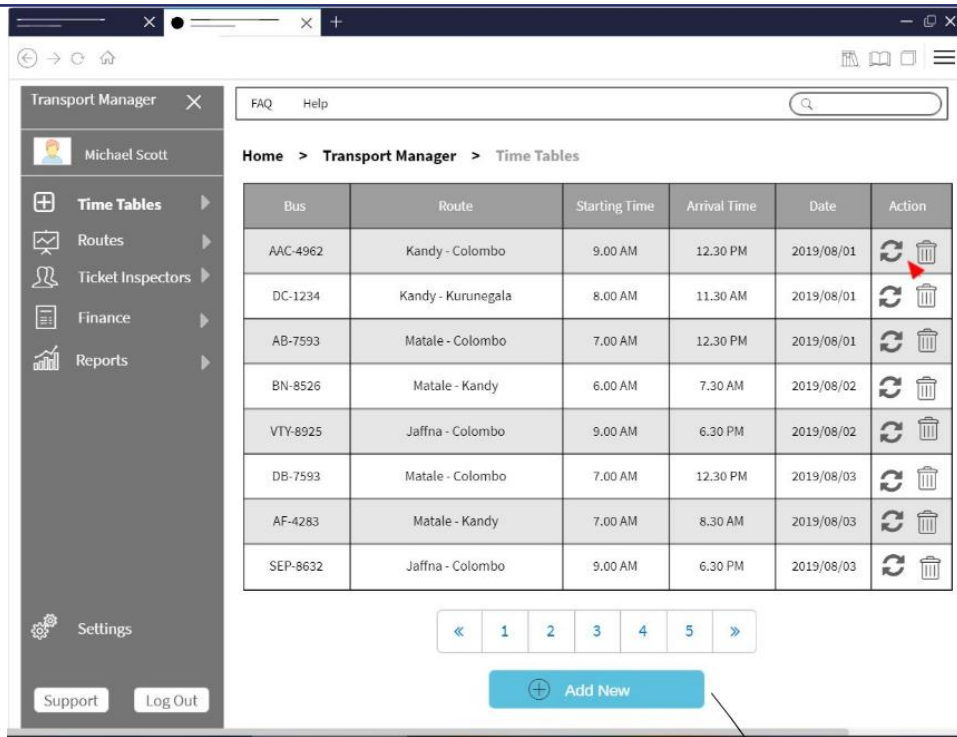


The screenshot shows the Transport Manager application interface. A green notification box with the text "Data Updated successfully ...!" is displayed at the top of the main content area. Below the notification is a table of transport routes. The table has columns for ID, Route, Start Time, End Time, Date, and Action. The data is as follows:

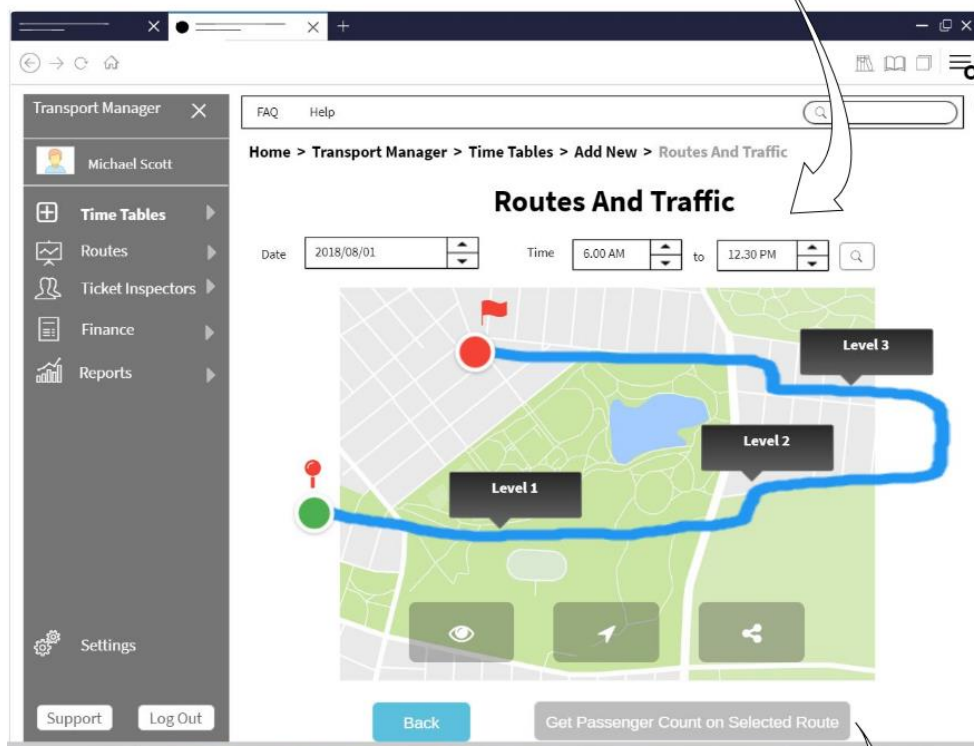
ID	Route	Start Time	End Time	Date	Action
AAC-4962	Kandy - Colombo	9.00 AM	12.30 PM	2019/08/01	Refresh, Delete
DC-1234	Kandy - Kurunegala	8.00 AM	11.30 AM	2019/08/01	Refresh, Delete
AB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/01	Refresh, Delete
BN-8526	Matale - Kandy	6.00 AM	7.30 AM	2019/08/02	Refresh, Delete
VTY-8925	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/02	Refresh, Delete
DB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/03	Refresh, Delete
AF-4283	Matale - Kandy	7.00 AM	8.30 AM	2019/08/03	Refresh, Delete
SEP-8632	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/03	Refresh, Delete

At the bottom of the table, there is a pagination control showing pages 1, 2, 3, 4, 5, and an "Add New" button.

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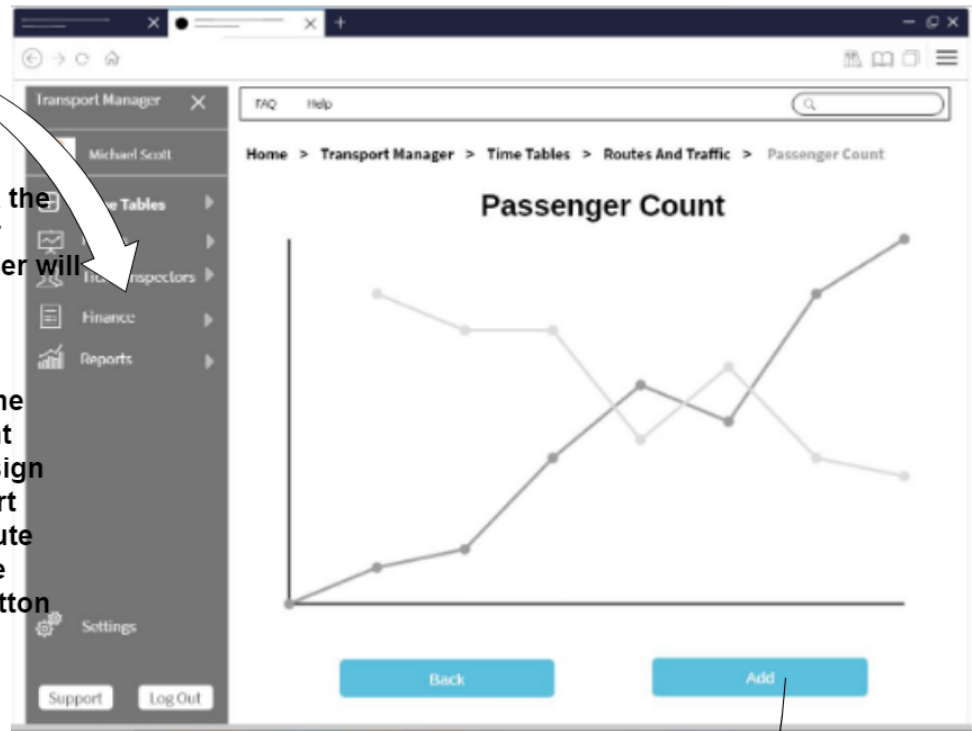
If Manager wants to add new route details to the time table, he should identify the potential overcrowding routes, time and date first. So when the user click add new button, user will be directed to routes and traffic page. User can view crowded routes on the map for desired date and time period. Then the user can select a route for adding new transport service and get passenger count on selected route.



C

C

After the user click the "get passenger count" button, the user will be directed to the passenger count page. If he thinks that the passenger count is sufficient for assign another transport service on that route he can continue with click "Add" button below the graph

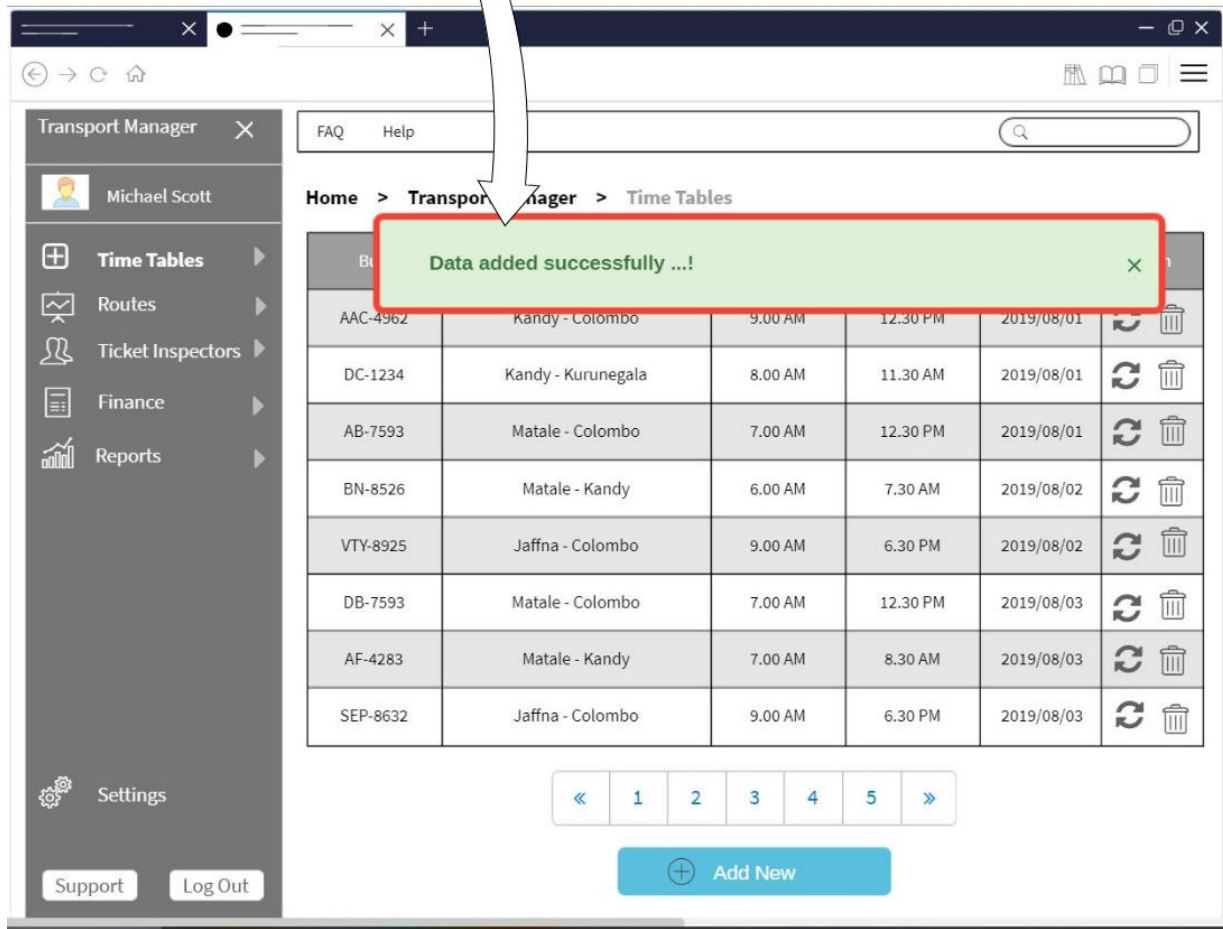


When transport manager click "Add" button user will be directed to a form for adding new transport service details

D

D

Once the transport manager click the "Add" button, data will be added to the database and the user will be redirected to the time table page. And "Data added successfully" notification will be shown to the user.

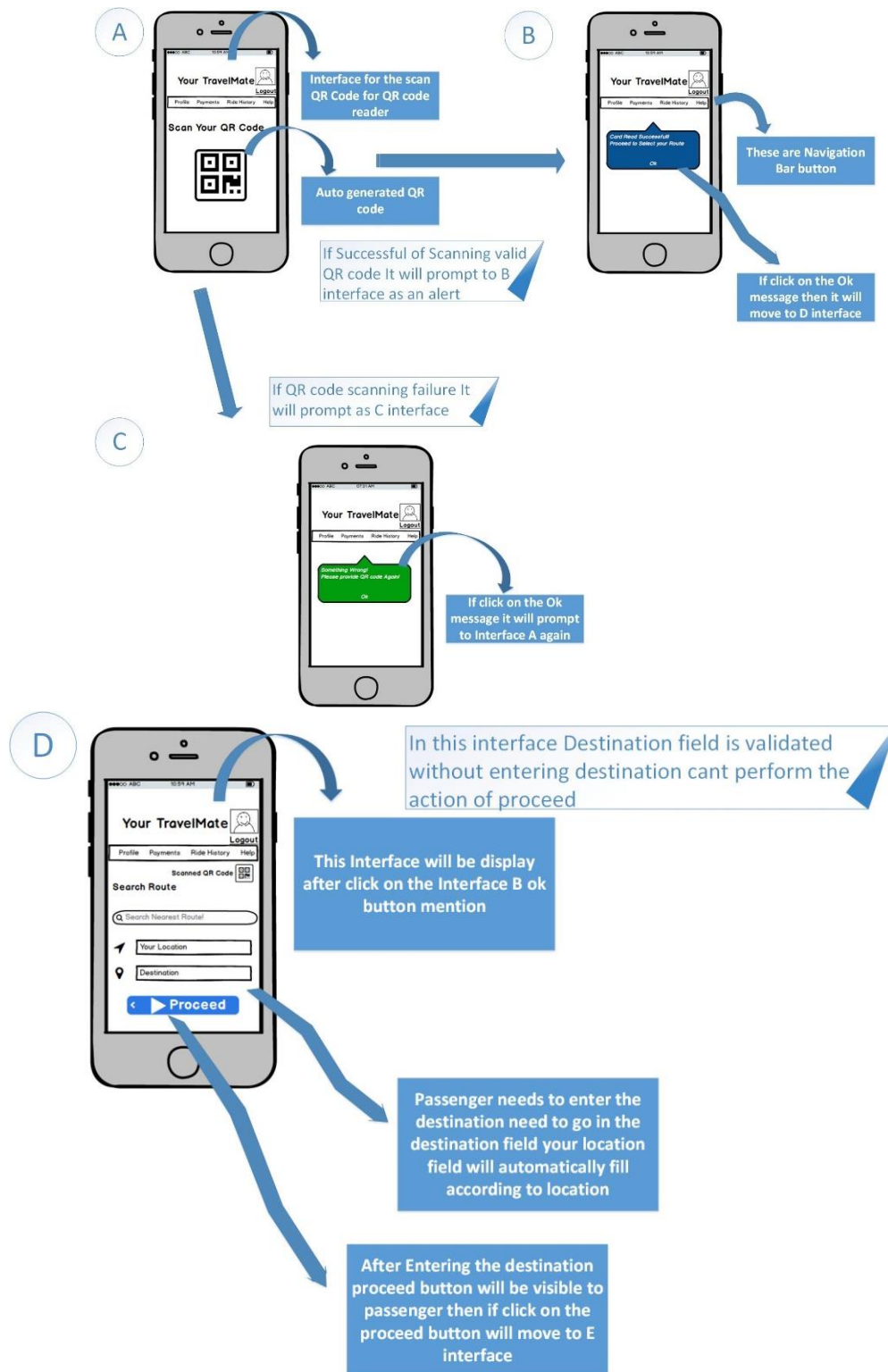


The screenshot shows the Transport Manager application interface. A green notification box at the top of the table area displays the message "Data added successfully ...!". The table below lists various transport routes with columns for ID, Route, Start Time, End Time, Date, and Action. The "Add New" button is visible at the bottom right of the table.

ID	Route	Start Time	End Time	Date	Action
AAC-4962	Kandy - Colombo	9.00 AM	12.30 PM	2019/08/01	Refresh, Delete
DC-1234	Kandy - Kurunegala	8.00 AM	11.30 AM	2019/08/01	Refresh, Delete
AB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/01	Refresh, Delete
BN-8526	Matale - Kandy	6.00 AM	7.30 AM	2019/08/02	Refresh, Delete
VTY-8925	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/02	Refresh, Delete
DB-7593	Matale - Colombo	7.00 AM	12.30 PM	2019/08/03	Refresh, Delete
AF-4283	Matale - Kandy	7.00 AM	8.30 AM	2019/08/03	Refresh, Delete
SEP-8632	Jaffna - Colombo	9.00 AM	6.30 PM	2019/08/03	Refresh, Delete

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High fidelity wireframe – Passenger purchases a ticket (QR)



D.1



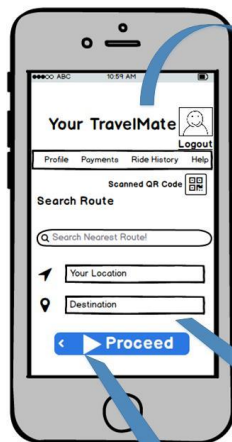
In this interface Destination field is validated before enter the destination passenger looks as proceed button locked as in this interface

This Interface will be display after click on the Interface B ok button mention

Passenger needs to enter the destination need to go in the destination field your location field will automatically fill according to location

After Entering the destination proceed button will be visible to passenger then if click on the proceed button will move to E interface

D.2



This Interface will be display after click on the Interface B ok button mention

Passenger needs to enter the destination need to go in the destination field your location field will automatically fill according to location

After Entering the destination proceed button will be visible to passenger then if click on the proceed button will move to E interface

E

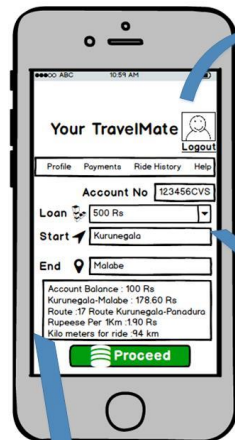


This Interface will be display after click on the proceed button mention in the D interface

In this interface display the fare for the selected route

After perform the proceed click action it will direct to G interface

E.1

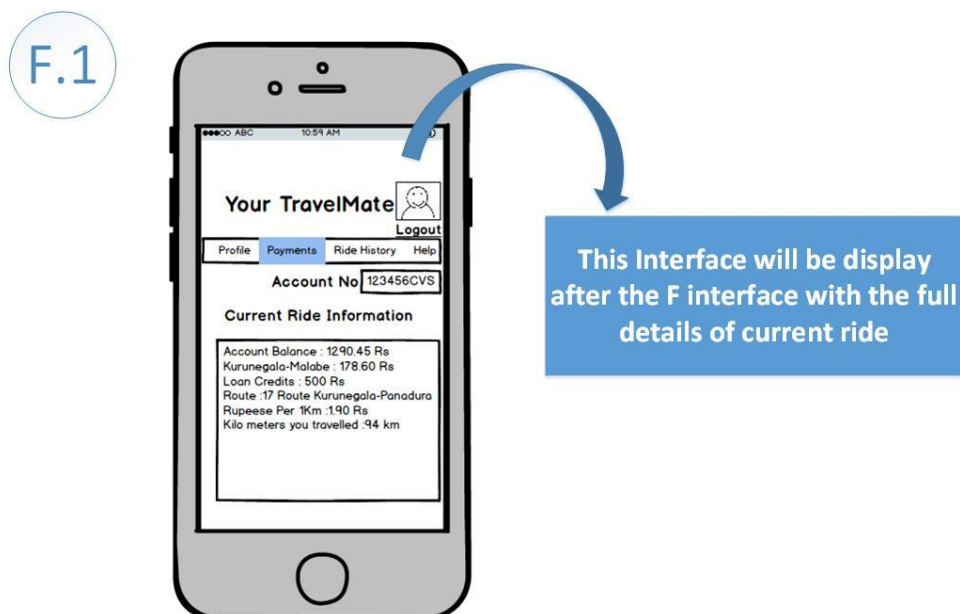
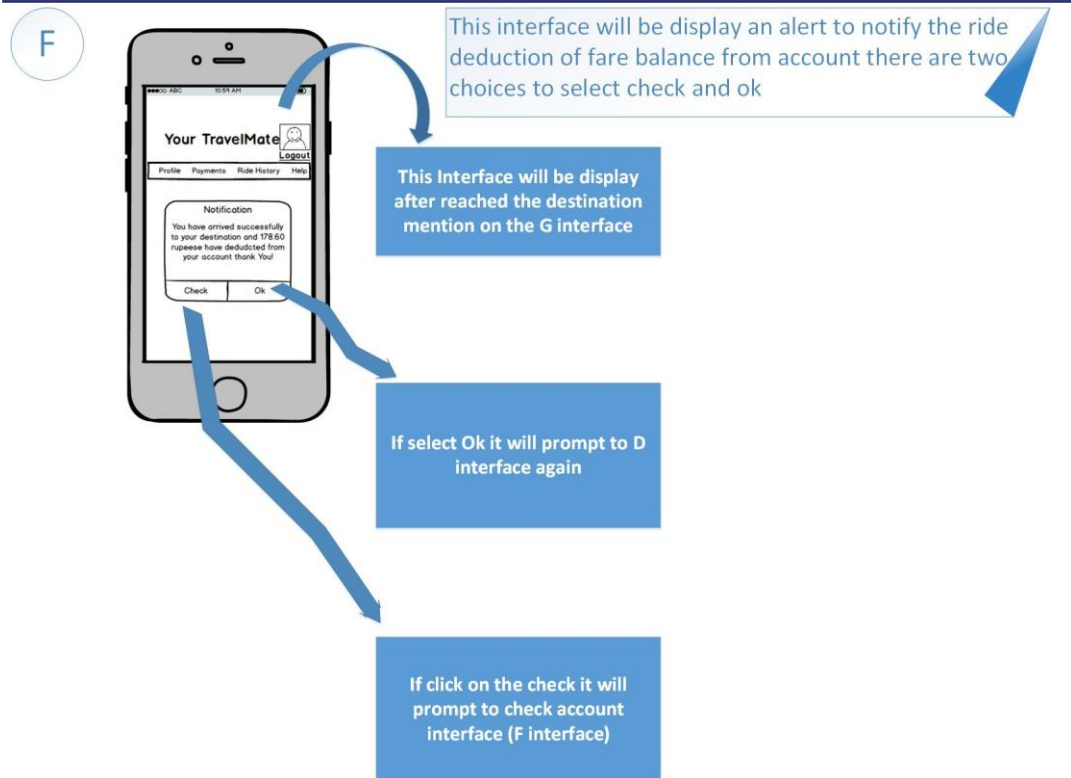


This interface will be display if the account balance insufficient to provide a loan for the ride after click on the proceed button it will move to G interface

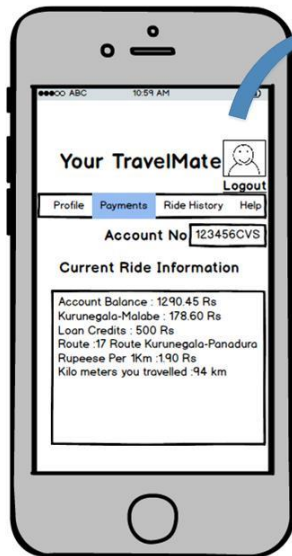
This Interface will be display after click on the proceed button mention in the E interface

In this combo box passenger can select the loan amount to take mostly it will automatically generate the suitable loan amount to the ride fare

In this div display the loan amount and current account balance

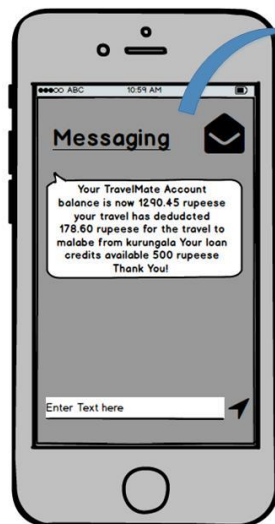


F.1



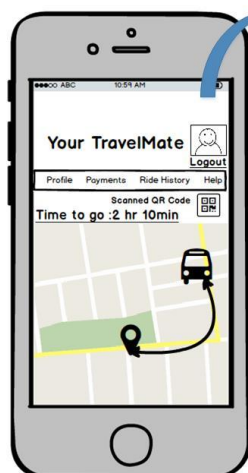
This Interface will be display after the F interface with the full details of current ride

F.2



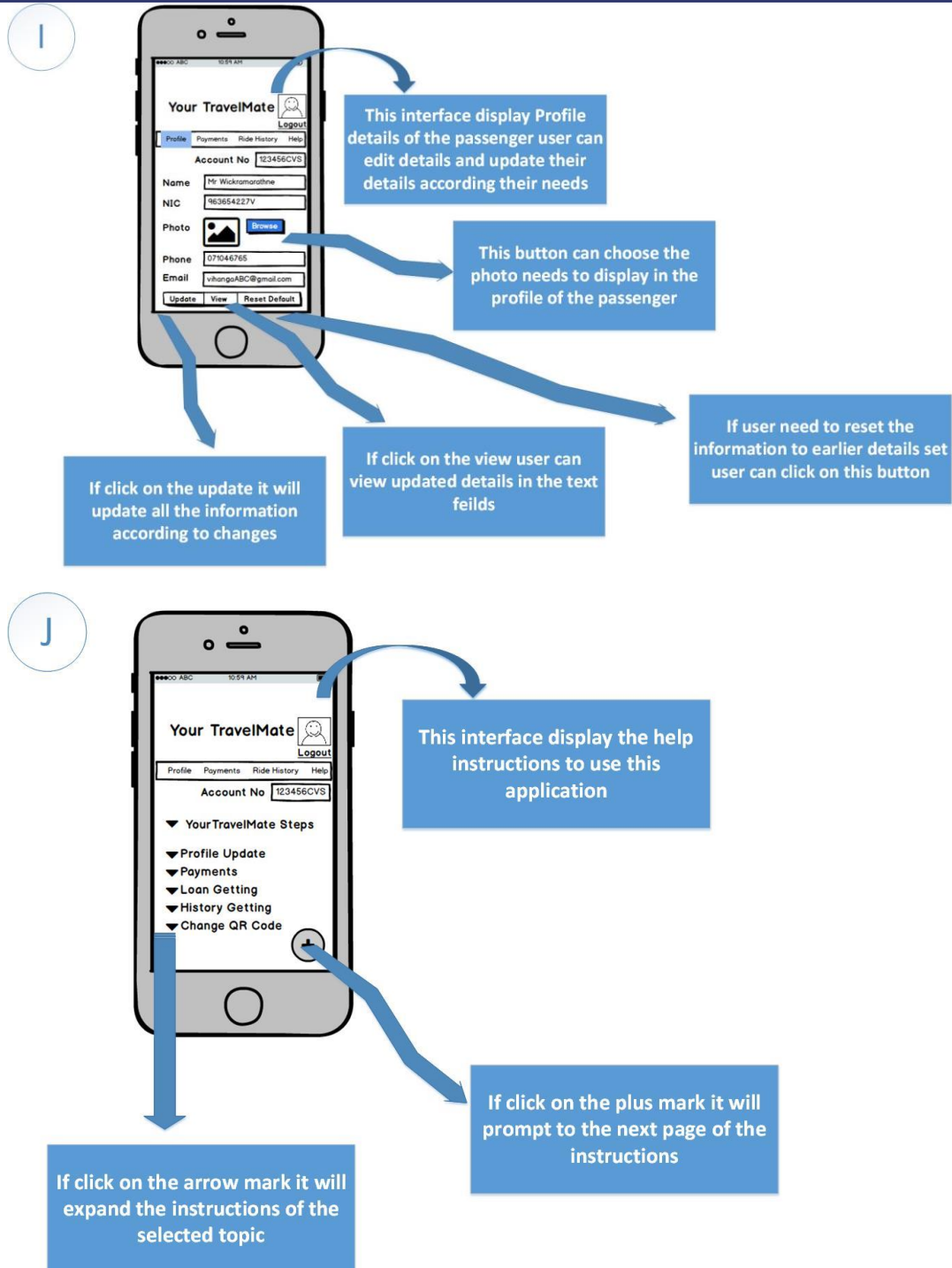
This is message notification service this message will be come to the phone after reach the destination with the payment

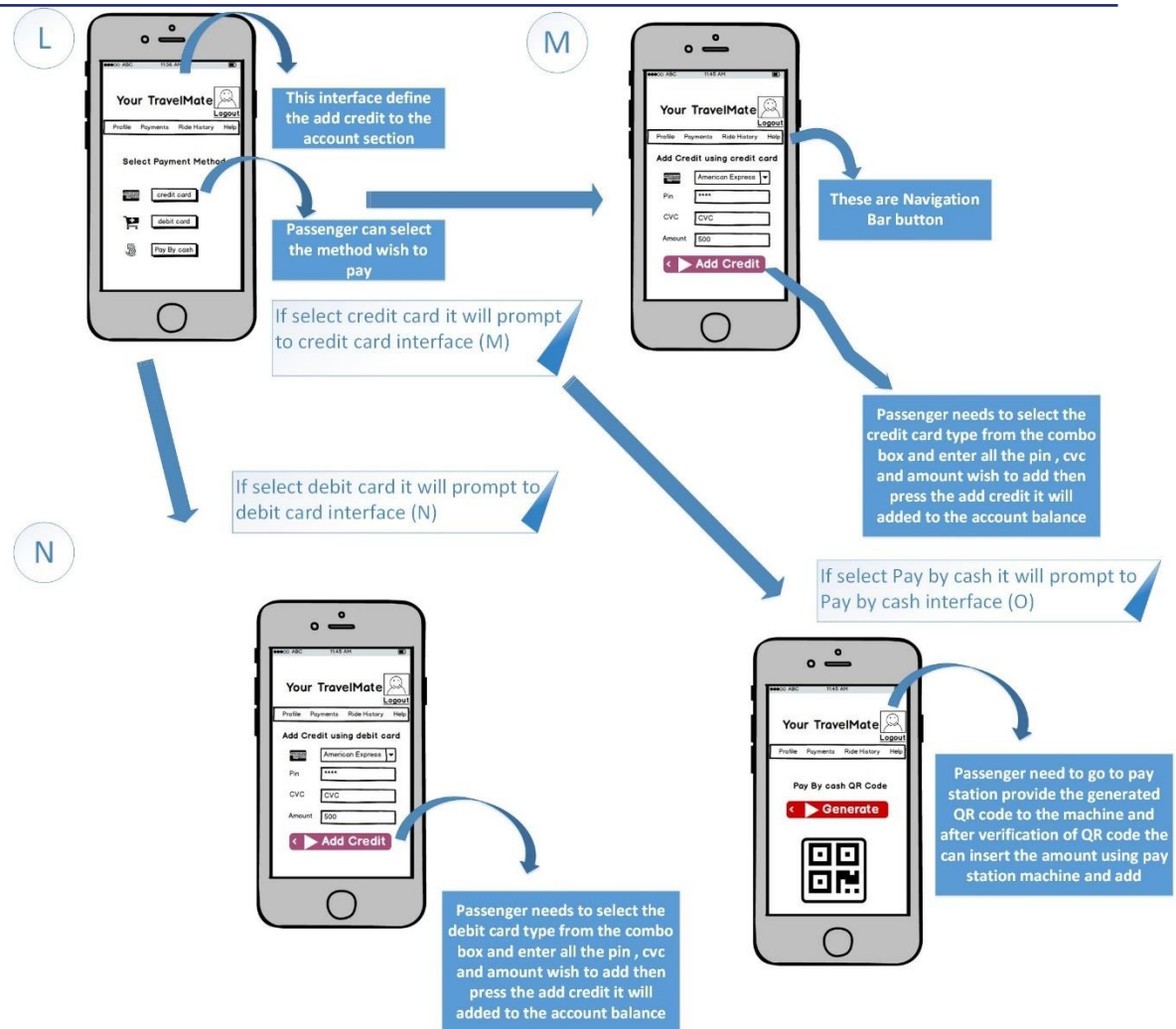
G



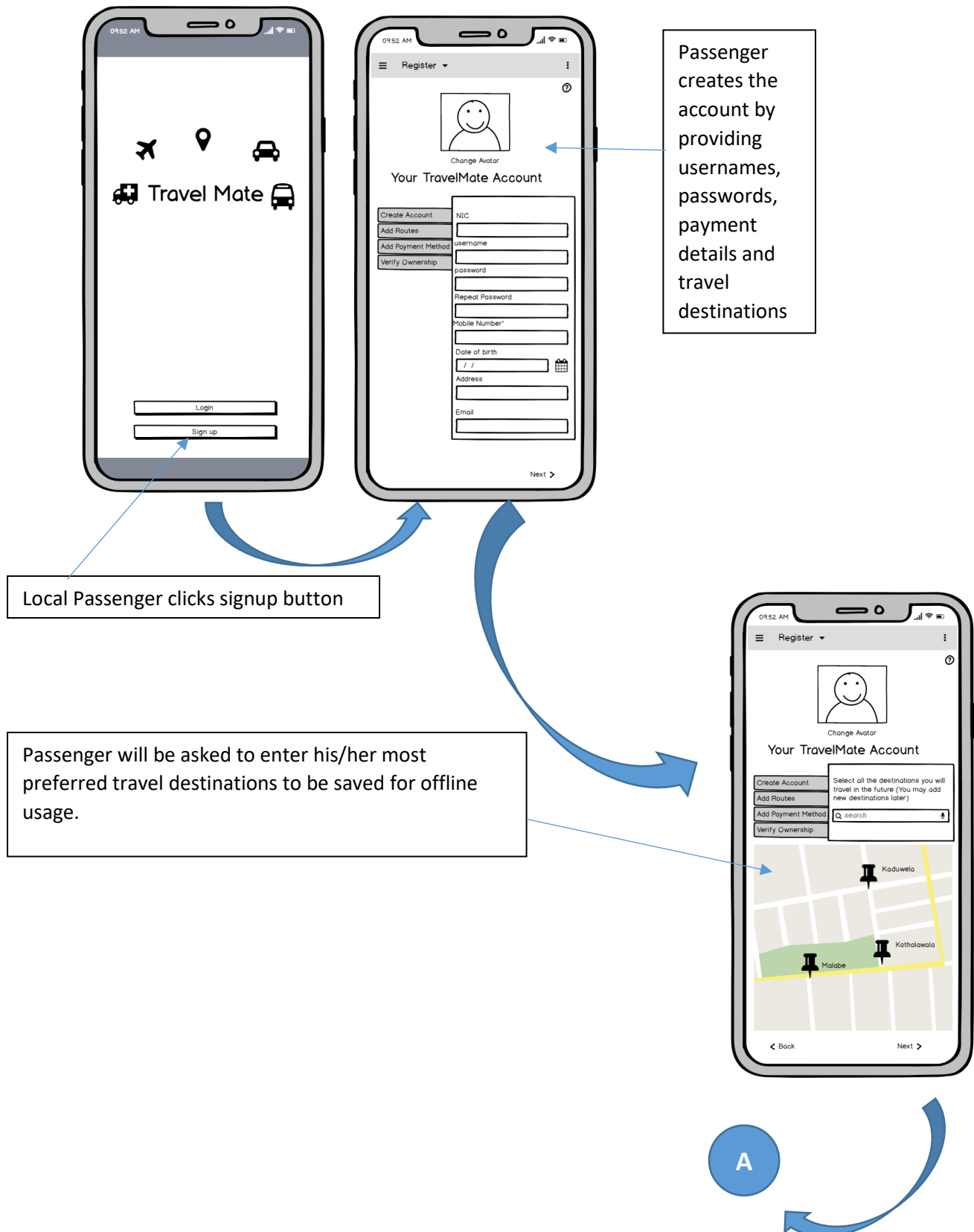
This Interface will be display after click on the proceed button mention in the E interface

In this interface display the time to reach the destination and where is now





High fidelity wireframe – Local passenger goes through the account creation steps.





Low fidelity wireframe- Claim Expense

