Friends And Family Location Tracker Using Gps Technology

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Abstract- *The project that is dearly suggested is real-time family tracking by GPS application. This application can be used to track our family anywhere to ensure their safety. The main purpose of this application is to know the position of our children or loved ones at the time and with this we can reduce the increasingly contagious social phenomena in our country. To track the location the app needs access to the location so user should allow the app to access their location. There will be a problem that needs to resolved among them is to retrieve information from time to time to get accurate location reading, need to ensure the location of each other is connected. We also provided a messenger facility that help's the user to interact with each other.*

I. INTRODUCTION

1.1 OVERVIEW

The world is now developing into advanced development, technology mobile shows immense growth. Today mobile smartphone is almost everything in single human life. Every aspect of our life is influenced by this technology. It can deal with many functions such as email, play games, browse the internet for an information and access to social networking sites such as Facebook, YouTube, Google and etc.

We can't be ever with our family members to ensure there security. So we also can use mobile phones to get there location with the help of this application using GPS and to get current location of user Firebase-Realtime is used. user can also chat with family members and friend with messenger provided by this app.user can also make call with our friends and family. These security goals are achieved by the Android System, Global Positioning System (GPS), Firebase Database Technologies. The proposed application must be installed in all the family members and friend's smart phones and these smart phones uses GPS service where GPS is used to track location.

1.2 OBJECTIVE

The main objectives of this system are helps you to stay in touch with the most your **family** sharing **location** securely. We can also chat with other family members using the proposed system and call them. Proposed application gives accurate and current live location.

1.3 LITERATURE SURVEY

This chapter is about literature review to focus comparing with existing application and to reviewing the techniques that have been proposed by the result from many researches. From reviewing the techniques, we can know how implement a sharing location mobile application. Related works for this project will be discussed as well.

[1] Mohammad izwan bin Idris/2019, FAMILY TRACKING REAL-TIME.

Can monitor children everywhere, Can reduce social phenomena, The safety of the children is awake. Sending the location in SMS. The scope of this study is aimed at this application can tracked our family any where. the purpose of this app was created to know the position of our children or loved ones at the time.

[2] Steven D. Blatt, MD/2018, Social Issues Affecting Children.

To mature emotionally and socially. care by a loving ,an adult can provide gives a child the self -confidence, resiliency to cope effectively with stress. To thrive, a child must experience the consistent and ongoing care by a loving, nurturing caregiver, whether that person is a parent or substitute caregiver. The security and support that such an adult can provide gives a child the self-confidence and resiliency to cope effectively with stress.

[3] Guohua MinMark Schneider /2011, Systems and methods of wireless position tracking.

Position tracking involves identifying an entity's location in a predefined environment by comparing the signal strength at each receiver position ,a position tracking system can use triangulation or trilateration to determine the position of the tag. wireless position tracking of mobile handheld, wireless, and wired devices Position and orientation tracking

systems and methods include a transmitting antenna transmitting a radio frequency (RF) signal.

[4] Patrick W. Giraldin Regan E. Kelly Timothy W. Giraldin /2000, System for real-time location of people in a fixed environment.

A system is provided for tracking in real-time the location of a group of individuals within a defined environment, for providing information to an individual user about the location of any other individuals of the group and for gaining assistance to locate and reunite lost individuals. identification tags receiving a radio signal. Tag worn by each individual of the group, has means for communicating with each Tag as it moves with the individual through the environment and means for using the communication to determine the position of the Tag in the environment. The system also uses strategically placed ID stations distributed within the environment for users to activate a request that the system locate members of the group or obtain help in assisting lost

1.3.1 SUMMARY

Based on the literature review on the previous existing paper and journal, it's still a new technology and needs use little combination technology to make sure this project was done. . Google Map is an important part of this project because it provides map, it's no time to make an own map. GPS can provide coordinate location and Google map can use that coordinate to view tracking point is a good combination in this project.

II. SYSTEM ANALYSIS

The system study is to provide the description about the existing system, its limitations and proposed system, its advantages of the project.

2.1 EXISTING SYSTEM

This project refers to existing application which they used same method by using map such as, Glympse , GeoZilla and Find My Friend but this application has different function and advantage.

2.1.1 GLYMPSE

Glympse is a built-for-mobility SaaS leader that helps companies empower their customers by eliminating the anxiety and uncertainty around product and service deliveries. We pioneered real-time temporary sharing technology, and our powerful platform leverages that intelligence to unite key marketing, commerce and service engagement points into a single interactive and easy-to-use customer experience. Usually, people use this application for:

- To find out friend location
- Let our wife or husband know when goes work or home
- To tell parent that child safe while cycling or running
- To find friends if they all going concert or festival
- To notice if client late when stuck in traffic
- Share to friend about route with friend in Facebook or Twitter
- To notice if got some emergency cases to quickly

2.1.2 Geozilla

Geozilla is for business and family position by using GPS. For family, free geolocation app to keep family safe Safety monitoring with popular gadgets Location alerts to prevent emergencies. For business, White label partnerships with Telecoms Affiliate and licensing for IoT manufacturers Product licensing for logistics companies.

- To find out friend or family about location history on a daily life
- Can force the device to allocate location manually and update friend and family location when they moved around
- To store location when out network going down, and send back to GeoZilla server if network going back online
- Send a notification for request allocation to update if a member goes offline. They will receive some notification when back online.
- Can leave some come notes and check in to tell family and friends if you are lost.
- Trackback if phone if lose.

2.1.3 DISADVANTAGES

•Less details are present in map layout
•There is no messenger to chat
•There is no call facility
•At a time only one person location can be viewed
We can add members with code only .

2.2 PROPOSED SYSTEM

proposed application uses real-time firebase to update location. This application allows to search and add members

with phone number or username.All added family members and friend location is displayed in map with marker.Messenger is added to chat with friends and family members.This application allows us to call with friends and family members.

III. SYSTEM REQUIREMENTS

The requirements specification is a technical specification of requirements for the software products. It is the first step in the requirements analysis process; it lists the req uirements of a software system including functional, performance and security requirements. The requirements also provide usage scenarios from a user, an operational and an administrative perspective. The purpose of software requirements specification is to provide a detailed overview of the software project, its parameter and goals. This describes the project's target audience and its user interface, hardware and software requirements.

3.1 HARDWARE REQUIREMENTS

Processor : minimum Intel core i5
RAM : minimum 4 Gb
Hard Disk : minimum 500 Gb

3.2 SOFTWARE REQUIREMENTS

Platform : Windows 10
Language : Java , Kotlin
IDE : Android Studio
Database : Firebase Realtime

3.3 SOFTWARE DESCRIPTION

Software Description is a technical specification of requirements of software products. This specifies the environment for development, operation and maintenance of the product**.**

3.3.1 ANDROID STUDIO

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems or as a subscription-based service in 2020. It is a replacement for the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development.

Android Studio was announced on May 16, 2013 at the Google I/O conference. It 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.

On May 7, 2019, Kotlin replaced Java as Google's preferred language for Android app development. Java is still supported, as is C++.

3.3.2 JAVA

Java is a class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let application developers write once, run anywhere (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. The Java runtime provides dynamic capabilities (such as reflection and runtime code modification) that are typically not available in traditional compiled languages. As of 2019, Java was one of the most popular programming languages in use according to GitHub, particularly for client-server web applications, with a reported 9 million developers

3.3.3 XML

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. The World Wide Web Consortium's XML 1.0 Specification of 1998 and several other related specifications all of them free open standards—define XML.

The design goals of XML emphasize simplicity, generality, and usability across the human languages.

Although the design of XML focuses on documents, the language is widely used for the representation of arbitrary data structures such as those used in web services.

Several schema systems exist to aid in the definition of XML-based languages, while programmers have developed many application programming interfaces (APIs) to aid the processing of XML data.

3.3.4. KOTLIN

Kotlin is a cross-platform, statically typed, general-purpose programming language with type inference. Kotlin is designed to interoperate fully with Java, and the JVM version of its standard library depends on the Java Class Library, but type inference allows its syntax to be more concise. It was first introduced by JetBrains in 2011 and a new language for the JVM. Kotlin is object-oriented language, and a "better language" than Java, but still be fully interoperable with Java code. Kotlin is sponsored by Google, announced as one of the official languages for Android Development in 2017. Key Features of Kotlin: Statically typed – Statically typed is a programming language characteristic that means the type of every variable and expression is known at compile time. Although it is statically typed language, it does not require you to explicitly specify the type of every variable you declare. Data Classes– In Kotlin, there are Data Classes which lead to auto-generation of boilerplate like equals, hash Code, to String, getters/setters and much more. Concise – It drastically reduces the extra code written in other object-oriented programming languages. Safe – It provides the safety from most annoying and irritating Null Pointer Exceptions by supporting nullability as part of its system. Every variable in Kotlin is non-null by default.

3.3.5 FIREBASE

Store and sync data with our NoSQL cloud database. Data is synced across all clients in real time, and remains available when your app goes offline. The Firebase Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in real time to every connected client. When you build cross platform apps with our iOS, Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data.

The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, real-time events continue to fire, giving the end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically. The Realtime Database provides a flexible, expression-based rules language, called Firebase Realtime Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase

Authentication, developers can define who has access to what data, and how they can access it. The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you can build a great real time experience that can serve millions of users without compromising on responsiveness. Because of this, it is important to think about how users need to access your data then structure it accordingly.

IV. SYSTEM DESIGN

System design is the process of planning a new system or to replace the existing system. Simply, system design is like the blueprint for building, it specifies all the features that are to be in the finished product.

4.1 SYSTEM ARCHITECTURE

System architecture is the conceptual model that defines the structure, behavior and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

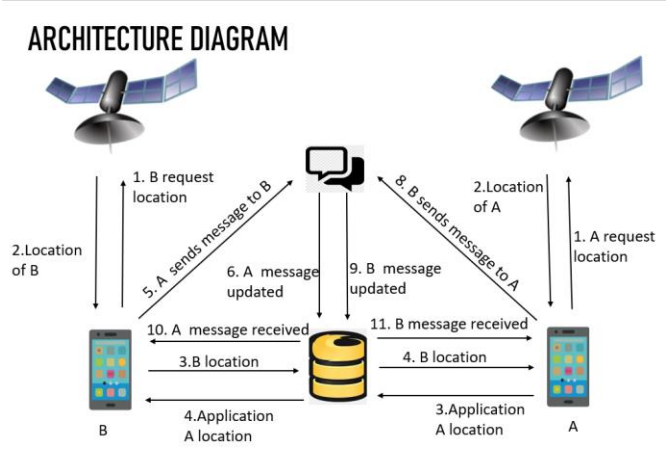


Figure 4.1 Architecture diagram

4.2 UML DIAGRAM

Use Cases are typically used to describe the typically visible interactions that the system will have with users and external systems.

In This Use Case diagram there are three actors such as user A ,user B and Database . The actors interact each other to run the system user A and user B log in into system there login credentials are saved in database ,when user gives

request to login it is verified with the data stored in the database.

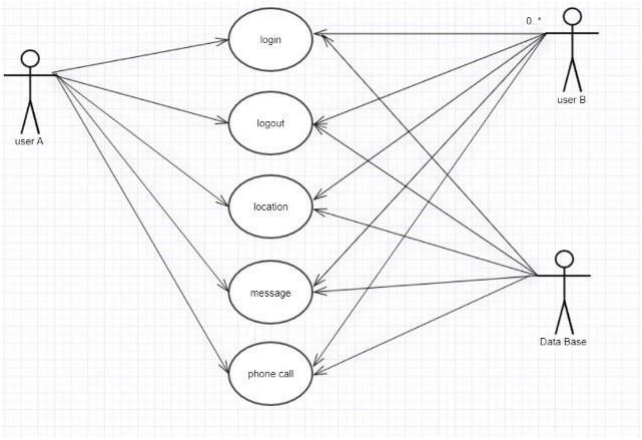


Figure 4.2.1 Use case diagram for Friends and Family Location Tracker using GPS Technology.

4.2.2 CLASS DIAGRAM

A class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among, objects.

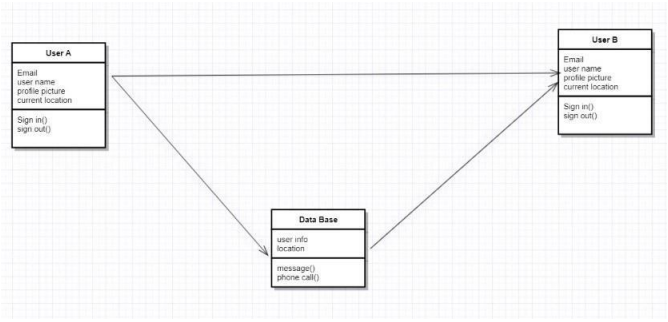


Figure 4.2.2 Class diagram for Friends and Family Location Tracker using GPS Technology.

4.2.3 ACTIVITY DIAGRAM

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. The issuer registers with their email id and create the course and add student. The issuer creates the certificate. The student login with their email id. If the server does not recognize the student, it stops the process otherwise it allows the student to login the next page. The certificate number is stored in the blockchain.

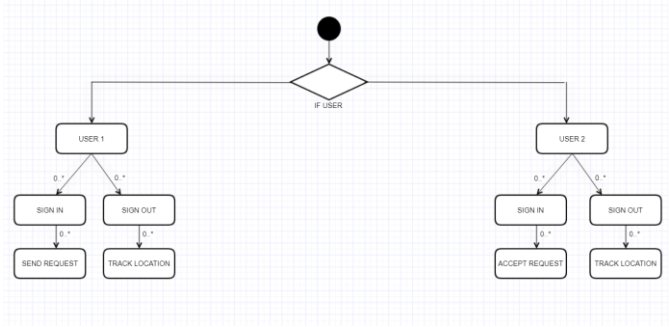


Figure 4.2.3 Activity diagram for Friends and Family Location Tracker using GPS Technology.

4.2.4 SEQUENCE DIAGRAM

A Sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. The issuer can add new student and the new course. The student can register for course and the view students details. The issuer provide the score and certificate to student. The certificate is shared by the student to the employee, The employee verify the certificate through blockchain technology platform.

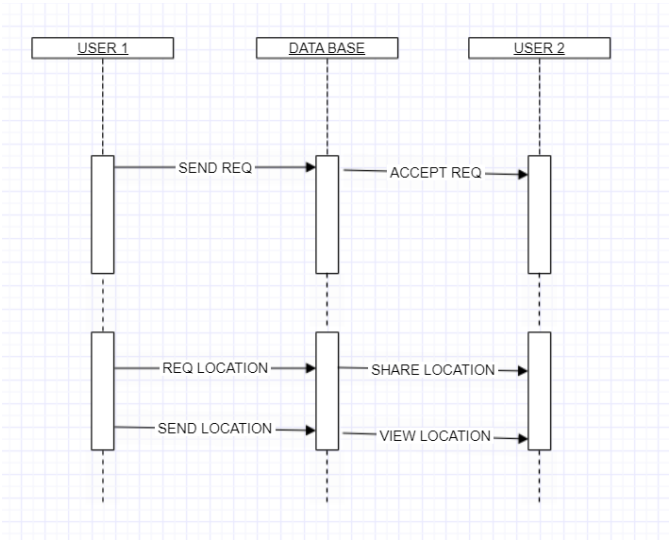


Figure 4.2.4 Sequence diagram for Friends and Family Location Tracker using GPS Technology.

4.2.5 COLLABRATION DIAGRAM

Another type of interaction diagram is the collaboration diagram. A collaboration diagram represents a collaboration, which is a set of objects related in a particular context, and interaction, which is a set of messages exchange among the objects within the collaboration to achieve a desired
outcome.

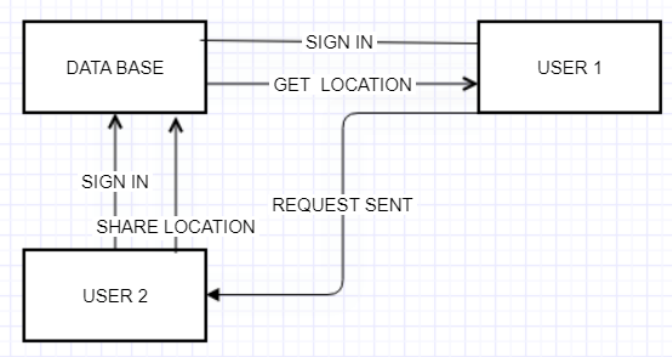


Figure 4.2.5 Collaboration diagram for Friends and Family Location Tracker using GPS Technology.

V. SYSTEM IMPLEMENTATION

5.1 LIST OF MODULES

- sign in, sign out and sign up
- Adding and Removing members
- Getting and Displaying Location
- Sending and Receiving Message

5.2 MODULE DESCRIPTION

The application consists of user and their family members and the system is designed in such way to interact with them. This system allows to create a user and user can sign in or sign out. The proposed system will display all your friends and family location in the map. The user is allowed to add the member or remove the member. This system allows user to send message and receive messages from friends and family members

5.2.1.FIREBASEMANAGEMENT

Most apps need to know the identity of a user. Knowing a user's identity allows an app to securely save user data in the cloud and provide the same personalized experience across all the user's devices. Firebase Authentication provides backend services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook and Twitter, and more. Firebase Authentication integrates tightly with other Firebase services, and it leverages industry standards like OAuth 2.0 and OpenID Connect, so it can be easily integrated with your custom backend. Authentication service of Firebase is used to manage the issuer and student credentials. User registration sign in and forget password features for the application are provided.

5.2.2 ADDING AND REMOVING USERS

Here we can able to add a member and remove the members from our friend list.

5.2.3 MANANGING LOCATION

When we give them a request or by accepting the request, we can able to share our current location to them.

5.2.4 SENDING AND RECEIVINGMESSAGES.

Here we can able to chat with them using chat application by sending and receiving a message.

VI. TESTING

Testing is the process of executing a program or application with the intent of finding software bugs, and to verify that the software product is fit for use.

6.1 UNIT TESTING

Unit testing is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use. In this project, all statements are executed properly. All units of program programs are tested in different computer. And the result of the project is same in all system.

6.1.1 TEST OBJECTIVES

- Collection of user details
- save users data into database
- Collection of users location
- Displaying of user location
- Log out from the app.

ID	TEST CASES	PRE CONDITIONS	EXPECTED RESULTS	ACTUAL RESULTS	PASS /FAIL
BT001	Registration Of user	User details	Successfully login	Successfully login	PASS
BT002	Collecting users' current location	User location	Successfully Location updated	Successfully Location updated	PASS
BT003	Displaying Location	Displaying all location in map	Successfully displayed	Successfully displayed	PASS
BT004	Sending message to other user	Sending message	Message sent	Message sent	PASS
BT005	Receiving Message from others	Receiving message	Message received	Message received	PASS
BT006	Logging out of the application	Logging out	Logged out	Logged out	PASS

6.1.2 TEST CASES OF FRIENDS AND FAMILY LOCATION TRACKER USING GPS TECHNOLOGY

6.2 INTEGRATION TESTING

Integration testing (sometimes called integration and testing, abbreviated I&T) is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before verification testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing.

6.3 SYSTEM TESTING OF FRIENDS AND FAMILY LOCATION TRACKER USING GPS TECHNOLOGY

The listed tests were conducted in the software at the various development stages. Unit testing was conducted. The errors were debugged was performed. The integration testing will be performed once the system is integrated with other related systems like Inventory, Budget etc. The results were analyzed, and the appropriate alterations were made. The test results proved to be positive and henceforth the application is feasible, and test approved.

VII. RESULT AND DISCUSSION

7.1 RESULTS

The main idea is to make a live location app to get our friends and family to view their live location and manage their personal travels with them to give a live and real-location of them self's with this app to get their own destination routs to their needs and even they can have live interaction phone call included in this app manage their phone calls and location. merit-one of the family tracker app mainly for child or aged person to avoid there missing routs.

7.2 DISCUSSION

This app was made to be user friendly so even normal people can also access this app and manage their location with others without any complications the app gives a live location as we given a Firebase real-time to track a other people's location live and continuously without any delay this app is fully secured where unknown people cannot access your location only they can view your location with your permission**.**

VIII. CONCLUSION AND FUTUREENHANCEMENT

8.1 CONCLUSION:

Thus, we conclude that friends and family location tracker is an android application which is user friendly and also used to get the current location of your loved once to ensure their safety and security. we can also make calls and chat with them.

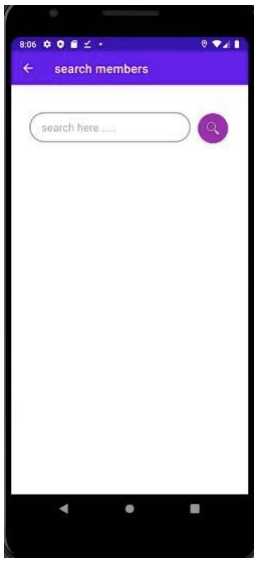
8.2 FUTURE ENHANCEMENT

In future we can enhance this project by upgrading with new features like adding a VOIP (Voice Over Internet Protocol) in the project.

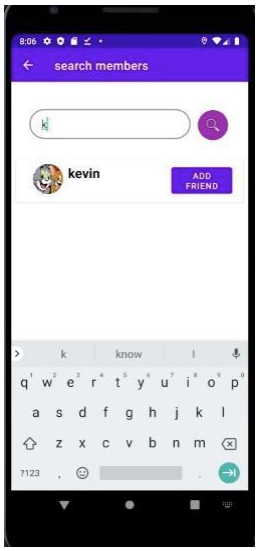
IX. OUTPUT SCREENSHOTS

Login page

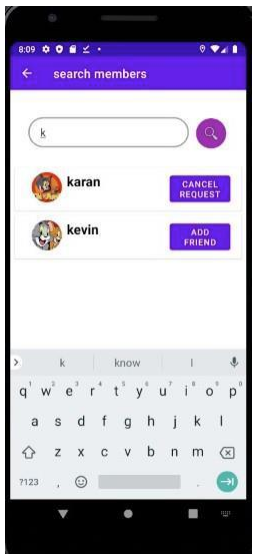
Registration page



Search friend



Add friend



Add friend request

View friends current location

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