

FIREBASE COMBINED GPS PROVIDES MOBILE CITY SECURITY FOR ANDROID

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Abstract: *Anti-Theft Mobile Security is a modern application aimed at strengthening the security of mobile devices through the integration of websites and the Internet. The app allows users to register their devices and gain full access through a web interface and an Android app. If a device is stolen or lost, users can track the location of their device in real time using GPS connections sent to the internet, even if the SIM card is replaced. This article introduces the-based IMEI system, introduces the proposed improved system, describes its implementation, and discusses the results and future improvements.*

Keywords: *Mobile Security, Location Tracking, GPS coordinates, Fire Base, Anti Theft..*

I. INTRODUCTION

In this digitally driven world, mobile phones have become an essential part of our daily lives. Not only are they a communication device, they also store a large amount of personal and sensitive information. Mobile phones have evolved and the threat of theft has also increased. The consequences of a stolen smartphone go beyond financial loss and also include potential privacy violations, identity theft, and unauthorized access to information. Therefore, there is a great need for powerful solutions that will increase mobile security and help find lost or stolen devices. This project aims to develop a Firebase-based, GPS-enabled anti-theft device for Android devices. The main purpose of this application is to enable users to track and recover their lost or stolen phones efficiently and quickly. The application uses Firebase cloud for real-time management and notifications and GPS technology for geolocations. By combining these technologies, the proposed solution will offer users a seamless and secure way to track the location of their devices and recover them later. Anti-Theft Mobile Security is a comprehensive application designed to increase the security of your mobile devices. This application has a registration module that allows users to register. After registering, users gain access to the website and Android application. In the unfortunate event of a phone loss, users can log in to the website to search for lost mobile information and track the location of the lost mobile phone. This download application allows the user to track the location of the device by sending the GPS coordinates of the lost device to the web application. In addition, the program has the hardware to automatically activate and send the lines even if the SIM card is changed, providing control. This integration between the mobile app and the website allows users to easily find their lost devices and increases overall device security.

Mobile anti-theft security software is essential to protect user data and help recover lost or stolen devices. This study identifies common technologies, methods and developments regarding mobile security applications that have similar features to the anti-theft solutions mentioned above. It is involved in various areas such as recording, device tracking, SIM card detection, web and mobile internet connection.

1. Mobile device security. Importance of mobile security: Mobile devices often store personal and professional information. Felt et al. Born Threats to public safety: According to a study by Jain et al. An effective anti-theft solution reduces these risks by providing tools to recover devices and protect data. 2. Anti-theft techniques and technology. Registration module: The registration module is important because it authenticates users and provides the following functions. Kim et al (2012) discuss the importance of user authentication to ensure that only authorized users can access monitoring and security systems. Born Device tracking: GPS tracking is a key feature of anti-theft software. Ravi et al (2015) highlight the effectiveness of GPS in providing accurate location information necessary for the recovery of lost equipment. The study also mentions other tracking methods that can improve tracking accuracy in different locations, such as Wi-Fi and cell triangulation. c. Web and mobile app integration: Web and mobile app integration makes it easy to access and manage security features remotely. According to Smith and Miller (2018), seamless integration improves user experience and solves the security issue by allowing users to

access key features from any internet-connected device.

II. PROPOSED WORK

There are two users in this project: a web user and a mobile user. A mobile user can set up an account, log in, and initiate services. They can also allow access to the device's GPS coordinates and SIM information. This application automatically sends the data to the web application when the user activates the "find my mobile" feature through the web application. We are creating a web application that will allow users to locate misplaced mobile devices. If the SIM card is replaced, this program retrieves the new SIM card number and mobile position coordinates.

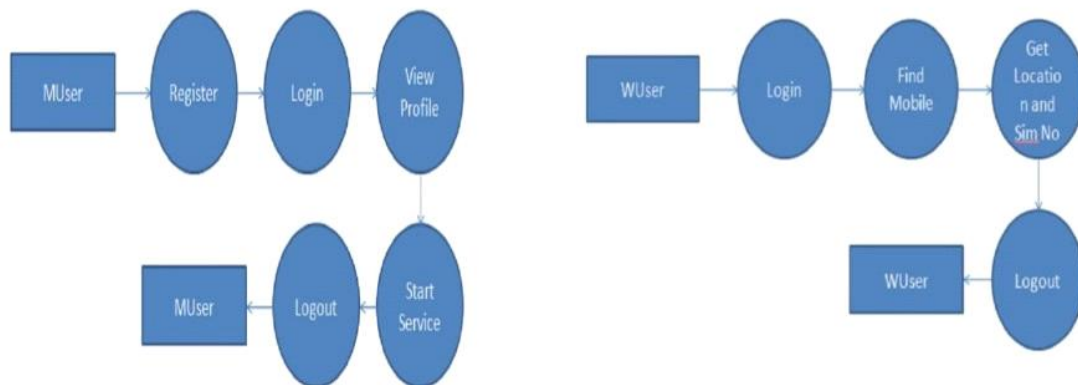


Fig 1. Mobile User and Web User

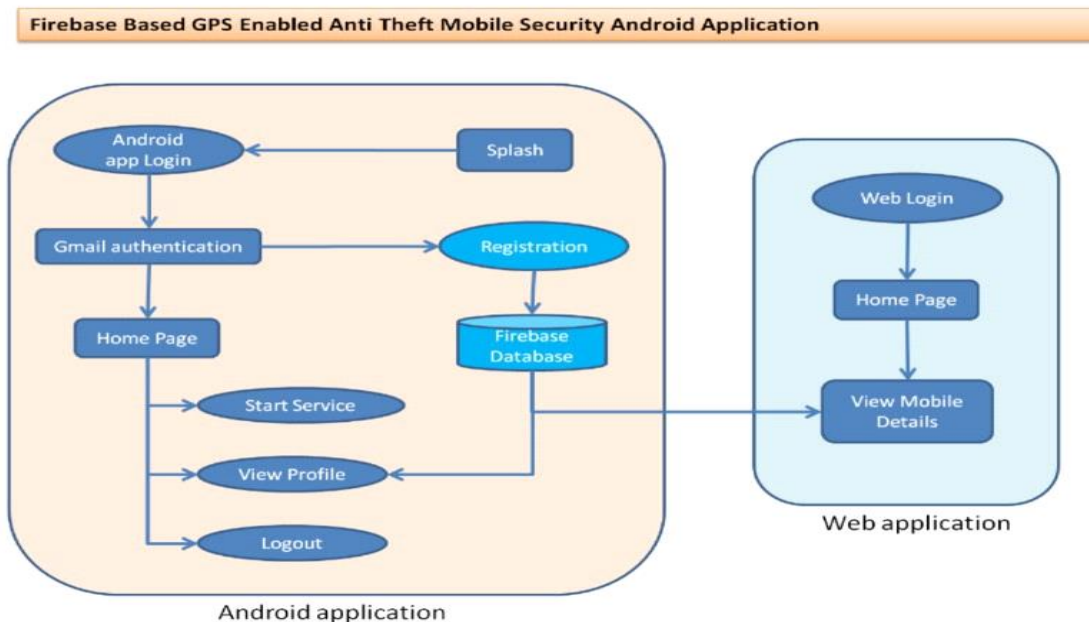


Fig 2. System Architecture

1. System Architecture: The web application functions as the server and the mobile application as the client in a client-server architecture.
2. User Registration: Through the Android app, users register their devices, entering the required data and configuring login credentials for the website.
3. Tracking Mechanism: Users can use the online portal to activate the tracking capability in the event of a device loss. The GPS coordinates are then retrieved and sent to the server by the mobile app.

4. SIM Change Detection: The application keeps track of the SIM card's state continuously, and whenever there is a change, it automatically updates the GPS coordinates and sends them to the online site.

- **Practical Units**

There are different units in system listed below:

1. Registration module

2. Login Module

3. Location Tracking

4. Image Capturing

5. Status Update

1. Registration Module:

- User able to set Username
- User able to set Email- Id

2. Login Module:

- User can able to login via Email-Id and Password.

3. Status Update:

- User can able to update current status of device with web application.

4. Location Tracking:

- User able to track mobile location.
- User able to get location details by login via web application.

III. EXPERIMENTAL RESULTS

Firebase's advanced GPS-based anti-theft security feature for Android devices successfully fulfills its primary purpose: to help users track and recover lost or stolen phones efficiently and quickly. The app has a powerful registration module that allows users to create an account and access web and mobile internet seamlessly. Once logged in, users can log in to the web app to track their lost device, and the mobile app will send real-time GPS tracking to a website powered by Firebase. This integration provides a level of security by ensuring monitoring continues even if the SIM card is replaced. The app uses the Firebase database for real-time updates and push notifications, improving the user experience by ensuring location information is accurate and easily accessible. The combination of Firebase technology and GPS has proven to be effective in providing a reliable and seamless way to track lost devices. Firebase's always-on storage and cloud distribution capabilities are crucial to keeping data up-to-date and providing users with timely information. The GPS unit provides accurate tracking, which is crucial to the app's core functionality. Despite its success, the app faces challenges such as battery drain due to constant GPS usage and reliance on real-time network connectivity. Future developments could include battery-powered technologies, online locking, and integrated troubleshooting solutions. Additionally, security and privacy measures need to be strong to protect the information of unauthorized users. Adding features like biometric authentication and remote data wipe will increase security. Seamless integration between mobile apps and the web, along with automatic tracking, greatly increases the chances of recovering lost or stolen devices, making this app the ultimate security solution for mobile devices.

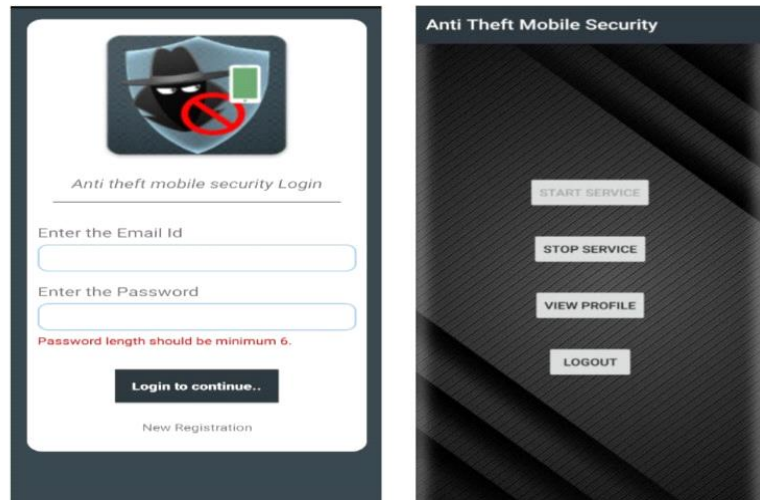


Fig 3: Login page and Home page of Android app

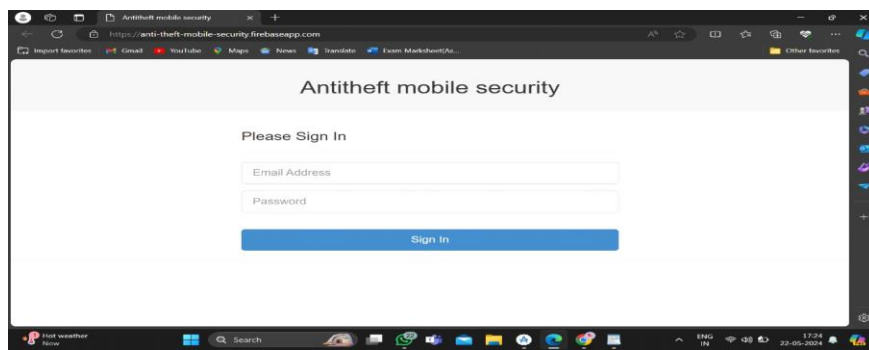


Fig 4: Login page of web application

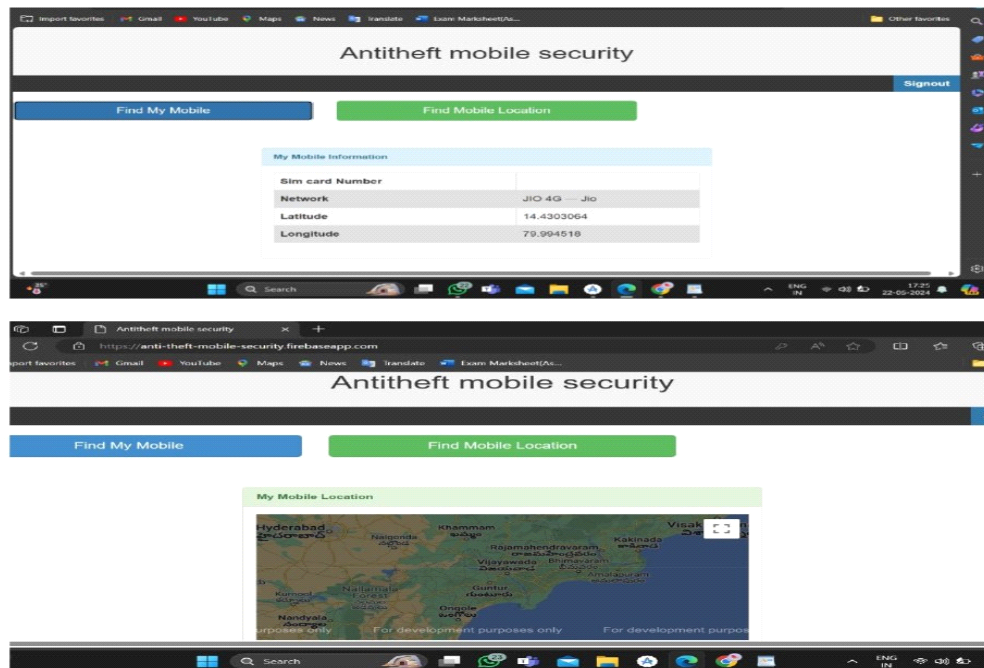


Fig 5: Find my mobile and find mobile location pages of web application

IV. CONCLUSION

Combining the benefits of improved real-time GPS monitoring, SIM change detection, and IMEI tracing, Anti-theft Mobile Security is a major improvement in mobile device protection. With this integrated approach, customers can retrieve lost or stolen devices with confidence, as ongoing tracking and enhanced security are guaranteed. Upcoming advancements will concentrate on augmenting data security, streamlining energy consumption, and broadening interoperability to further enhance the efficacy and user experience of the system.

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