KHULNA UNIVERSITY OF ENGINEERING &TECHNOLOGY

Project Report

Title: Real Time Moving Object Tracking System

CSE 3200: Software Development Project –II

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1.Acknowledgement:

All praises goes to Almighty ALLAH for his kindness& blessings. Without his desire we would not be here as we are today.

Thanks to our project supervisor ***Prof. Dr. M. M. A. Hashem***, Department of Computer Science & Engineering, KUET for his untiring effort as well as strong support. He truly helped throughout the entire project with his correct decision & necessary advice. As a result, we are able to complete this **software development project-II** successfully.

Any constructive comments, suggestions, criticism from teachers as well as seniors will be highly appreciated and gratefully acknowledged.

2.Introduction:

In this project we have designed a '**Moving Object Tracker'** using Object -oriented technology**.** '**Moving Object Tracker'** is the active control program which **track** the moving object with the help of server and an app which is in the device which should be tracked.

The **Tracked** app uploads it's current location by a certain interval of time in the server. And from the server, the **Tracker** app gets the location of the tracking side. The tracker app can also track the pathway through animation to go to the position of the Tracking and also see the street view of this location.

3. The Deployment:

This application is developed as a 3rd year 2nd semester software development project, a course titled *"Software Development Project-II"*. As a requisite we used the Java programming language and android as a platform to develop the application**.** We used MySQL , an open-source relational database management system(RDBMS) . With the help of PHP we were able to connect with the database server and store specific information from the user with date and time included, then using JSON parser we can be able to retrieve it.

This project is done with:

1. Android Studio.

3.1 Why use Java and Android as Platform:

Java is Object Oriented Programming language that contains very rich API, specifically designed towards faster and more efficient application development. The API is a large collection of ready-made software components that provide many useful capabilities. It is grouped into libraries of related classes and interfaces; these libraries

are known as *packages*. As a platform-independent environment, although the Java platform can be a bit slower than native code, its powerful API is the primary reason for it to be used to develop this application, as in many others being developed by a large number of developers around the globe. Moreover, advances in compiler and virtual machine technologies are bringing performance of Java applications close to that of native code without threatening portability.

Some more points that makes java so popular:

1. Java is easy to learn

Java was designed to be easy to use and is therefore much easier to write, compile, debug, run and learn than other programming languages.

2.Java is platform-independent

One of the most significant advantages of Java is its ability to move easily from one system to another. The ability to run the same code on many different systems is crucial to www, and Java succeeds at this by being platform-independent at the source and almost binary levels.

3. Java is distributed

Java is designed to make distributed computing easy with the networking capability that is inherently integrated into it. Writing network programs in Java is like sending and receiving data to and from a file.

4. Java is secure

Java considers security as part of its design. The Java language, compiler, interpreter, and runtime environment were each developed with security in mind.

5. Java is robust

Robust means reliability. Java puts a lot of emphasis on early checking for possible errors, as Java compilers are able to detect many problems that would first show up during execution time in other languages.

6. Android Platform:

Android is the most widely used platform now-a-days. Even in our country around 50% of people use android phones. So, to use this platform now-a-days is a wise decision because most of the companies want android developers as they can be benifited.

3.2 About Android Studio:

Android Studio is the official Integrated Development Environment (IDE) for developing for the Android platform. It was announced on May 16, 2013 at the Google I/O conference. Android Studio is freely available under the Apache Lisence 2.0.

Android Studio was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0.

Based on Imtellig software, Android Studio is designed specifically for Android development. It is available for download on Windows, MAC OS X and Linux and replaced Eclipse Android Development Tools (ADT) as Google's primary IDE for native Android application development.

3.3 My SQL and JSON parsing:

MySQL is an open-source Relational Database Management System (RDBMS); in July 2013, it was the world's second most widely used RDBMS, and the most widely used open-source client-server model RDBMS. It is named after co-founder Micheal Widenaus 's daughter, My The SQL acronym stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the The GNU, as well as under a variety of agreements. MySQL was owned and sponsored by a single for profit firm, the Swedish company MYSQL AB, now owned by Oracle Corporation. For proprietary use, several paid editions are available, and offer additional functionality.

JSON (JavaScript Object Notation) is an open standard format that uses human readable text to transmit data objects consisting of attribute value pair . It is the most common data format used for asynchronous browser/server communication, largely replacing XML which is used by AJAX.

JSON is a language independent data format. It derived from Javascript , but now code to generate and parse JSON-format data is available in many programming languages. The JSON filename extension is .json.

The JSON format is described by two competing standards, ECMA-404. The ECMA standard describes only the allowed syntax, whereas the RFC also provides some semantic and security considerations.

4. Problem:

- During the time of waiting for bus/train, the passengers need to know the current position of the bus/train as well as how far the bus/train from the station.
- We need to locate the children's current position so that they may not go far away from the house.
- We need to track the position of theaf by inserting the GPS module into their body.

5. Objective:

- To provide a better way to find a place and go to the place.
- To track a moving object.
- To see the street view of the current position of the object.
- To track how to go to the place with a 3D animation view in the map.
- To search a place in the map.
- To see different type of view in the map.

6. Design of the Moving Object Tracker :

6.1 Front-end design:

Having a close look into the pattern of the working procedure of this application we can draw a flow chart. It is a pattern of how Components work & connects with each other. It can be described as below –

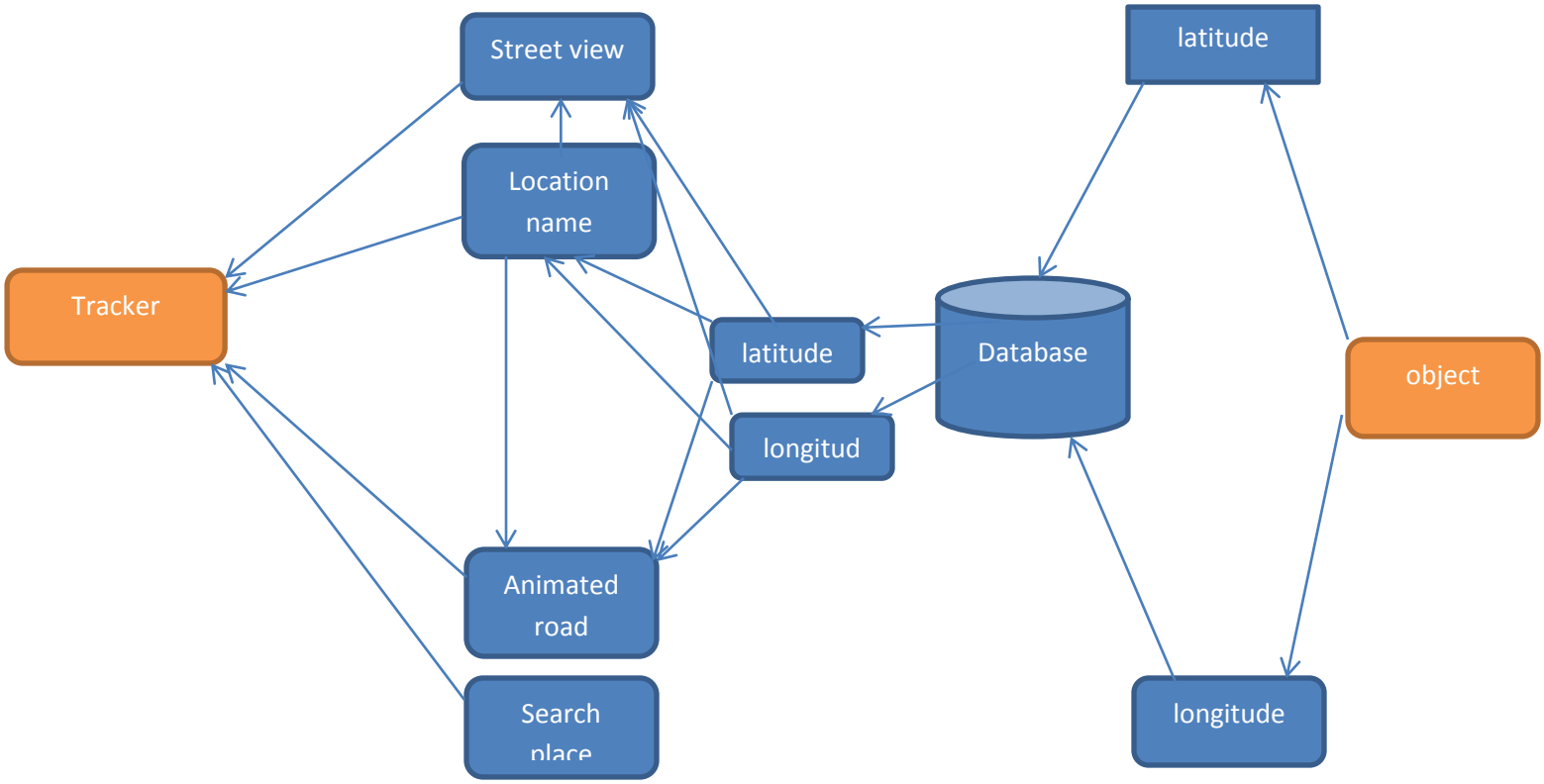


Fig: Flow chart

6.2 Backend Design:

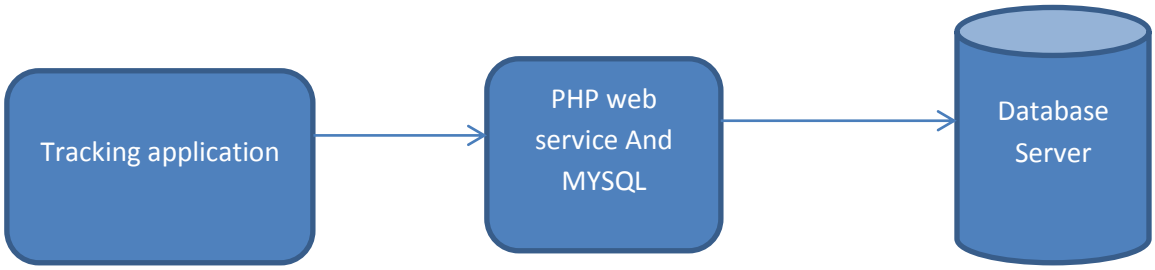


Fig : 2

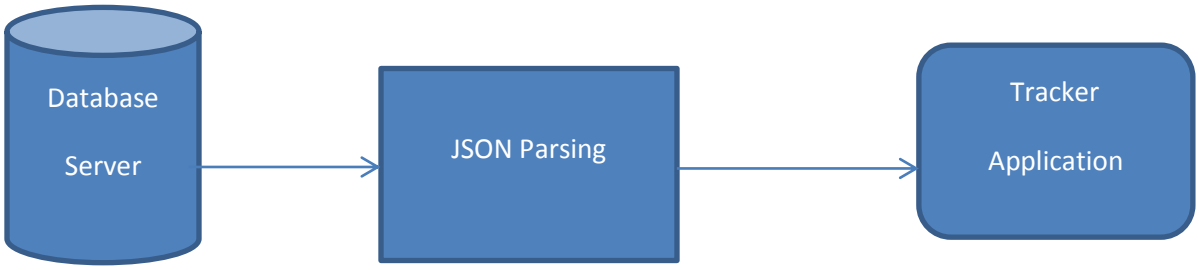


Fig : 3

6.3 Database Schema:

Table: vehicleLocation
location_id
latitude
longitude
dateTime

7. Project Structure:

The project is divided into sevaral classes and 0ne package for the .The package, along with the classes they contain, are shown below:

TrackerApplication
About
DistanceOfTwoPlace
GetUserCallback
ItemSlideMenu
MapsActivity
ServerRequest
SlidingMenuAdapter
StreetView
VehicleLocation

DeviceHandler
GetMyLocation
GetUserCallback
Login
MainActivity
MapsActivity
Register
ServerRequest
ServerRequestLogReg

User
UserLocalStore
VehicleLocation

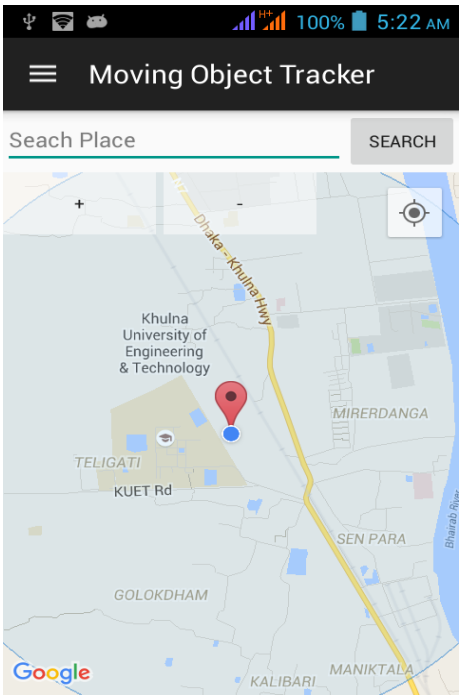
8. Features of Moving Object Tracker:

Moving Object Tracker can be various types but the application we implemented in our project is quite easier in terms of use. The features of this application are-

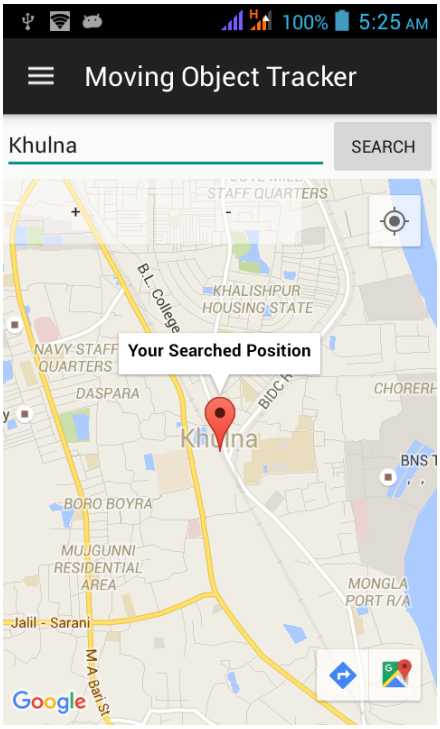
- ✓ Track the moving object
- ✓ Show the street view of the current location of the moving object
- ✓ Track the pathway between the moving object and the tracker
- ✓ View the 3D pathway between the Tracker and the moving object
- ✓ Change the map type
- ✓ Search any location in the map
- ✓ Zoom in or Zoom out of the map

9. A brief Discussion on How this application Works:

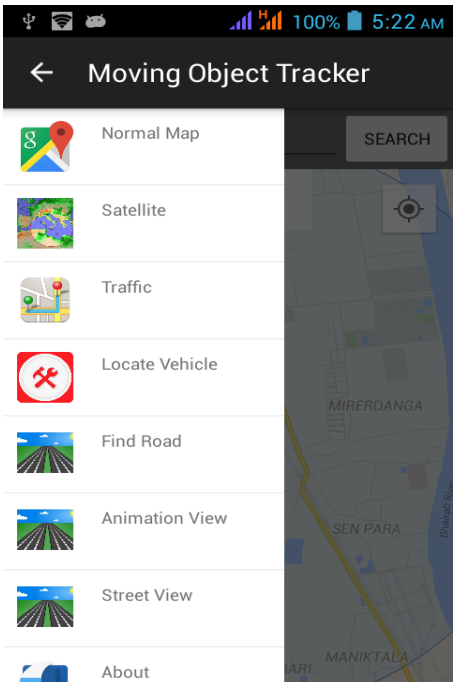
- First when you login with proper username or password, you will get your current location in the map.



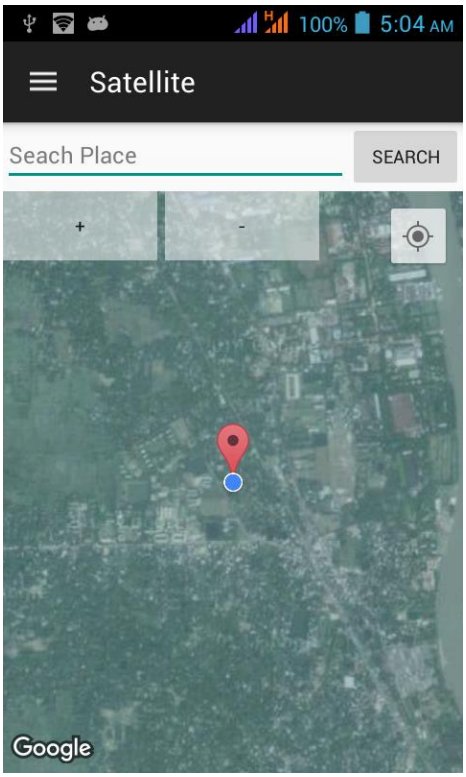
- You can search place by place name.



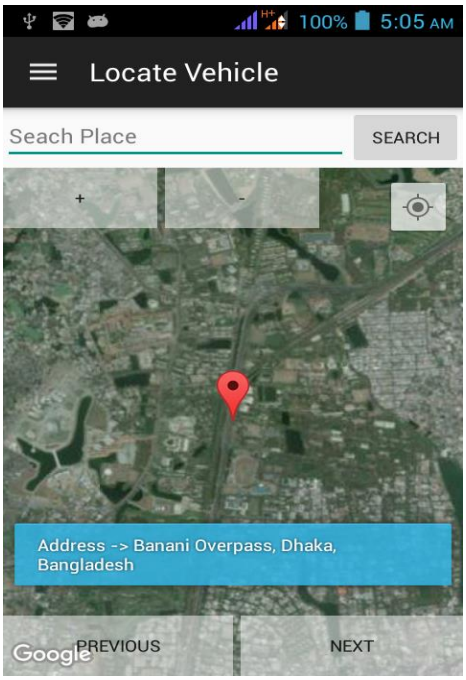
- Here’s the list of features you can do with this map.



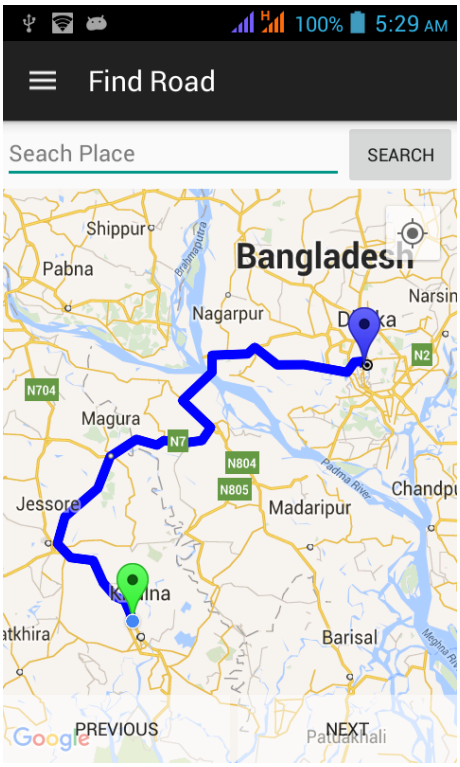
- One can change the map type. Here’s the image of the satellite map.



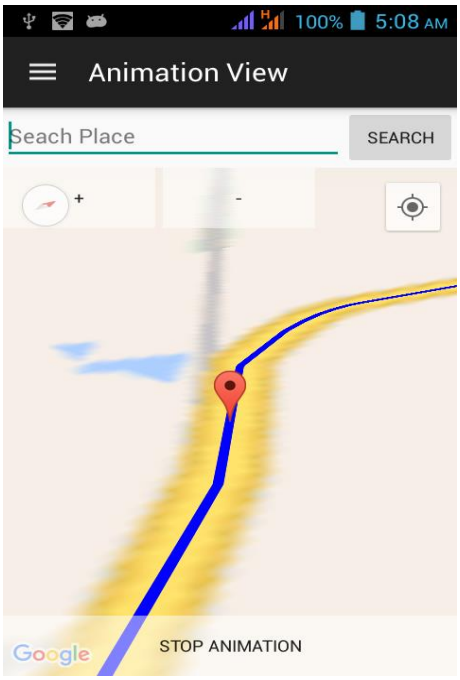
- One can see the current position of the moving object.



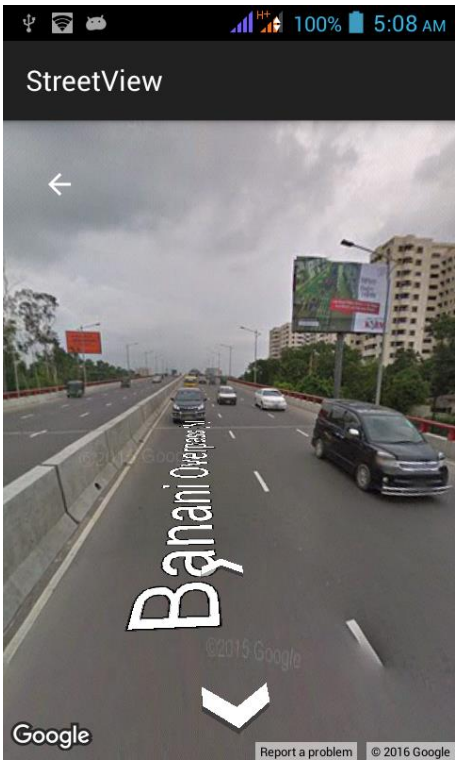
- Pathway from the app position to the object's current position



- 3D animated pathway from your current position to moving object's current position.



- 360 degree street view of the current position of the object.



10. Limitations:

- ✓ The application is used to track only one moving object.
- ✓ If we could make our project for a GPS module tracking it would be more helpful.

11. Improvement:

We have a huge future plan with this project:

- The app should work for multiple objects.
- There should be an alarm system when we reach the current position of the object.
- There should go a message in a remote phone, when we reach at the current position of the object.

12. Conclusion:

We started working with android earlier in this semester. And decided to do the project with android platform. Finally, talking with our project supervisor, we decided to work with map. We work throughout the semester. As a result of our hard working, finally we complete the project successfully. Though the app has some limitations, we have tried our best. As a result of this, the app is in it's current position. We also have a huge future plan with this application.

13. References:

- ✓ **The Java SE 7 Documentation by Oracle Corporation**
- ✓ **Google API**
- ✓ **Tech Academy**
- ✓ **Android Documentation**