

# COLLEGE BUS TRACKER

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**Abstract—***This paper proposes real time college bus tracking and student information who are travelling in the bus. This system is very useful for parents. This system can route the information to the location module for tracking. We have also proposed student information system for parents to view student's details that keep them updated about the entry details of student by using QR scanner. Parents can locate the bus in the route map. Using this system, parents can also get their ward's travelling, payment details and can communicate with their parents through notifications.*

**Index Terms—** GPS, QR code.

## I. INTRODUCTION

Bus Tracking System is a commonly used application for tracking vehicles. Due to traffic congestion and road works, most of the buses are delayed. People have to wait for their bus at the bus stops for a long time without even knowing when the bus will arrive. Thus, the arrival time of the bus cannot be guaranteed. The main focus of the project is to save the waiting time of students and provide them the details of the bus. The latest technology like GPS are highly useful now a days. This system enables the people to observe and track the buses and find out its movement.

The main aim of this project is to track the college buses which would give the exact location of buses with the help of Google map and help the parents to know whether their students have reached college safely or not. This will be more helpful for students to know whether they missed their bus or not. In addition, this will also enhance the security since the movement of the college buses is always available.

## II. PROBLEM ANALYSIS

### A. Problem Statement

The parents and students does not know the exact location of the college bus also they does not know whether the students are

going to or from the concerned bus stop. They will not be aware of the fee validation details also.

### B. Problem Solution

The solution to the problem is to develop an app that supports GPS tracking, which will help the parents to know the current location of the bus and also sends notification indicating that the student had entered the right bus. The fee validation details is also provided by this webapp.

### C. Problem Solving Methodologies

1) *Existing System:* In the existing system, the parents and students does not know the exact location of the college bus and whenever they need to know about the location, they has to call and ask someone. Sometimes the bus may also get delayed by few circumstances such as traffic congestion. Then they will not be able to decide whether the bus has arrived or not. Due to this, they may face many problems such as late arrival to the college. Parents will not be aware whether their student is travelling in college bus, also they does not know whether the students are going to or from the concerned bus stop.

2) *Proposed System:* The proposed system provides the user to find exact location of the bus from where they are. The position of the bus is displayed in the Google map. The

distance between the bus and its stop is also displayed so this system helps the students/parents to be aware of where the bus is exactly. Depending on the information like distance and position displayed in the Google map they can plan and start accordingly. The system provides the current location of the bus.

In proposed system, QR Code is used for analyzing the students attendance, in which the QR code of students with some basic information is created and placed on students bus pass. It will be scanned when they board the bus both while going to and coming from school. The each student has a unique QR code generated by college. At the time of scanning the QR code, the details of the code will be compared with data stored in the database. After scanning students data will be updated in database. Also in this system fee validation notification will be send to corresponding parent and student.

### III. SYSTEM DESIGN

Different modules in proposed system are:

1. Admin
2. Conductor
3. Parent
4. Bank

#### A. ADMIN

This module is for the bus administrator for updating the information in the server when required. It includes option to add department, add stop, add bus, assign stop, add staff ,add student issue bus pass. In add student, details of each students area dded by the administrator. Student details are added by admin along with bus details. Routes are assigned to each buses through assign stop option. Bus passes with QR code are issued by the admin for each student who is travelling in the college bus. Whenever the student enters the bus, the bus card will be scanned by the QR code scanner at that time notification message will be delivered to their parent's number. So that they will be able to know that the student has entered the college bus.

#### B. PARENT

This module is for tracking the college bus so that parents will be updated with corresponding bus location. It

include options to view student detail location, payment, detail. The details of buses are known to parent when they logins to their account. Using location option the current location of particular bus can be known to parent. By using the payment option detail they can know about the fee validation details.

#### C. CONDUCTOR

This module is for verification of student related to bus fee details. It includes options to scan the pass for verifying student, update location. Also the verification process is done to check the validity of fee payment through verify student option. The current location of the bus are known to parent/student using GPS location in which location will be updated automatically according to the location. During the scanning of QR code, details of particular student can be viewed by their parents, admin as well as students.

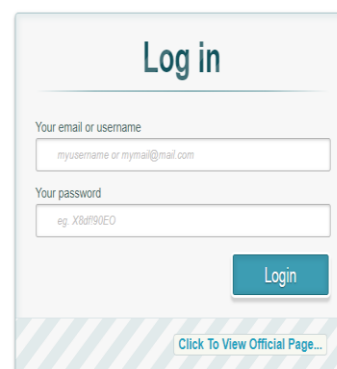
#### D. BANK

This module has options to create account, cash deposit, viewing the details of users of the accounts. This module's purpose is regarding the payment of bus fees. If the account balance of particular account is low, then notification message will be send to parent.

### IV. SYSTEM IMPLEMENTATION

#### A. ADMIN MODULE

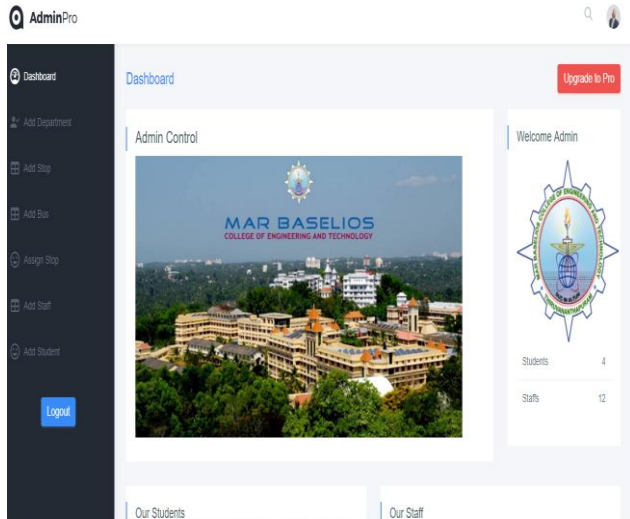
This is the login page of the admin module. Here admin have unique user name and password. Using this admin can login to the admin page.



Admin have the authority to update and manage the student information. This module includes functionality for add

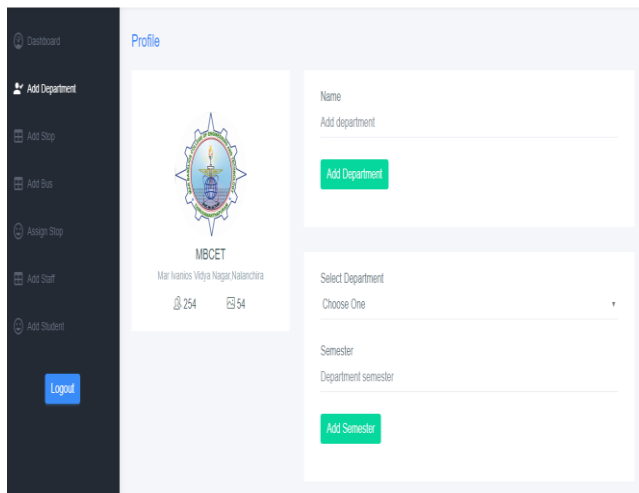
department, add stop, add bus ,assign stop, add staff, add student.

### A.1.DASHBOARD PAGE



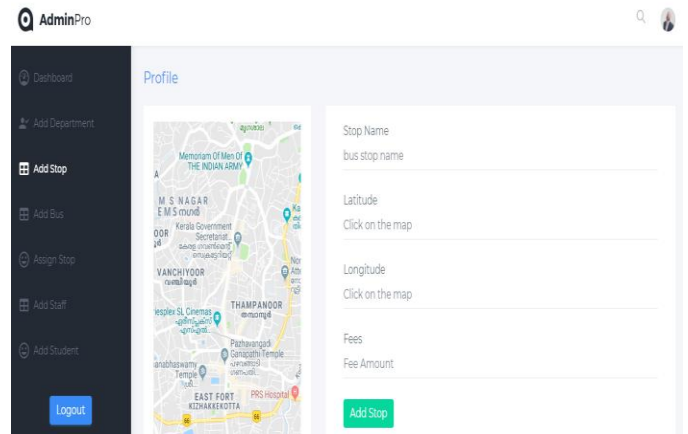
### A.2. ADD DEPARTMENT

In add department page , we can add the department as well as it can add semester for the corresponding department

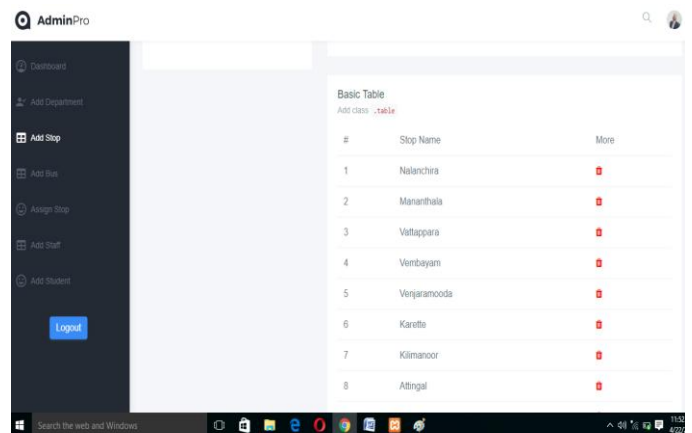


### A.3.ADD STOP

In this page, stop name details and fees details will be added..On the left side a map will be displayed. By clicking the location inside the map corresponding latitude and longitude will be displayed.

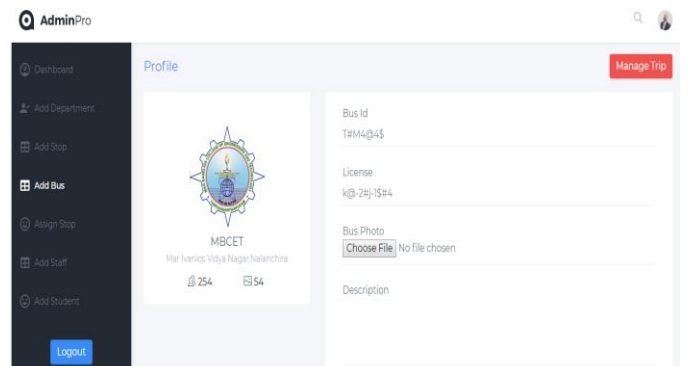


This page will list out the added stop in a table format. Here deletion of stop is also possible if not needed.



### A.4.ADD BUS

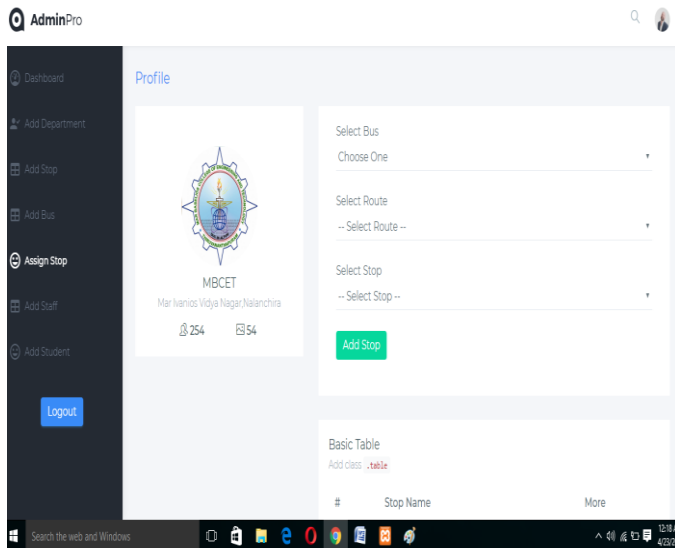
In add bus, the bus details will be added which includes bus id which will be unique for each bus, license ,photo of bus along with its description. On clicking on ADD BUS button the detail will be added into the database.



On clicking **MANAGE TRIP** button, the trip name for the corresponding bus will be added, also the added stop will be displayed in this page itself.

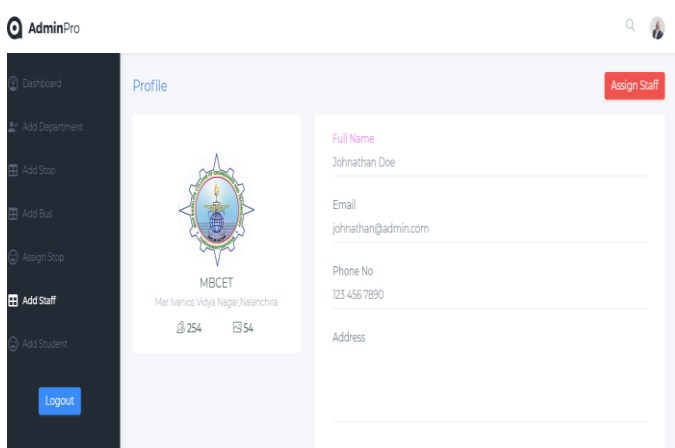
#### A.5. ASSIGN STOP

Route and stop will be assigned for a particular bus according to bus id, which will be updated into the database on clicking on **ADD STOP** button.



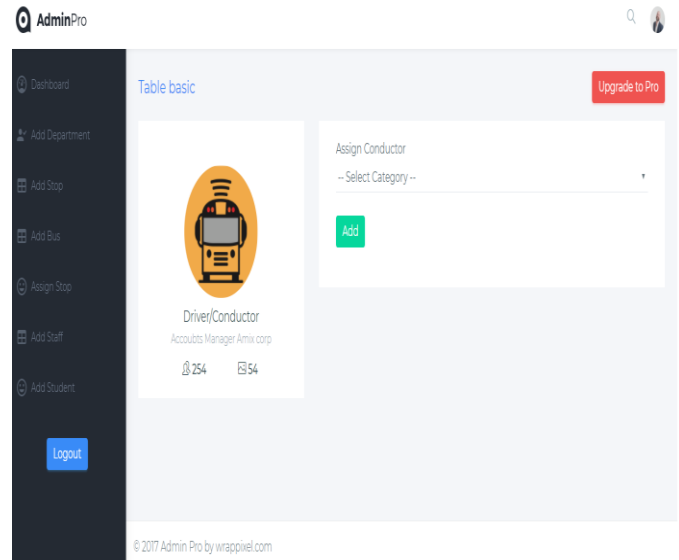
#### A.6. ADD STAFF

Here the staff details will be added, based on the job designation which includes driver and conductor. If the selected designation is conductor then they will be provided with unique username and password. On clicking on **ADD STAFF** button, the staff details will be added according to the designation into the database.



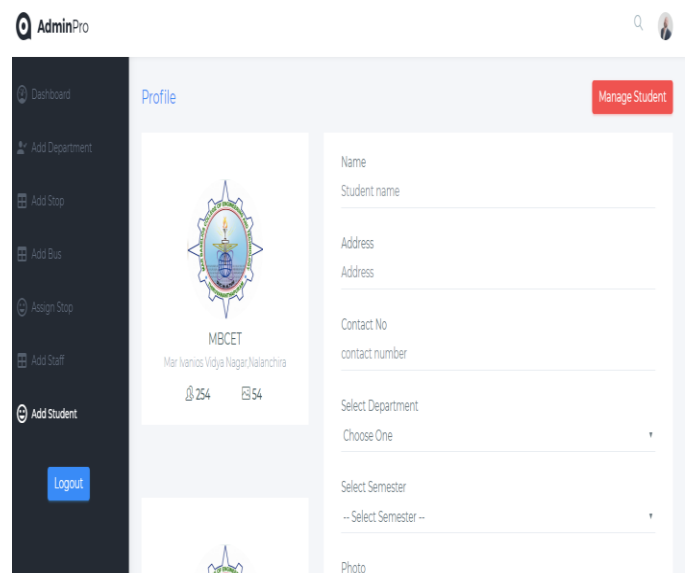
On clicking the **ASSIGN STAFF** button, it will display the bus details which includes bus id, license, destination, driver, conductor.

If any of the staff is not assigned to a particular bus then it is possible to assign the staff in this page.



#### A.7. ADD STUDENT

In this student details will be added along with the bus details as well as the guardian details in which admin will provide username and password for the guardian. On the click of **REGISTER STUDENT** button the student details will be added.



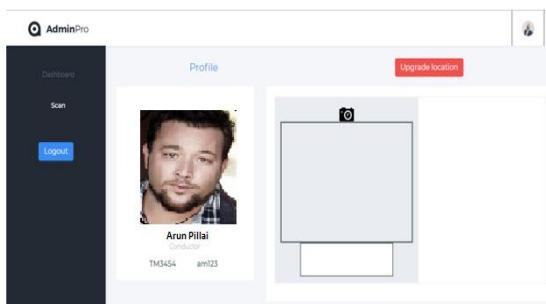
On click of **MANAGE STUDENT** button in this page, it will display the added student details in table format. In the "more" column there is option for editing as well as for printing the bus card. By clicking the **EDIT** button the admin

can edit the details of a particular student .On the click of UPDATE NOW button the student details will be updated.

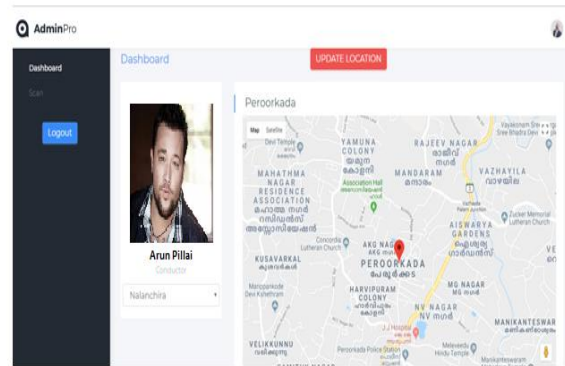


### B. CONDUCTOR

After updating all details a bus pass with QR code will be issued by the admin for each student..After login to the corresponding account the conductor can manually update the location and the updated location will be viewed by the parent while clicking “TRACK THIS BUS” button in the parent module..Conductor can find out the students fee details and students entry details. These details will be sent to the parent through messages. Bus pass will be issued to the student with a QR code containing students unique admission number. By scanning the QR code in the bus pass it will check whether the scanned admission number is valid for the particular student. If the admission number is valid then it will check whether the student have paid the bus fees for that particular semester. If the student have paid fees then message will be sent to the parent along with the senders time about the entry bus details of the student. If the bus payment has not been paid yet then notification will appear for the proper concern of the parent about the payment.



On the click of this UPGRADE LOCATION button the conductor can manually update the current location of the bus.

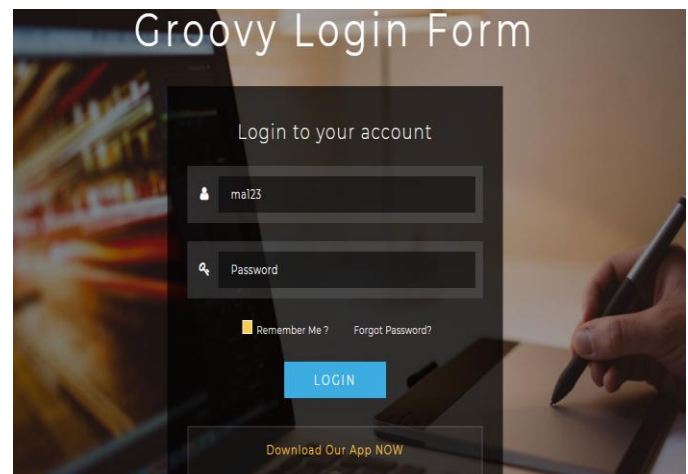


### C. PARENT

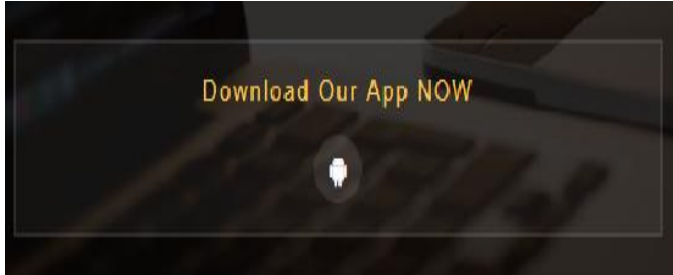
A web site will be provided for every parents of those students studying in a particular college. The web site includes the information such as **home** which includes the home page of Mar Baselios College of Engineering and technology. **About** specifies the details of the college. **Services** specifies the services provided by the college. **Team** specifies the details of the teaching and non teaching staffs in the college. **Contact** information will also be provided in the website. **Find bus location** will provide information about the current location of a particular bus and fee payment details.

#### C.1. LOGIN PAGE:

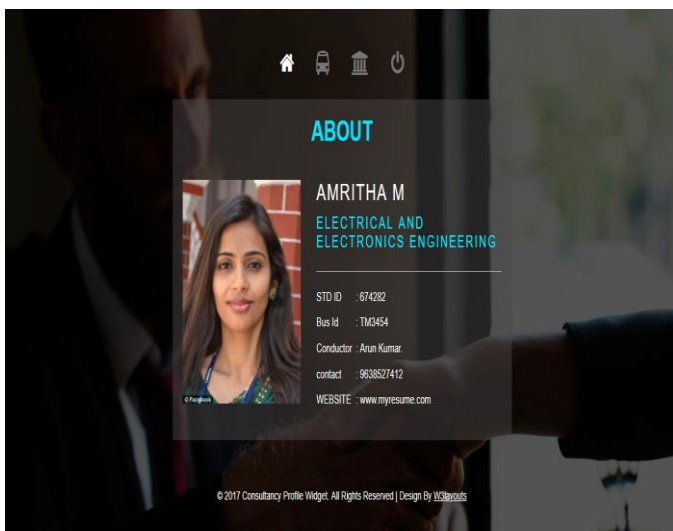
This module is mainly used for tracking the college bus so that parents will know the corresponding bus location of their student.For each and every parent a unique username and password will be provided by the admin. Using that username and password the parent can login into their account.



In this login page there is a “Download Our App NOW” button. On the click of that button, the corresponding parent can download the app for tracking their student bus location. Parent can access this website by entering the ip configuration of corresponding system.



After login to the page, on the upper border of this page contain four buttons and they are home, location, payment and log out button.

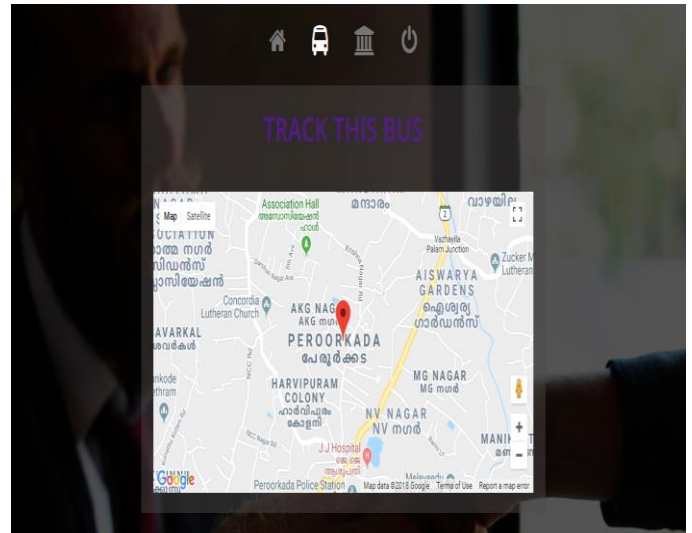


### C.2. HOME:

On the click of home button the parent can view their corresponding student details.

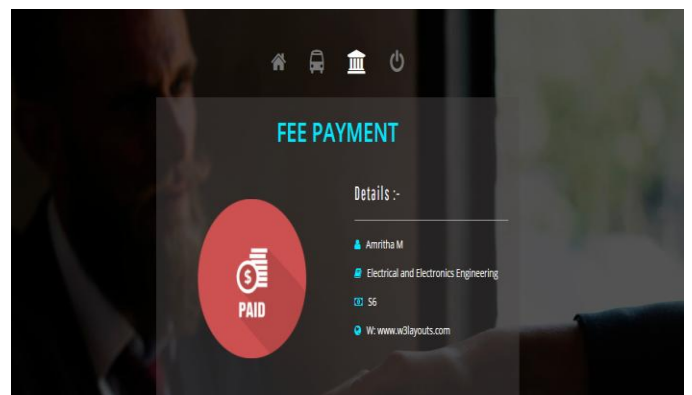
### C.3. LOCATION:

Here the parent can view the current bus location of the student which is updated by the conductor. On the click of the “TRACK THIS BUS” button the path of corresponding bus will be viewed to the parent.

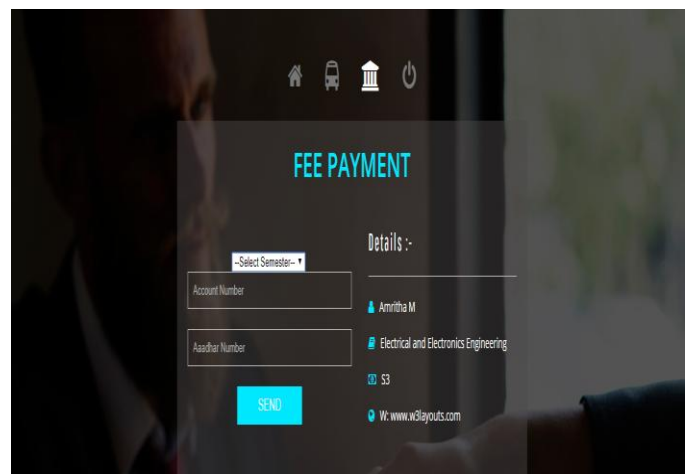


### C.3. PAYMENT:

**Fee payment** will provide the details whether the student had paid the bus fees. Details such as name of student, branch, semester will be displayed.



If the student didn't paid the bus fee then the information such as account number and aadhar number will be entered in order to pay the bus fees.



D. BANK

D.1. LOGIN PAGE:

This is the bank login page, on click of LOGIN button after entering the username and password it will go to the home page of bank module.

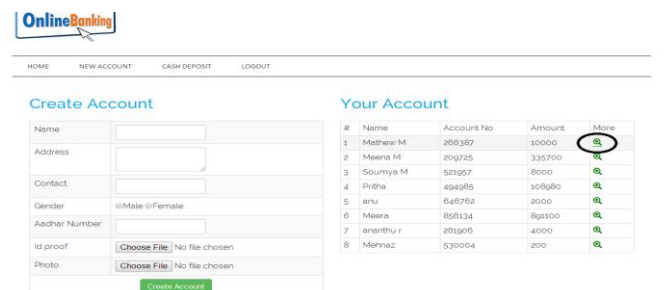


D.2.HOME PAGE OF BANK:

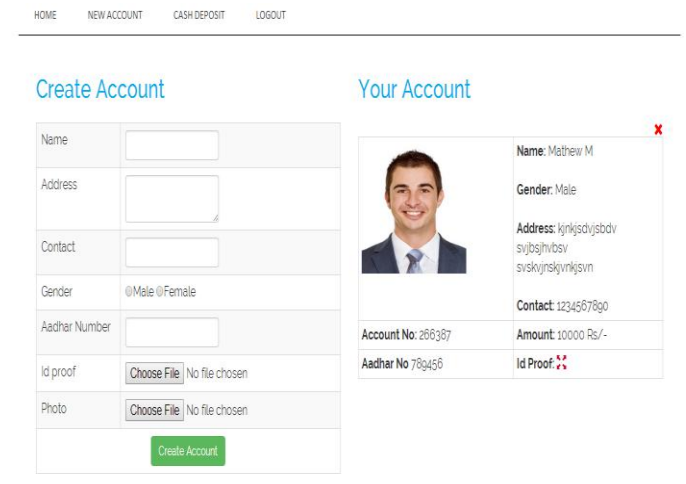


This page will include options to create account, for cash deposit and for logout.

On click of **NEW ACCOUNT**, it will display the form for creating the account for the user by filling the required details in the form and on click of **CREATE ACCOUNT** it will create the corresponding account for the particular user which will displayed on the table in the same page itself.

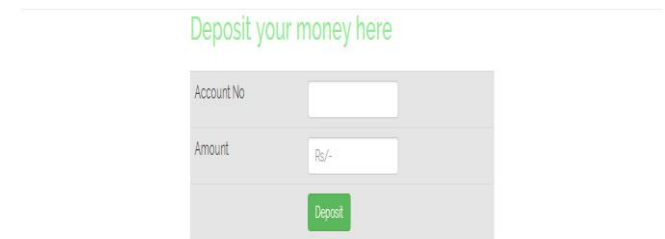
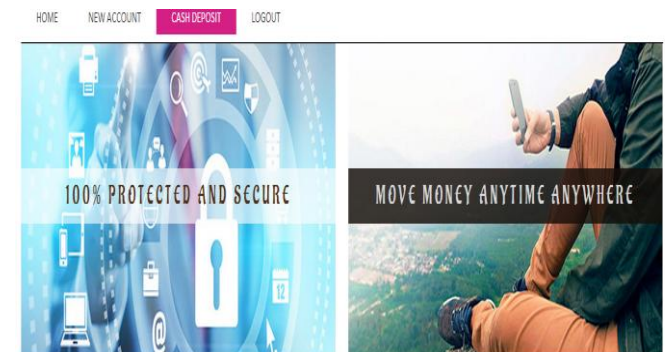


In the “More” column of the table in this page, by clicking on the icon in that column the details of the user who created the account will be display in which each user will be having unique account number.



Cash can be deposited into the account of user by clicking on **CASH DEPOSIT** option in the home page. The cash is deposited into account by the account number of each user, on click of **DEPOSIT** button the money will be deposited.

When the bank account balance is low the notification message will be sent to the user.



## V. FUTURE ENHANCEMENT

- GPS tracking can be implemented using hardware device.
- QR code scanning can be implement using hardware device.
- This system can be further enhanced in reporting accidents and help in traffic monitoring.

## VI. CONCLUSION

Now a day's parents are so busy that they do not have time for their children to pick up and drop to college bus. So college buses have been introduced but one more problem here is parents do not know that when the bus is arriving to their bus stop and even about the security of their child. So this proposed system provides parents about bus location using GPS. It provides security for students by sending notifications to the parents about their children's boarding into the bus. The QR code is used which is generated and has unique features which is unique to each students which will store the information about the students who enter the bus and QR code is scanned while departing the bus.

## REFERENCES

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- [2]. G. Jemilda , R. Bala Krishnan , B. Johnson , G. Linga Sangeeth," Mobile Application for College Bus Tracking", , International Journal of Computer Science and Mobile Computing, Vol.4 Issue.3, March- 2015