Transport-AI 3rd Year Group Project Reports.

Cork Institute of Technology

Version 1.0

TRANSPORT-AL - AN ANDROID APP/ADMIN PANEL/ARDUINO- APPLICATION

by

Group 19

Cork Institute of Technology, 2018

A REPORT

submitted in fulfillment of the requirements for the project

Software Development 3rd Year-1st Semester

Department of Computing

CORK INSTITUTE OF TECHNOLOGY Bishoptown, Cork

2018

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ACKNOWLEDGEMENTS

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I want to express appreciation to our group members, Mr. Rudy Murer, Mr. Conor Morgan, Mr. Nicholas Horgan.

INTRODUCTION

Transport is an integral part of our social living. Modern society cannot run without these facilities. In the current system, at first client contacts the transport company to get the service. The company then reserve the vehicle for him/her on the requested date and time. It then sends the vehicle to his/her place at the time. The Transport-Al system is the online service that will automate booking a taxi/cab and will facilitate both the client and the company with the reduced time and efforts. First, the company will register his/her vehicles to the system. Then the client will request for booking a vehicle, providing all necessary information. The fare will be calculated, and the client should confirm it. Then the vehicle will serve the client. Finally, the client will have an opportunity to give feedback on the service he/she got. The company can check it and take appropriate action for future improvements.

PURPOSE

The purpose of this SRS document is to specify software requirements of the transport-Al Online Taxi Booking through Android Mobile App and track the vehicle in real-time through the Arduino device and Admin panel to manage the backend of the Application. It is intended to be a complete specification of what functionality the system provides. The primary purpose of the system is to automate the process of booking a taxi online. The specific design and implementation details will be specified in a future document.

PROJECT SCOPE

This project aims to automate the system to book the cab, calculate the fare, collect the fare, pay bills through app collecting all necessary information of the client, and then serve the client. The data used by the system is stored in a google firebase database that will be the center of all information held by clients and vehicles. It enables things to be simplified and considerably quickened, making the jobs of the people involved easier. It supports the current process but centralizes it and makes it possible to make decisions earlier and more comfortable.

GOALS

The system's primary goal is to automate the process carried out in the organization with improved performance and realize an online booking vision. Some of the goals of the system are listed below:

- Manage a large number of client details.
- Manage all details of clients who registered and requested for getting the service.
- Create client accounts and maintain the data effectively.
- View all the details of the clients and vehicle.
- Showing available vehicles to book for the client.
- Calculating and showing the fare to the client before booking.
- Create the statistical reports to facilitate the finance department's work.
- We are getting feedback from the client to facilitate future improvement.
- We are tracking in real-time vehicle position.

OBJECTIVES OF THE PROPOSED SYSTEM:

The proposed system aims to address the limitations of the current system. The system requirements have been gathered from the past defects and based on the users' feedback from previous metrics tools. Following are the objectives of the proposed system:

- Reach to geographically scattered clients. One of the online booking system's crucial objectives is to communicate with all the clients scattered geographically.

- Automate the process of booking. The system will reduce the time and effort of the clients and employees and automate booking.

- We have centralized data handling. Transfer the data smoothly to all the departments involved and handle the centralized data way.

- Reduced workforce. Reduce the human resources needed to perform the booking and serving clients.

- Cost-cutting. Reduce the cost involved in the booking process.

- Operational efficiency. Improve the operational efficiency by improving the quality of the process.

BENEFITS OF THE SYSTEM

As with the most real-world activities, there are numerous benefits to using a taxi booking software system like Transport-AI. The most apparent to this project is the unification of the entire process. The system uses a central database. This database is the basis for all actions in the system. It can be trivially updated and used to aid in all of the system's processes. All of the required information is stored in one central location and thus is easily accessible. It is a far more reasonable storage method than a paper-based file system, where the time of traveling to and physically searching the records for the required information could be a burden. Human error could also be a factor in that mistakes could be made in the filing process, which would not occur in a well-written database system, and mistakes or physical records changes can be messy to correct. Software systems are also much faster at performing specific tasks than humans, meaning that time can be saved by sending communication emails, creating recommendations, and comparing applications. It also means that these tasks can be done solely by the system, freeing up those involved to perform more critical tasks.

TECHNOLOGIES

- Google drive
- Android Studio
- Google Firebase Server and Database
- Atom IDE and Node.js are used for PayPal payment implementation.
- For internal communication with the client, email is being used.
- Trello, Slack, WhatsApp, GitHub: Used for the development and maintenance of the group project.
- Install shield: Package to be used to simplify the installation process of the software.

- JavaScript used for Admin part developed.
- Arduino Uno
- 1Sheeld + app

OVERVIEW

SRS will include two sections.

Overall Description will describe significant components of the system, interconnection, and external interfaces.

Specific Requirements will describe the functions of actors, their role in the system, and constraints.

OVERALL DESCRIPTION

App Perspective

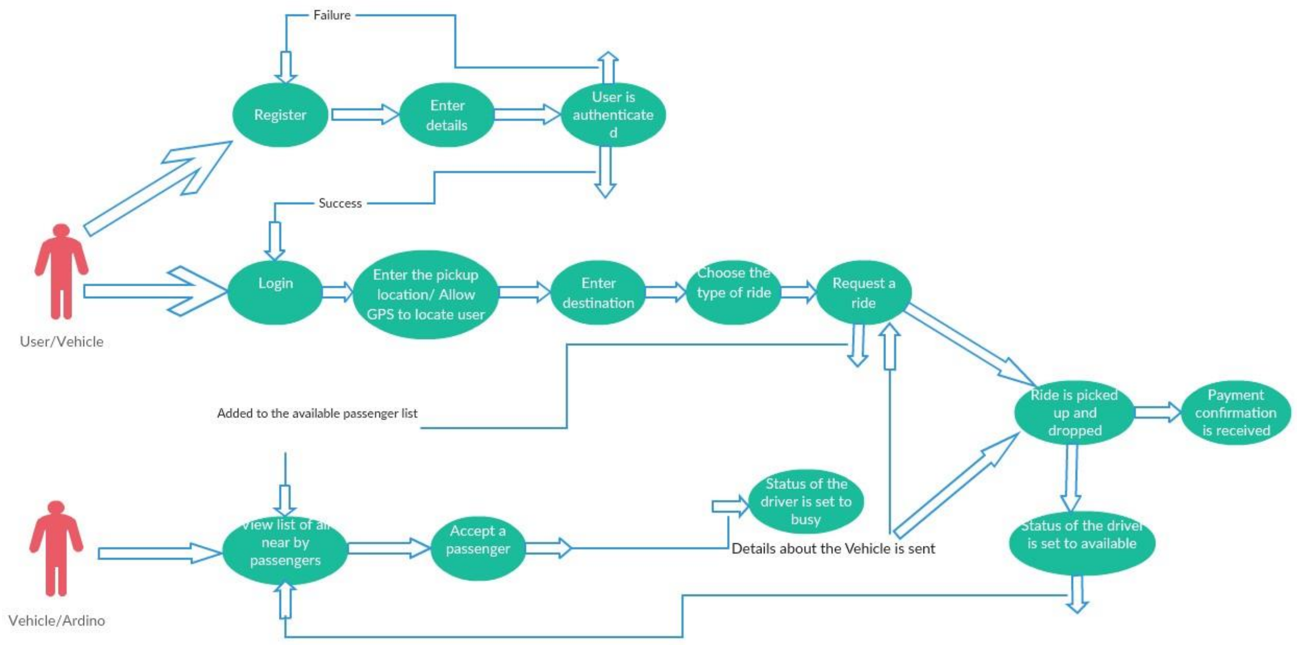

Failure
Register
Enter details
User is authenticated
Success
User/Vehicle
Login
Enter the pickup location/ Allow GPS to locate user
Enter destination
Choose the type of ride
Request a ride
Added to the available passenger list
Ride is picked up and dropped
Payment confirmation is received
Status of the driver is set to busy
Details about the Vehicle is sent
Status of the driver is set to available
Vehicle/Ardino
View list of all near by passengers
Accept a passenger

Figure 1: Model of the System

APP FEATURES

Some of the features are identified for the software. They are listed below:

- View Available Vehicles: The client must see all details about the available vehicles without any constraints.
- Log in and log out from the app.
- Calculate Fare: The client must be available to check the fare they should pay for the vehicles.
- Rating: The administrator can see the feedback given by each client so that he can take appropriate actions for future improvement.
- Payment: User can pay his/her total bill through the app
- Register: The client can register with the app
- Tracking the location: The user can see and track the location of the vehicle.

USER CLASSES AND CHARACTERISTICS

USER CHARACTERISTICS

The client should have the basic idea to operate (use) the system, and he already has the experience to work in the app (android). Default Language is English.

SYSTEM REQUIREMENTS AND ANALYSIS:

The following sections will introduce the system's numerous requirements from the point of view of different users. They will introduce several decisions that have been made regarding implementation. These sections also attempt to describe each user group's role in the system, discussing their roles through the functions they can perform.

USER INTERFACE

The user interface for this system will have to be simple and straightforward. Most importantly, the ages must be easy to read, easy to understand, and accessible. The color scheme should be appropriate to provide familiarity with the company, and there should be no contrast issues.

CLIENT VIEW FUNCTIONALITY:

Registration and Login System: Clients will carry out their registration, providing the system with a way to associate a user to their request(s). It will enable the system to display personalized information when the user logs in and specific information, such as name and address, automatically added to each booking request.

Booking System: The booking process will be as straightforward as possible, using an intuitive form layout, with the necessary information being completed in stages.

Update Details: clients will all have the ability to update their details at any time.

Payment/Bill: The client can pay his/ her bill through the app

Receive Notification from the Drive/Vehicle

Leave Rating for the Driver

Cancel the booking

DRIVER/VEHICLE VIEW FUNCTIONALITY:

1. Registration and Login System
2. Update details/Reset password-if password forgotten.
3. Receive notification for new booking
4. Accept/cancel the booking.
5. Pickup client
6. Drive complete
7. Rating customer
8. Payout

FUNCTIONAL OR SPECIFIC REQUIREMENTS:

The system should satisfy the following requirements:

CLIENT ASPECT:

1. Registration
2. Update details/Reset password – if the password is forgotten.
3. Make a booking

4. Check their booking status.
5. Fare calculation
6. Trip history
7. Pay bill for the ride
8. Accept/cancel a booking.

DRIVER/VEHICLE ASPECT:

1. Registration
2. Update details/Reset password – if the password is forgotten.
3. Accept/reject a booking.
4. Receive notification for new booking
5. Pickup customer
6. Driver complete when reached to the destination.
7. Trip history
8. The payout for the ride

ANALYSIS

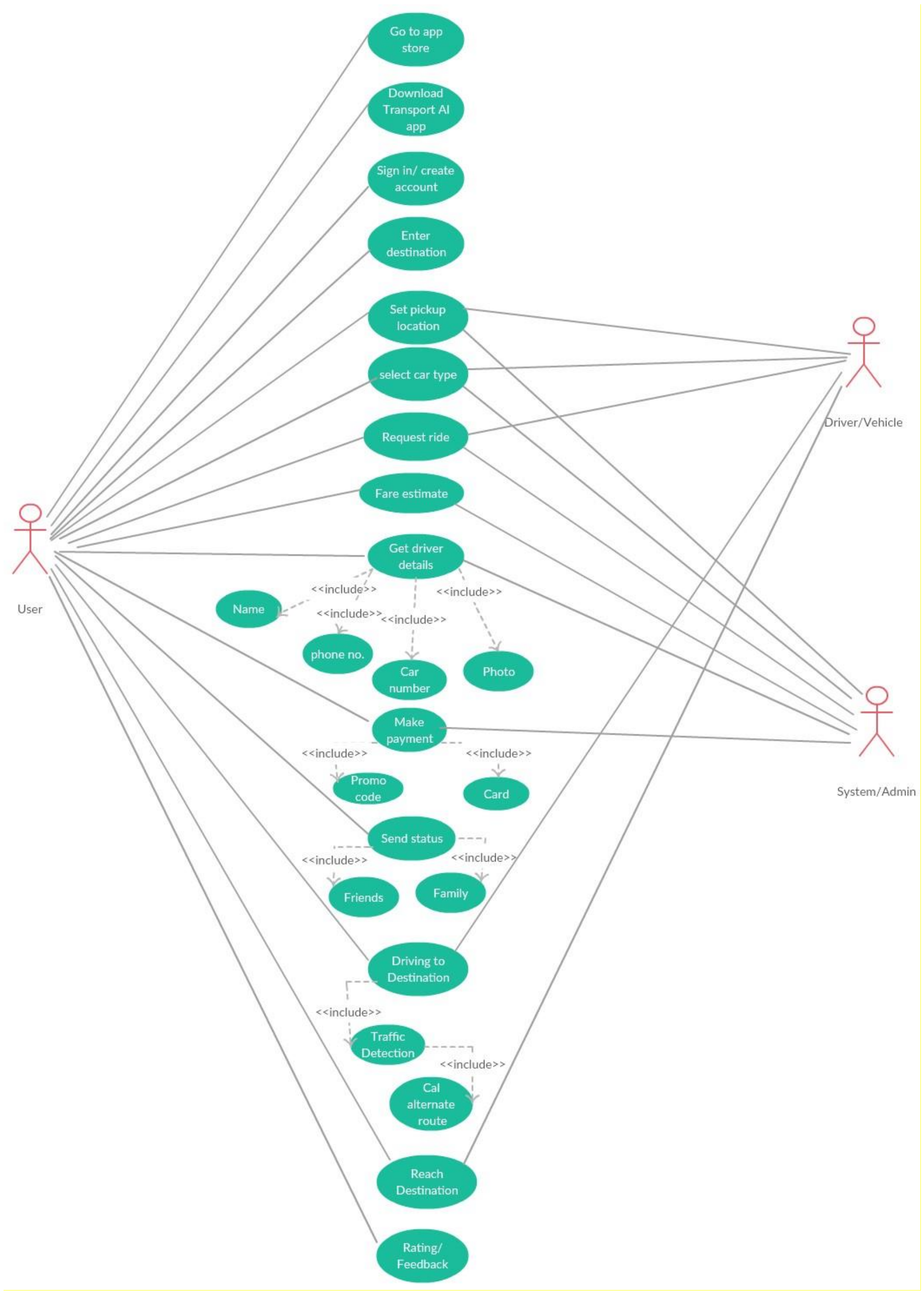
1. We are authenticating users based on username and password.
2. Recording client's request for booking.
3. We are checking whether the vehicle is available for booking.
4. We are keeping the history of course bookings.
5. We are keeping a record of feedbacks received from the clients.
6. Keeping track of the payment

PERFORMANCE REQUIREMENTS

Some Performance requirements identified are listed below:

- The database shall be able to accommodate a minimum of 10,000 records of clients.
- The software shall support the use of multiple users at a time.
- Good Wi-Fi or data connectivity
- App software version 6 or above.
- There are no other specific performance requirements that will affect development.

CASE DIAGRAMS



The details are written as follow :

Below a use case scenario for a user requesting a ride with a Standard vehicle, the company's most basic ridesharing service.

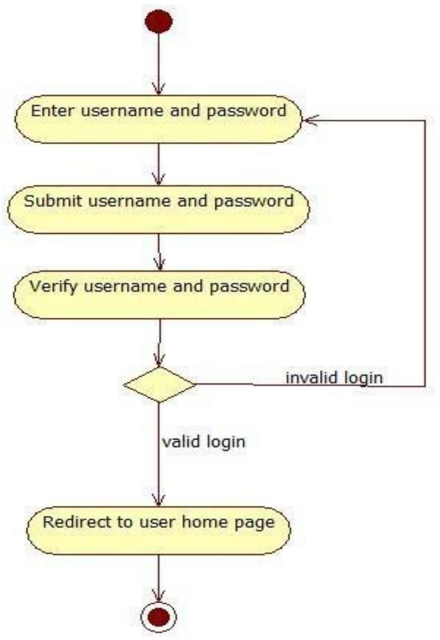
Name	Customer Requests Standard Ride
ID	001 – System Generated ID
Description	How a user will request a ride
Actors	User, Driver/Vehicle, and System
Organizational Benefits	Connect riders with Vehicles for cashless ridesharing
Frequency of Use	Each time a user requests a ride.
Triggers	User clicks "Request Standard."
Assumptions	1.The user is located within a Transport-Al market zone 2. There is at least one available driver/Vehicle within the maximum range of the user.
Preconditions	The user has an authenticated Transport-Al account.

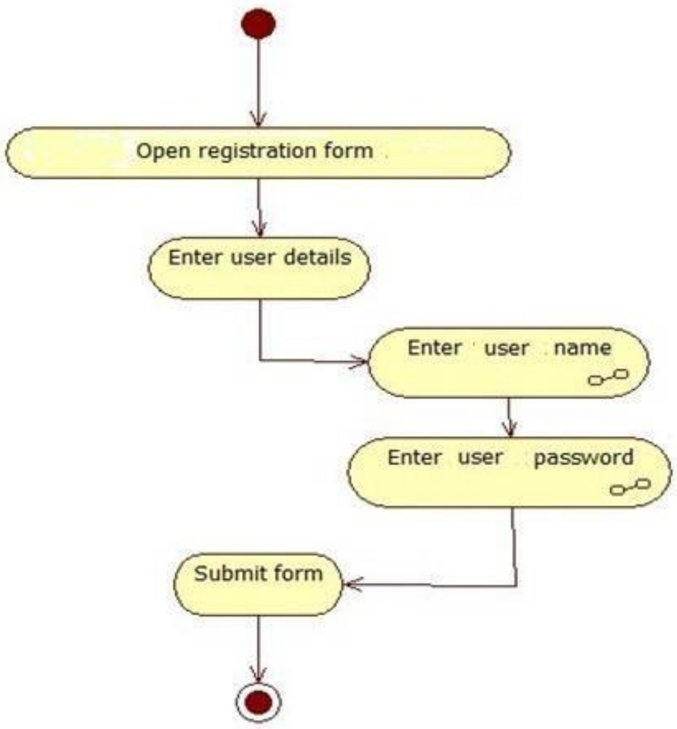
Postconditions	The driver/Vehicle has dropped off the user at the desired location, and the appropriate transaction occurs. 1. The user selects "Set Pickup Location" at the current or desired pickup location. 2. Users can select "Request any type of vehicle out of 3."

	3. The system sends user pickup location and customer rating to available drivers. 4. The closest driver/Vehicle accepts ride in-app, and the system routes them to the user location. 5. User is notified that a driver/Vehicle is found or on the way, listing car make, model, license plate number, driver photo, and driver rating Etc. 6. The system notifies the user via text message when a driver is one minute away from the pickup location(have to implement) 7. Driver/Vehicle and user meet at pickup location. 8. User or driver input drop-off location in-app 9. The driver selects "Picked up Customer" on app, starting the fare calculation (Have to implement and show the user) 10. The system routes drivers from the pickup location to the drop-off location and displays navigation. (It implemented but not showing all the time) 11. The driver drives the user to the requested drop-off location. 12. When drop-off occurs, the driver selects "End Ride" in the app 13. The system bills the user's credit card for the final fare amount 14. System credits the balance to the driver's Paypal account. 16. The driver is prompted to rate the user before looking for the next ride. 17. User is prompted to rate the driver the next time they open the app.

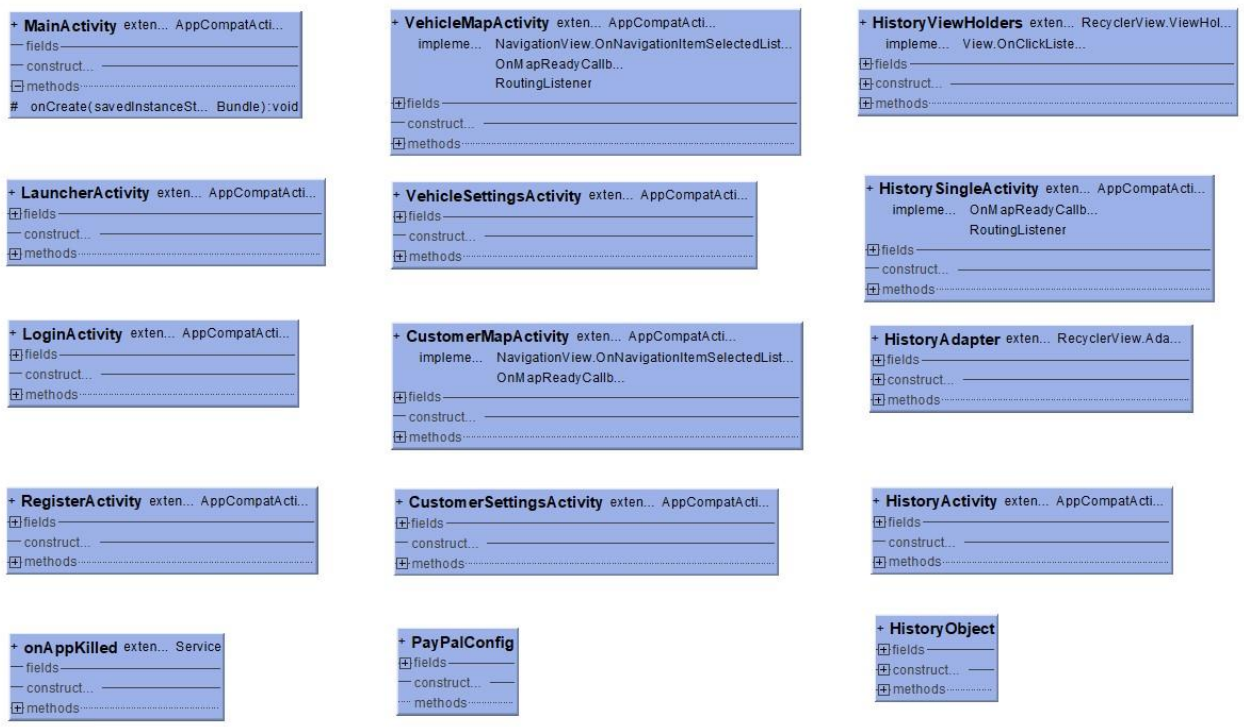
Alternate Courses	AC1: Closest driver does not accept rides step 4; if the closest driver does not accept the ride request, the next closest driver is notified until a driver accepts or all drivers within the maximum radius have been notified.
Exceptions	EX1: Driver cancels the ride while the ride is in progress 1. The ride ends, and the user exits the vehicle 2. The system does not charge the user for the ride 3. The system prompts the driver to explain the canceled rideEX2: User cancels ride request before pickup occurs 1. The user selects “Cancel Pickup” in the app 2. The driver is notified that the pickup has been canceled and is prompted to select the next ride

FLOW DIAGRAM EXAMPLE OF USER LOGIN AND REGISTRATION

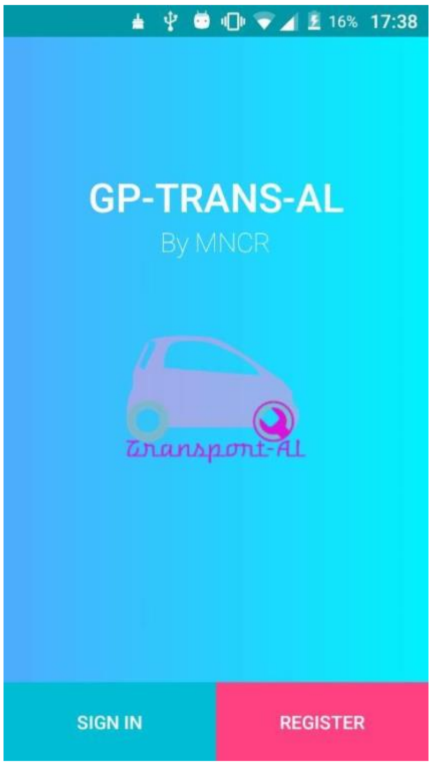

Enter username and password
Submit username and password
Verify username and password
invalid login
valid login
Redirect to user home page



CLASS DIAGRAM

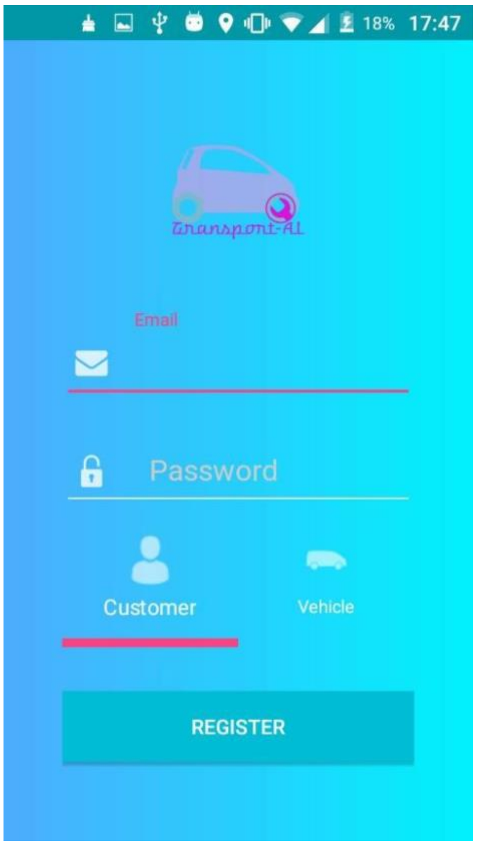

+ MainActivity exten... AppCompatActi...
fields
construct...
methods
# onCreate(savedInstanceSt... Bundle):void
+ VehicleMapActivity exten... AppCompatActi...
impleme... NavigationView.OnNavigationItemSelectedList...
OnMapReadyCallb...
RoutingListener
fields
construct...
methods
+ HistoryViewHolders exten... RecyclerView.ViewHol...
impleme... View.OnClickListe...
fields
construct...
methods
+ LauncherActivity exten... AppCompatActi...
fields
construct...
methods
+ VehicleSettingsActivity exten... AppCompatActi...
fields
construct...
methods
+ HistorySingleActivity exten... AppCompatActi...
impleme... OnMapReadyCallb...
RoutingListener
fields
construct...
methods
+ LoginActivity exten... AppCompatActi...
fields
construct...
methods
+ CustomerMapActivity exten... AppCompatActi...
impleme... NavigationView.OnNavigationItemSelectedList...
OnMapReadyCallb...
fields
construct...
methods
+ HistoryAdapter exten... RecyclerView.Ada...
fields
construct...
methods
+ RegisterActivity exten... AppCompatActi...
fields
construct...
methods
+ CustomerSettingsActivity exten... AppCompatActi...
fields
construct...
methods
+ HistoryActivity exten... AppCompatActi...
fields
construct...
methods
+ onAppKilled exten... Service
fields
construct...
methods
+ PayPalConfig
fields
construct...
methods
+ HistoryObject
fields
construct...
methods

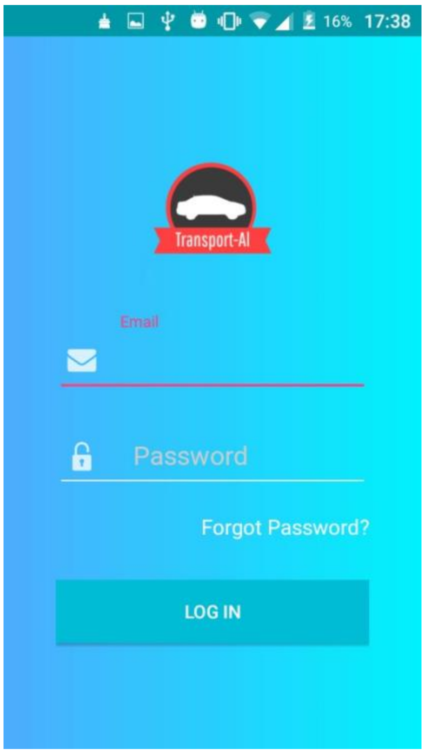
TRANSPORT-AL APP SCREENSHOT EXAMPLE



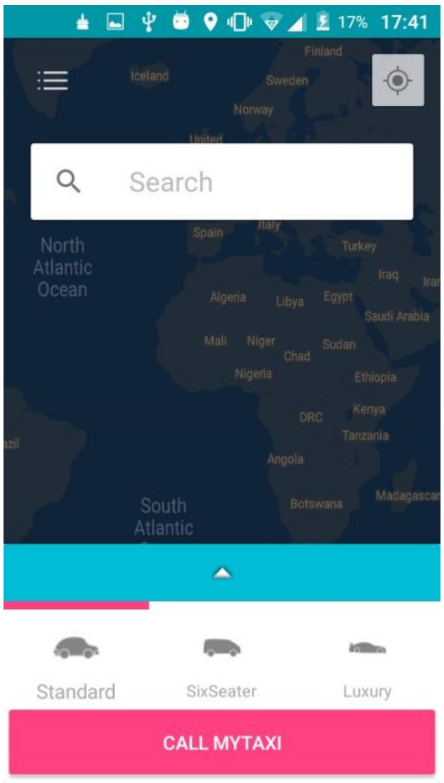
- Welcome screen
- Logo
- Sign in and Register button

- Register Screen
- Client or Driver/Vehicle
- Email & password required for register

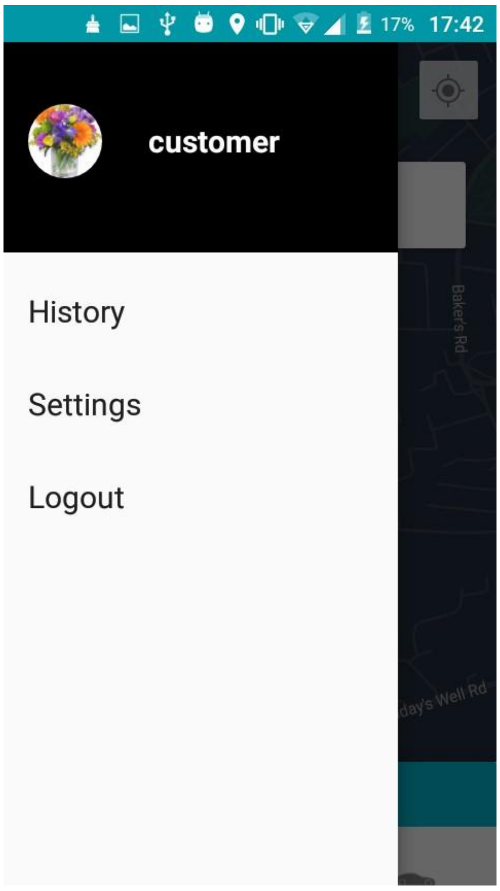




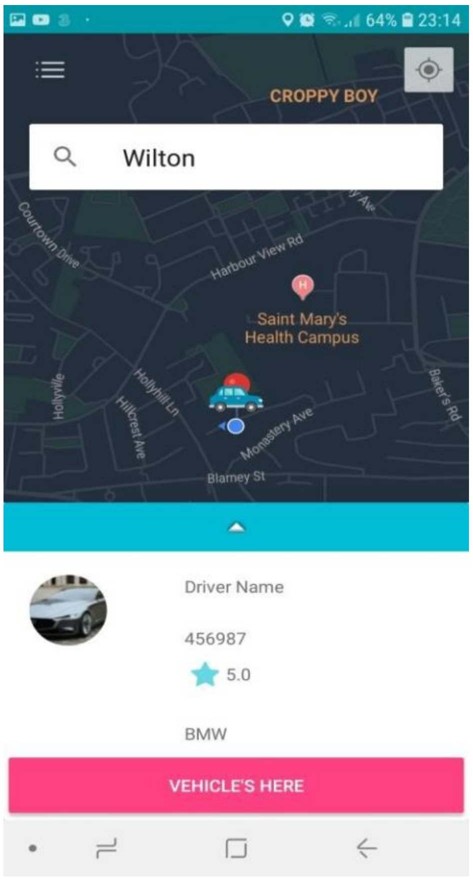
-Log in Screen
-If the user forgets the password will be sent to the user email for a reset
-Must be valid email and password for login, and it is authenticated with firebase database.



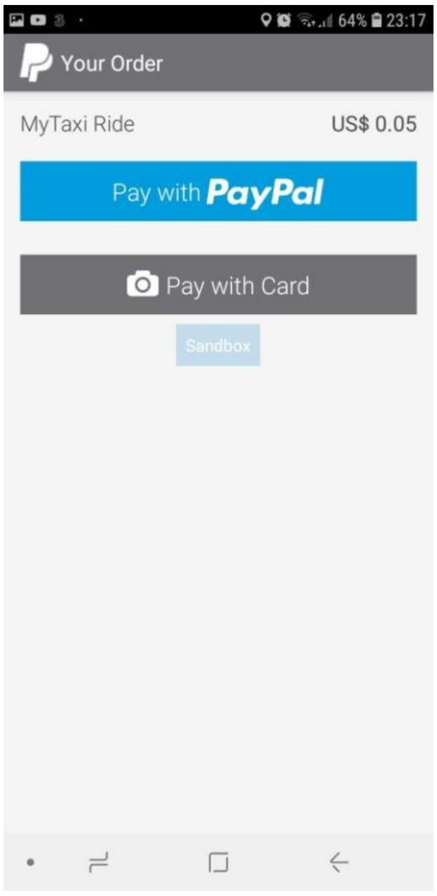
- After successful login user will go to the next stage of the app
- Here user can ○ See the menu ○ To Zoom the map ○ To search & set the pickup location.
  - Select the vehicle type ○ Update user details ○ See the trip history
  - Hide the bottom layout



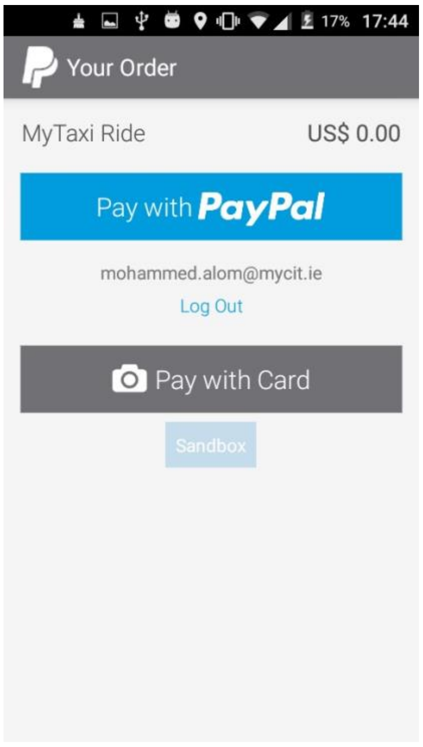
- User menu option ○ Can see the trip history ○ Update user details by setting button
  ○ Logout from the Application



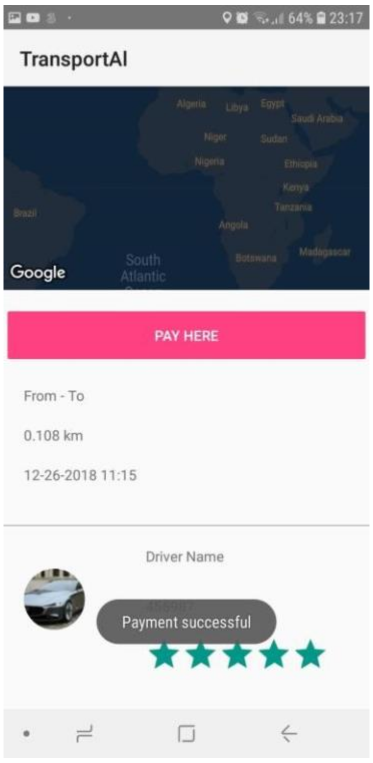
- The user will receive a notification from the vehicle.
  - Name
  - Contact no ○ Vehicle rating.
  - Vehicle type



- The user will pay after finishing the trip.
- Will show total amount in euro.
- Pay by PayPal or by Credit Card

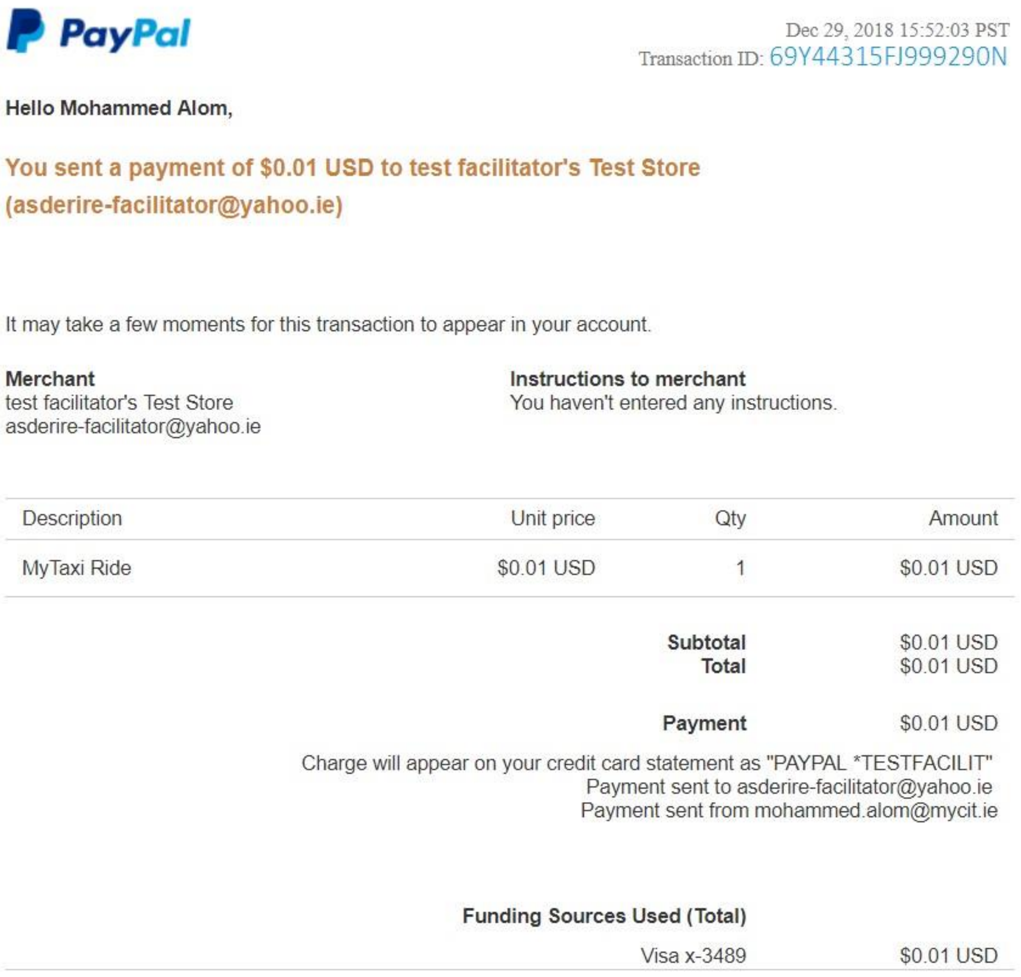


- Users need to log in with a PayPal account to pay the ride fees.



- After authenticating with PayPal, the account Client can pay his/her ride bill.
- And the transaction went successful.
- Below is the screenshot of the receipt

PAYMENT RECEIPT FROM PAYPAL SCREENSHOT



Dec 29, 2018 15:52:03 PST
Transaction ID: 69Y44315FJ999290N

Hello Mohammed Alom,

You sent a payment of $0.01 USD to test facilitator's Test Store (asderire-facilitator@yahoo.ie)

It may take a few moments for this transaction to appear in your account.

Merchant
test facilitator's Test Store
asderire-facilitator@yahoo.ie

Instructions to merchant
You haven't entered any instructions.

Description	Unit price	Qty	Amount
MyTaxi Ride	$0.01 USD	1	$0.01 USD

Subtotal	$0.01 USD
Total	$0.01 USD
Payment	$0.01 USD

Charge will appear on your credit card statement as "PAYPAL *TESTFACILIT"
Payment sent to asderire-facilitator@yahoo.ie
Payment sent from mohammed.alom@mycit.ie

Funding Sources Used (Total)

Visa x-3489	$0.01 USD

ADMIN SECTION

THE ADMIN PANEL

The admin website posed quite a few challenges along the way, many of which to do with firebase database data manipulation and Google map integration.

Down below are the goals, functionality, use cases of the admin panel. CORE FEATURES OF THE SITE

1. Firebase login
2. Active booking requests
3. Vehicle data
4. Users and their data
5. User transaction history
6. Map view and route tracking
7. Data search and management functions
8. Help and support

The features of the web panel are purely based on admins. It uses data related to firebase and the app, as such, these features are built to be easily expanded upon, allowing the web panel to be a go-to service for web admins.

As is the reason most companies would opt to use these kinds of data management.

OBJECTIVES

- Create a secure login page
- Allow the ability to accept or deny booking requests of users.
- Get active route tracking using Google Map API.
- Put firebase data into neatly organized tables.
- Create a responsive and visual appealing webpage

- To create a web panel that administrators can use to monitor, modify data related to the APP.
- Help and support for admins to understand the functionality of the page and gain user feedback

FUNCTIONALITY

Here, the login page can log in using their registered emails and password in the firebase database.

Active bookings - The tab initially opened by the website allows admins to accept or deny booking requests and the requests to be tracked using Google Maps.

Map - The map allows users to get the route data from bookings and the total distance needed to travel to make the trip. However, it also allows for adding in points and locations manually to see the route and the distance needed to make that happen.

User database – User IDs and their registered emails can be view in a table format. User History – User history shows all the Apps users' past transactions; this is also a table of data but allows for individual users' search.

These functionalities provide crucial data visualization and management admins to quickly and efficiently provide a more in-depth expandable service.

USE CASES

User Login

1. The user enters in their username and password and clicks login.
2. The user is shown the full web panel web page.

Bookings

1. User login.
2. The user once logged in, is on the booking tab with a booking table.
3. The user enters a user id into the given user id text field.
4. The user clicks on the accept button to accept the booking.

Tracking

1. User login.
2. Once logged in, it is on the booking tab with a booking table.
3. The user enters a user id into the given user id text field.
4. The user clicks track to track the route of the transaction.
5. The user clicks on the map tab at the top of the page and can see the booking route, coordinates, and total distance.

Database Management

1. User login
2. Once logged in, the user clicks on the database tab on the top of the page.
3. The user presented with a data table with several text field below.
4. The user enters data into each text field ID, Car, Name, and Phone and clicks update.
5. The table is now populated with new data for another vehicle.
6. The user then enters the car, type in the Car text field, and clicks search.
7. A search table shows results for any car matching the entered car name, including the data entered earlier.

CHALLENGES

- Deciding on a webpage layout
- Creating a login page for administrators
- Learning to use Java Script queries
- Outputting script data into dynamic tables
- Communication with a NoSQL database
- Creating search queries
- Updating firebase database thorough quires
- Creating a Google Maps API window
- Adding functionality such as tracking to the Google Maps API

When overcoming these challenges, the goal in mind was to create easier data visualization and management than firebase for the app.

However, also allowing for additional functionality for app-related processes, like route tracking.

DEVELOPMENT

Web Design Layout

When creating the website, the initial desire was to have something that looked nice, so web template bootstrap was considered but ultimately deemed unnecessary.

While bootstrap can provide readily available professional-level visuals, they also come with a level of complication to use effectively, making it unnecessarily difficult to present firebase data.

A simple visual website with all the necessary data functionality was decided to be best.

Firebase NoSQL & JavaScript

Assessing the firebase NoSQL Database presented many complications along the way, from deciding to use a NoSQL to MySQL conversion, node.js, and JavaScript quires.

In the end, JavaScript quires ended up best suiting the web panel as firebase does provide some commands on how to do so.

These quires directly visualize the data from the firebase in real-time and allow for communication in real-time also.

Google Maps API

The Google Maps API allows for the use of Google Maps in HTML and android.

Implementing this API required using an API key, which required registration of the Google cloud platform and provided very basic Google maps functionality.

Although it had basic functionality, to begin with, increased knowledge of the API JavaScript functions was used for additional functionality.

For better use with the app, the functionality was improved to include route display tracking for each booking with a total distance display.

OVERVIEW

- Web panel only allows secure login.
- Manages firebase database
- Visualizes data into different tables and tabs
- Validates, Invalidates customer bookings.
- Shows bookings, customers, vehicles, and customer history
- Data can be searched.
- Visual represents customer bookings in Google Maps API.

The web panel is designed for simplicity and functionality without being jarring to look at for an extended period.

It is meant to serve as a web portal tool with all the necessities to make data management very easy for the app data administrators.

ARDUINO UNO & 1SHEELD

SECTION

ARDUINO UNO & 1SHEELD

SETUP/CONFIGURATION

1. Connect 1Sheeld with Arduino.

   1.1 Physically position 1Sheeld on top of Arduino, connection all I/O pins.

2. Download 1Sheeld app on smartphone.

   2.1 Download, open, and connect via Bluetooth to 1Sheeld in use.

3. Connect to Power.

   3.1 Using Arduino USB cable, connect with a USB port on Computer/Socket.

FUNCTIONALITY

- Get GPS location.
- Send GPS coordinates to firebase.
- Listen for voice recognition.
- Text-to-speech for user interaction.

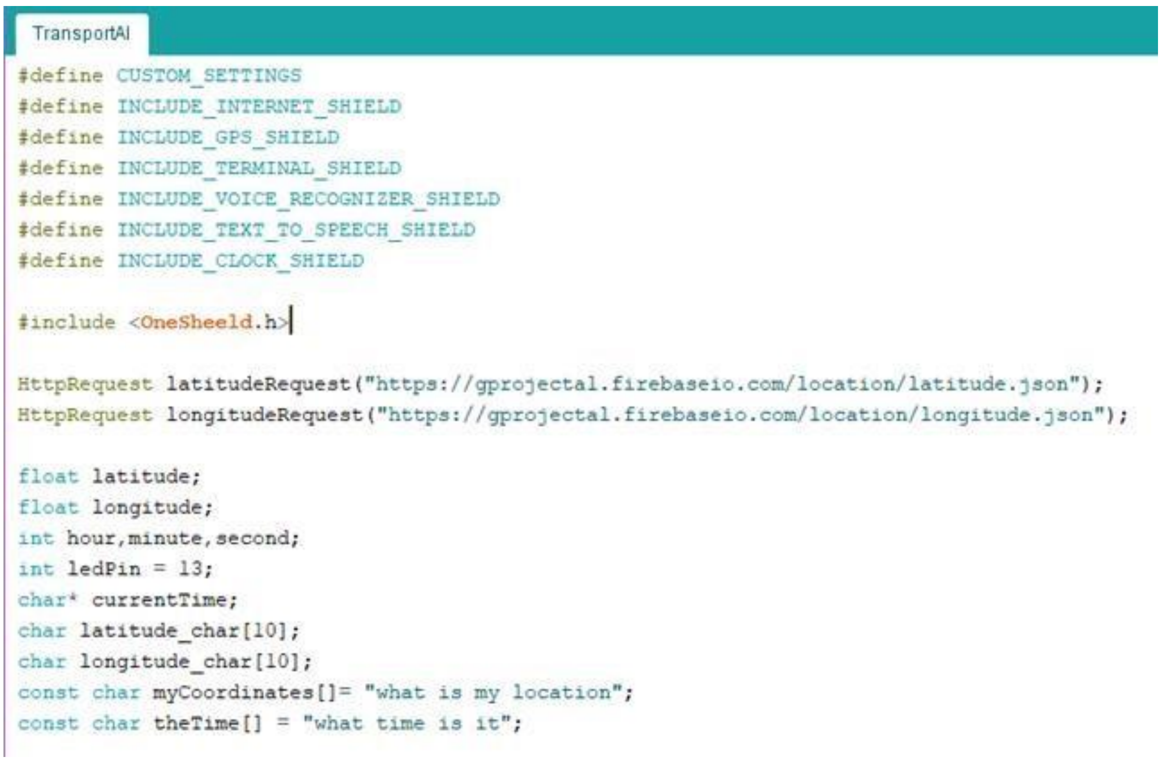
DEVELOPMENT

Housekeeping requirements.

Inclusion of the OneSheeld library and all used shields.

We are composing HTTP requests for posting coordinates to our database.

Initializing any variables needed.



```
#define CUSTOM_SETTINGS
#define INCLUDE_INTERNET_SHIELD
#define INCLUDE_GPS_SHIELD
#define INCLUDE_TERMINAL_SHIELD
#define INCLUDE_VOICE_RECOGNIZER_SHIELD
#define INCLUDE_TEXT_TO_SPEECH_SHIELD
#define INCLUDE_CLOCK_SHIELD

#include <OneSheeld.h>

HttpRequest latitudeRequest("https://gprojectal.firebaseio.com/location/latitude.json");
HttpRequest longitudeRequest("https://gprojectal.firebaseio.com/location/longitude.json");

float latitude;
float longitude;
int hour,minute,second;
int ledPin = 13;
char* currentTime;
char latitude_char[10];
char longitude_char[10];
const char myCoordinates[]= "what is my location";
const char theTime[] = "what time is it";
```

SETUP FUNCTION

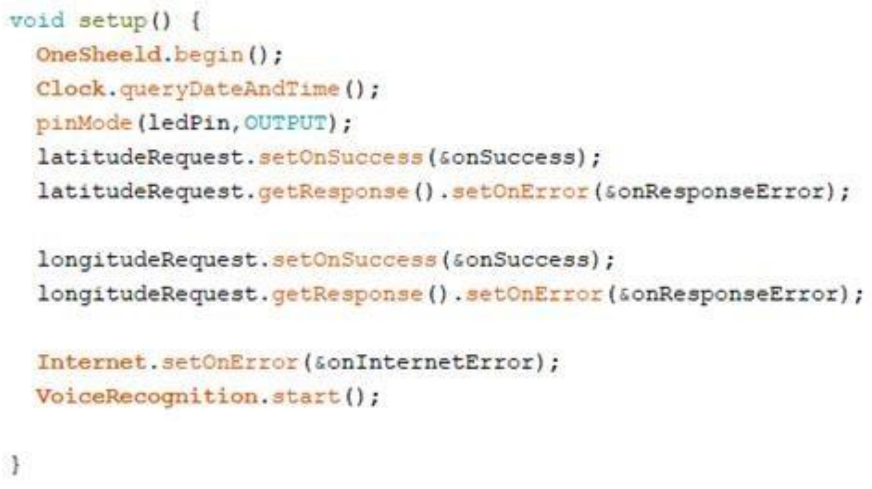
Initialize OneSheeld.

Permit to query the Clock shield.

Set the OUTPUT to pin 13 for the LED response.

Set HTTP request responses for success and failure of requests.

Start voice recognition shield.



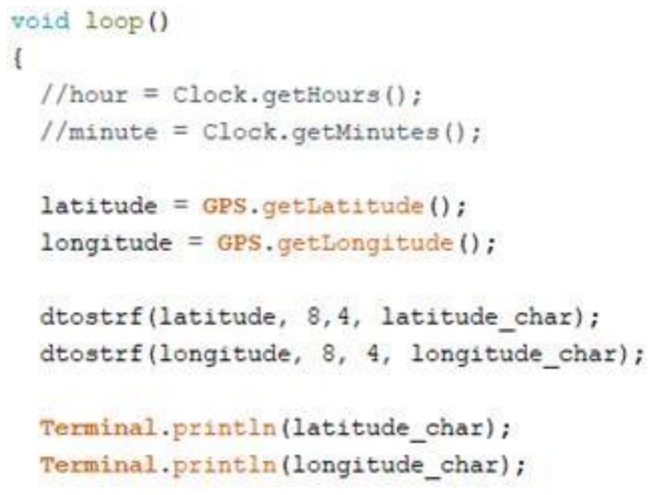
```
void setup() {
  OneSheeld.begin();
  Clock.queryDateAndTime();
  pinMode(ledPin,OUTPUT);
  latitudeRequest.setOnSuccess(&onSuccess);
  latitudeRequest.getResponse().setOnError(&onResponseError);

  longitudeRequest.setOnSuccess(&onSuccess);
  longitudeRequest.getResponse().setOnError(&onResponseError);

  Internet.setOnError(&onInternetError);
  VoiceRecognition.start();

}
```

LOOP

This is the code that will continuously loop on the Arduino. The primary method was holding most functionality.

Here we see some code that has been commented out as it was not working correctly; I request to pull the data for the current hours and minutes from the clock shield. Following this, the current longitude and latitude values of our position are pulled from the OneSheeld App.

These float values are then converted to a character array to be printed to the terminal.

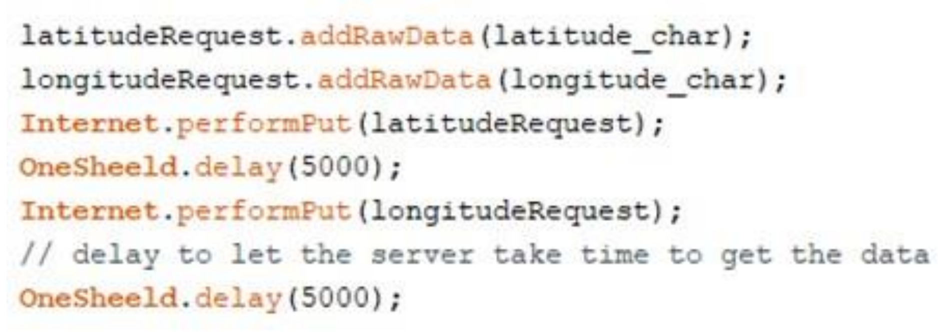


```
void loop()
{
  //hour = Clock.getHours();
  //minute = Clock.getMinutes();

  latitude = GPS.getLatitude();
  longitude = GPS.getLongitude();

  dtostrf(latitude, 8,4, latitude_char);
  dtostrf(longitude, 8, 4, longitude_char);

  Terminal.println(latitude_char);
  Terminal.println(longitude_char);
```

Next, this character array is added to the HTTP requests individually.

A PUT request to the firebase database is called for both Longitude and Longitude coordinates.

A delay of 5 seconds is added for processing purposes.



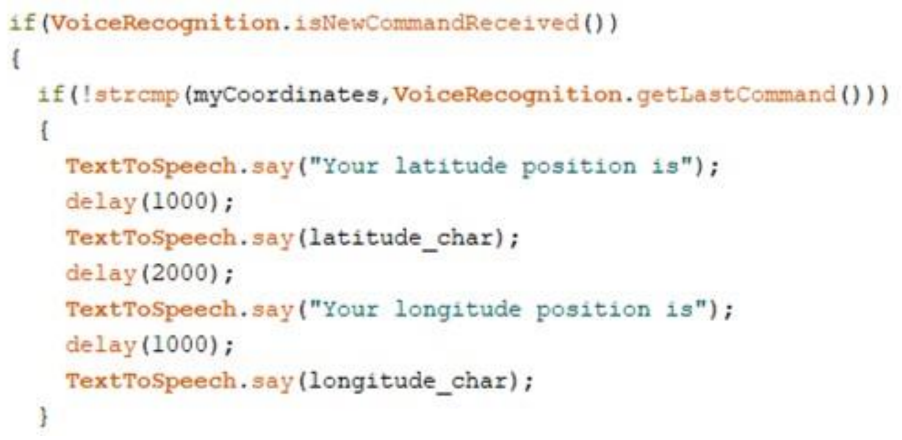
```
latitudeRequest.addRawData(latitude_char);
longitudeRequest.addRawData(longitude_char);
Internet.performPut(latitudeRequest);
OneSheeld.delay(5000);
Internet.performPut(longitudeRequest);
// delay to let the server take time to get the data
OneSheeld.delay(5000);
```

The following section of code in the loop is for our unique feature.

The idea is for a passenger to ask for their current location & the current time.

Only the location is working as seen previously; the clock shield requests for the current time did not currently function.

This Arduino “listens” for the passenger to ask a question such as “what is my location?”, upon recognizing the question, a reply is given telling the passenger their current longitude and latitude position.

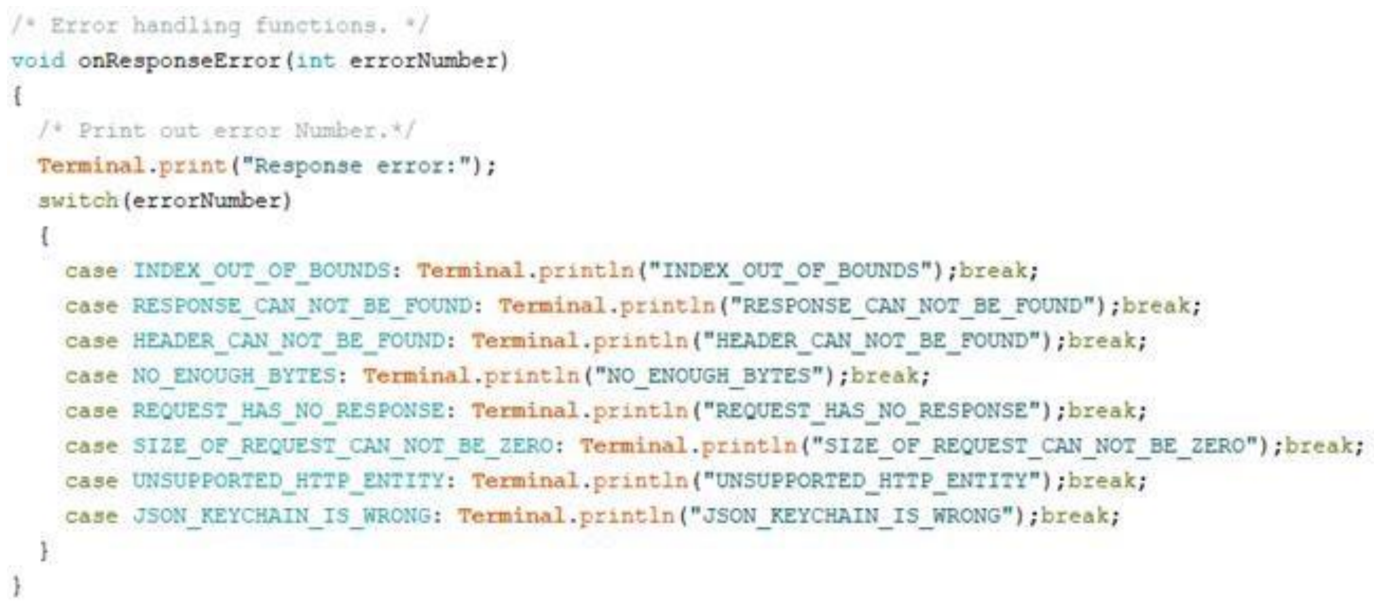


```
if(VoiceRecognition.isNewCommandReceived())
{
  if(!strcmp(myCoordinates,VoiceRecognition.getLastCommand()))
  {
    TextToSpeech.say("Your latitude position is");
    delay(1000);
    TextToSpeech.say(latitude_char);
    delay(2000);
    TextToSpeech.say("Your longitude position is");
    delay(1000);
    TextToSpeech.say(longitude_char);
  }
```

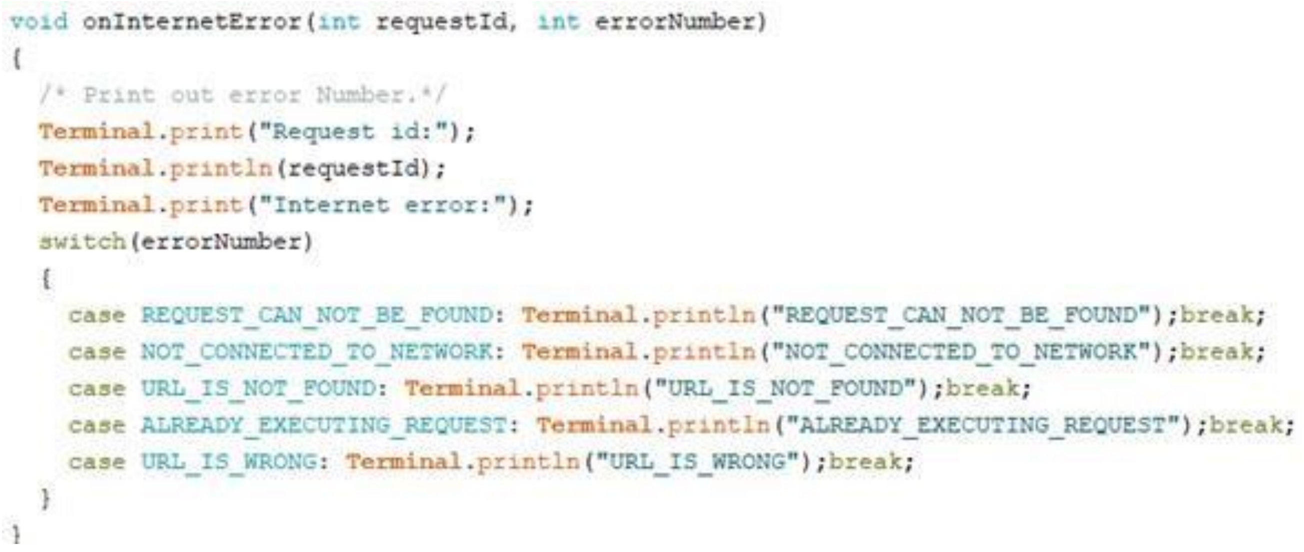
ERROR HANDLING

These methods are called if there is a problem with the response from the HTTP requests or an error with the Internet shield.

It determines the error type and displays the response in the terminal.



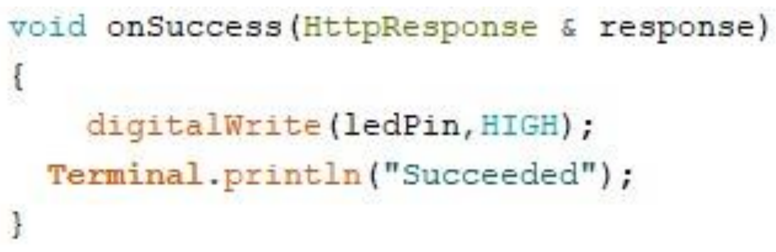
```
/* Error handling functions. */
void onResponseError(int errorNumber)
{
  /* Print out error Number.*/
  Terminal.print("Response error:");
  switch(errorNumber)
  {
    case INDEX_OUT_OF_BOUNDS: Terminal.println("INDEX_OUT_OF_BOUNDS");break;
    case RESPONSE_CAN_NOT_BE_FOUND: Terminal.println("RESPONSE_CAN_NOT_BE_FOUND");break;
    case HEADER_CAN_NOT_BE_FOUND: Terminal.println("HEADER_CAN_NOT_BE_FOUND");break;
    case NO_ENOUGH_BYTES: Terminal.println("NO_ENOUGH_BYTES");break;
    case REQUEST_HAS_NO_RESPONSE: Terminal.println("REQUEST_HAS_NO_RESPONSE");break;
    case SIZE_OF_REQUEST_CAN_NOT_BE_ZERO: Terminal.println("SIZE_OF_REQUEST_CAN_NOT_BE_ZERO");break;
    case UNSUPPORTED_HTTP_ENTITY: Terminal.println("UNSUPPORTED_HTTP_ENTITY");break;
    case JSON_KEYCHAIN_IS_WRONG: Terminal.println("JSON_KEYCHAIN_IS_WRONG");break;
  }
}
```



```
void onInternetError(int requestId, int errorNumber)
{
  /* Print out error Number.*/
  Terminal.print("Request id:");
  Terminal.println(requestId);
  Terminal.print("Internet error:");
  switch(errorNumber)
  {
    case REQUEST_CAN_NOT_BE_FOUND: Terminal.println("REQUEST_CAN_NOT_BE_FOUND");break;
    case NOT_CONNECTED_TO_NETWORK: Terminal.println("NOT_CONNECTED_TO_NETWORK");break;
    case URL_IS_NOT_FOUND: Terminal.println("URL_IS_NOT_FOUND");break;
    case ALREADY_EXECUTING_REQUEST: Terminal.println("ALREADY_EXECUTING_REQUEST");break;
    case URL_IS_WRONG: Terminal.println("URL_IS_WRONG");break;
  }
}
```

SUCCESS RESPONSE

When a successful request is made to the database, the function is then called, and a message is displayed in the terminal.



```
void onSuccess(HttpResponse & response)
{
     digitalWrite(ledPin,HIGH);
   Terminal.println("Succeeded");
}
```