Safe Mobility Using Digitalized RC Book

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***Abstract*—**At a time when travelling alone for women is not free from risks, given the rise in crimes against the fair sex, a mobile app developed by a computer science graduate from Andhra Pradesh has come as a breather. Safe Mobility app has the unique feature of tracking the people and has a separate database that sends alert to the control room and family members in case if the travelling people face any inconvenience during the journey. The app can send alerts to the Police control room, your family members, friends, relatives or even volunteers in case a lone traveller especially woman does not reach her destinations safe. If there is any deviation in the route, the app will send alerts to the emergency contacts..

Keywords*—Safe Mobility app; formatting; tracking; send alerts; emergency contacts/*

I. INTRODUCTION

A. PHP

The safety for women has become a greater threat in the recent times. The products like electronic gadgets introduced into the market are highly focused on the safety for women users. PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. Instead of lots of commands to output HTML (as seen in C or Perl), PHP pages contain HTML with embedded code that does "something" (in this case, output "Hi, I'm a PHP script!"). The PHP code is enclosed in special start and end processing instructions <?php and ?> that allow you to jump into and out of "PHP mode."

What distinguishes PHP from something like client-side JavaScript is that the code is executed on the server, generating HTML which is then sent to the client. The client would receive the results of running that script, but would not know what the underlying code was. You can even configure your web server to process all your HTML files with PHP, and then there's really no way that users can tell what you have up your sleeve. The best things in using PHP are that it is extremely simple for a newcomer, but offers many advanced features for a professional programmer. Don't be afraid reading the long list of PHP's features. You can jump in, in a short time, and start writing simple scripts in a few hours.

B. DATABASE – MY SQL

MySQL is the world's most popular open source database. With its proven performance, reliability, and ease-of-use, MySQL has become the leading database choice for web-based applications, used by high profile web properties including Facebook, Twitter, YouTube, and all five of the top five websites*. Additionally, it is an extremely popular choice as embedded database, distributed by thousands of ISVs and OEMs.

MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress.MySQL is written in C and C++. Its SQL parser is written in yacc, but it uses a home-brewed lexical analyzer. MySQL works on many system platforms, including AIX, BSDi, FreeBSD, HP-UX, eComStation, i5/OS, IRIX, Linux, macOS, Microsoft Windows, NetBSD, Novell NetWare, OpenBSD, OpenSolaris, OS/2 Warp, QNX, Oracle Solaris, Symbian, SunOS, SCO OpenServer, SCO UnixWare, Sanos and Tru64. A port of MySQL to OpenVMS also exists.

C. 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. It is a replacement for the Eclipse Android Development Tools (ADT) as the primary IDE for native Android application development.

D. ZXING BARCODE SCANNER

The application Barcode Scanner is an Android app, from the open-source project ZXing (short for Zebra Crossing), that allows an Android device with imaging hardware (a built-in

camera) to scan barcodes or 2-D 2D graphical barcodes and retrieve the data encoded. Information encoded often includes web addresses, geographical coordinates, and small pieces of text, in addition to commercial product codes. This Android-based system has similar functionality to a hardware barcode reader. ZXing ("zebra crossing") is a barcode image processing library implemented in Java, with ports to other languages. It has support for 1D product, 1D industrial, and 2D barcodes.

ZXing is used by web search to make millions of barcodes on the web indexable. It also forms the basis of Android's Barcode Scanner app and is integrated into Google Product and Book Search.

E. RETROFIT NETWORKING LIBRARY

Retrofit Networking Library is a type-safe HTTP client for Android and Java. Retrofit is a REST client for Android, through which you can make easy to use interfaces which can turn any Android app into a powerful one. Retrofit can perform Async and sync requests with automatic JSON parsing without any effort.

F. GSON

GSON is Google's JSON parser and generator for Java. Google developed GSON for internal use but open sourced it later. GSON it reasonably easy to use, but in my opinion not as elegant as Jackson or Boon (the winner in my opinion). In this GSON tutorial I will take you through how to use GSON to parse JSON into Java objects, and serialize Java objects into JSON.GSON contains multiple APIs which you can use to work with JSON. This tutorial covers the Gson component which parses JSON into Java objects, or generates JSON from Java objects. In addition to the Gson component GSON also has a pull parser in the GSON JsonReader component.

II. EXISTING SYSTEM

Application called WatchMySafety, the android app developed by P.SriVidya, a native of Vijayawada, has the unique feature of sending alerts to the family members in case the travelling women face any inconvenience during the journey. The app can send alerts to your family members, friends, relatives or even volunteers in case a lone woman traveller does not reach her destinations safe. This app sends alert only based on time, if the passenger does not reach the destination in particular period of time. We have made changes in our app by sending alerts not only to family members but also to the Police control room. [1]. Today in the current global scenario, the prime question in every girl's mind, considering the ever rising increase of issues on women harassment in recent past is mostly about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a new perspective to use technology for women safety. "848 Indian Women Are Harassed, Raped, Killed Every Day!!" That's a way beyond HUGE number! We propose an idea which changes the way everyone thinks about women safety. A day when media broadcasts more of women's achievements rather than harassment, it's a feat achieved! Since we (humans) can't respond aptly in critical situations, the need for a device which automatically senses and rescues the victim is the venture of our idea in this paper. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable "Smart band" which continuously communicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes Human behavior and reactions to different situations like anger, fear and anxiety. This generates a signal which is transmitted to the smart phone. The software or application has access to GPS and Messaging services which is pre-programmed in such a way that whenever it receives emergency signal, it can send help request along with the location co-ordinates to the nearest Police station, relatives and the people in the near radius who have application. This action enables help instantaneously from the Police as well as Public in the near radius who can reach the victim with great accuracy. [2]. This paper describes about safe and secured electronic system for women which comprises of an Arduino controller and sensors such as temperature LM35, flex sensor, MEMS accelerometer, pulse rate sensor, sound sensor. A buzzer, LCD, GSM and GPS are used in this project. When the women is in threat, the device senses the body parameters like heartbeat rate, change in temperature, the movement of victim by flex sensor, MEMS accelerometer and the voice of the victim is sensed by sound sensor. When the sensor crosses the threshold limit the device gets activated and traces the location of the victim using the GPS module. By using the GSM module the victim's location is sent to the registered contact number. [3].

In current generation, people using smart phones have increased rapidly and hence, a smart phone can be used efficiently for personal security or various other protection purposes. The heinous incident that outraged the entire nation have waken us to go for the safety issues and so a host of new apps have been developed to provide security systems to women via their phones. This paper presents women security an Android Application for the Safety of Women and this app can be activated this app by a shaking the mobile, whenever need arises. This app identifies the location of place through GPS and sends a message comprising this location URL to the registered contacts and also send messages to near by mobile which are having this app. [4]. This paper describes about a safety electronic system for women, built in public transport vehicles such as cars, buses and auto-rickshaws as nowadays women are being molested, kidnapped and harassed by the

drivers. Hence implemented electronic system is fitted in the vehicle which has display, keypad, GPS, GSM and embedded board to control and interconnect all of the above. As journey is started passenger can enter her guardian, friend or relative mobile no, he/she is going to get all the notifications of the female passenger journey. First of all the driver's name, mobile number, vehicle registration number and the secure pin generated by passenger is sent by SMS to the concern person of passenger [5].

III. PROPOSED SYSTEM

The proposed system deals with the tracking of traveling passenger with the help of GPS. If the travelling path of the passenger deviates alert message is sent, unless the zone is set to safe zone by the user. The tracking is also done if the user gives instant alert message by selecting the panic button option if the user faces any sudden discomfort in the journey.

On clicking the app icon, splash screen appears, next to the splash screen login or signup screen appears. In signup page it asks for username, mobile number, aadhar number, email id, password. Upon successful registration One Time Password is sent to the registered mobile number. When OTP is added the account gets created.

Now the user can login to the account. After login in the home screen appears. Home screen consists of QR code button, start trip. User has to scan the QR code in the vehicle, now the user information, the vehicle owner's information, driver information, RC Book information gets stored in the database. Now the user has to set the destination and has to select start trip option. On selecting start trip the user is tracked until the user reaches the destination safe.

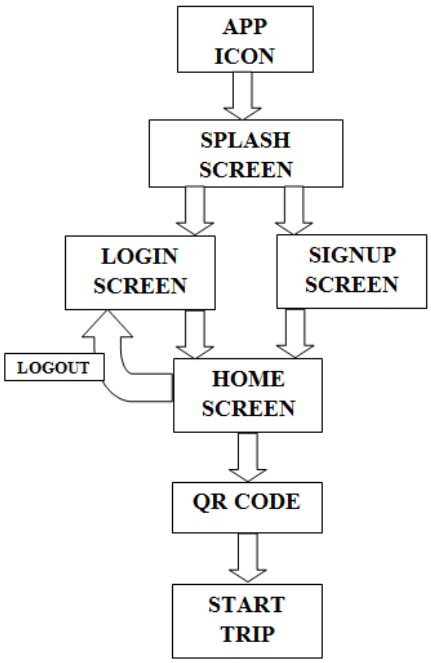

Fig 1 ; Block Diagram

QR Code

QR code (Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed in 1994 for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. In practice, QR codes often contain data for a locator, identifier, or tracker that points to a website or application. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji) to store data efficiently; extensions may also be used. The Quick Response system became popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcodes. Applications include product tracking, item identification, time tracking, document management, and general marketing. A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted. The required data is then extracted from patterns that are present in both horizontal and vertical components of the image.

Uses

QR codes have become common in consumer advertising. Typically, a smartphone issued as a QR code scanner, displaying the code and converting it to some useful form(such as a standard URL for a website, thereby obviating the need for a user to type it into a web browser). QR code has become a focus of advertising strategy, since it provides a way to access a brand's website more quickly than by manually entering a URL. Beyond mere convenience to the consumer, the importance of this capability is that it increases the conversion rate: the chance that contact with the advertisement will convert to a sale. It coaxes interested prospects further down the conversion funnel with little delay or effort, bringing the viewer to the advertiser's website immediately, where a longer and more targeted sales pitch may lose the viewer's interest. Although initially used to track parts in vehicle manufacturing, QR codes are used over a much wider range of applications. These include commercial tracking, entertainment and transport ticketing, product and loyalty marketing and in-store product labeling.

Fig 2 ; QR Codes Used In Train Tickets In China

License

The use of QR code technology is freely licensed as long as users follow the standards for QR Code documented with JIS or ISO. Non-standardized codes may require special licensing. Denso Wave owns a number of patents on QR code technology, but has chosen to exercise them in a limited fashion. In order to promote widespread usage of the technology Denso Wave chose to waive its rights to a key patent in its possession for standardized codes only. In the US, the granted QR code patent is US 5726435, and in Japan JP 2938338. The European Patent Office granted patent "EPO 0672994". To Denso Wave, which was then validated into French, UK, and German patents, all of which expired in March 2015.

The text QR Code itself is a registered trademark and word mark of Denso Wave Incorporated. In UK, the trademark is registered as E921775, the word "QR Code", with a filing date of 03/09/1998.The UK version of the trademark is based on the Kabushiki Kaisha Denso (DENSO CORPORATION) trademark, filed as Trademark 000921775,the word "QR Code", on 03/09/1998 and registered on 6/12/1999 with the European Union OHIM (Office for Harmonization in the Internal Market). The U.S. Trademark for the word "QR Code" is Trademark 2435991 and was filed on 29 September 1998 with an amended registration date of 13 March 2001, assigned to Denso Corporation.

Risks

The only context in which common QR codes can carry executable data is the URL data type. These URLs may host JavaScript code, which can be used to
Exploit vulnerabilities in applications on the host system, such as the reader, the web browser or the image viewer, since a reader will typically send the data to the application associated with the data type used by the QR code. In the case of no software exploits, malicious QR codes combined with a permissive reader can still put a computer's contents and user's privacy at risk. This practice is known as "at tagging", a portmanteau of "attack tagging". They are easily created and can be affixed over legitimate QR codes.

On a smart phone, the reader's permissions may allow use of the camera, full Internet access, read/write contact data, GPS, read browser history, read/write local storage, and global system changes. Risks include linking to dangerous websites with browser exploits, enabling the microphone/camera/GPS, and then streaming those feeds to a remote server, analysis of sensitive data (passwords, files, contacts, transactions), and sending email/SMS/IM messages or DDOS packets as part of a botnet, corrupting privacy settings, stealing identity, and even containing malicious logic themselves such as JavaScript or a virus. These actions could occur in the background while the user is only seeing the reader opening a seemingly harmless web page. In Russia, a malicious QR code caused phones that scanned it to send premium texts at a fee of US$6 each.

View Model

The View Model class is designed to store and manage UI-related data in a life cycle conscious way. The View Model class allows data to survive configuration changes such as screen rotations.

The Android framework manages the lifecycles of UI controllers, such as activities and fragments. The framework may decide to destroy or re-create a UI controller in response to certain user actions or device events that are completely out of your control. If the system destroys or re-creates a UI controller, any transient UI-related data you store in them is lost. For example, your app may include a list of users in one of its activities. When the activity is re-created for a configuration change, the new activity has to re-fetch the list of users. For simple data, the activity can use the on Save Instance State() method and restore its data from the bundle in onCreate(), but this approach is only suitable for small amounts of data that can be serialized and deserialized, not for potentially large amounts of data like a list of users or bitmaps.

Live Data

Live Data is a data holder class that can be observed within a given lifecycle. This means that an Observer can be added in a pair with a Life cycle Owner, and this observer will be notified about modifications of the wrapped data only if the paired Lifecycle Owner is in active state. Lifecycle Owner is considered as active, if its state is STARTED or RESUMED. An observer added via observe For ever(Observer) is

considered as always active and thus will be always notified about modifications. For those observers, you should manually call remove Observer(Observer).An observer added with a Lifecycle will be automatically removed if the corresponding Lifecycle moves to DESTROYED state. This is especially useful for activities and fragments where they can safely observe Live Data and not worry about leaks: they will be instantly unsubscribed when they are destroyed. In addition, Live Data has on Active() and on Inactive() methods to get notified when number of active Observers change between 0 and 1. This allows Live Data to release any heavy resources when it does not have any Observers that are actively observing. This class is designed to hold individual data fields of View Model, but can also be used for sharing data between different modules in your application in a decoupled fashion.

Data Binding

The Data Binding Library works seamlessly with the Architecture Components to further simplify the development of your UI. The layouts in your app can bind to the data in the Architecture Components, which already help you manage the UI controllers life cycle and notify about changes in the data.

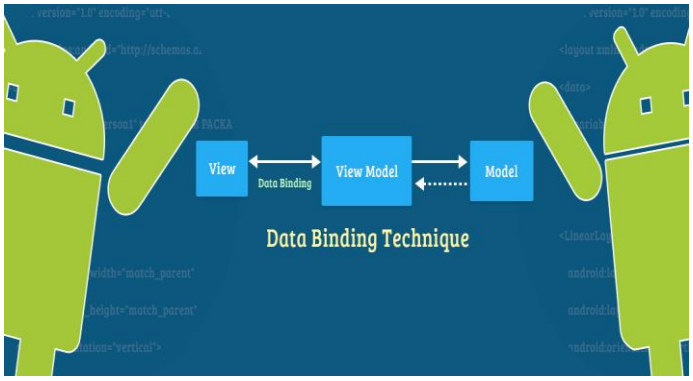

Fig 3; Data Binding

Networking

Retrofit

Retrofit is type-safe REST client for Android and Java which aims to make it easier to consume REST ful web services. Retrofit 2 by default leverages Ok Http as the networking layer and is built on top of it. Retrofit automatically serializes the JSON response using a POJO(Plain Old Java Object) which must be defined in advanced for the JSON Structure

OKHTTP

OkHTTP is an open source project designed to be an efficient HTTP client. It supports the SPDY protocol. SPDY is the basis for HTTP 2.0 and allows multiple HTTP requests to be multiplexed over one socket connection.

ProGuard

ProGuard is a Java class file shrinker, optimizer, obfuscator, and pre verifier. The shrinking step detects and removes unused classes, fields, methods, and attributes. The optimization step analyzes and optimizes the byte code of the methods. The obfuscation step renames the remaining classes, fields, and methods using short meaningless names. These first steps make the code base smaller, more efficient, and harder to reverse-engineer. The final pre verification step adds pre verification information to the classes, which is required for Java Micro Edition or which improves the start-up time for Java 6.Each of these steps is optional. For instance, ProGuard can also be used to just list dead code in an application, or to pre verify class files for efficient use in Java 6.ProGuard typically reads the input jars (or wars, ears, zips, or directories). It then shrinks, optimizes, obfuscates, and pre verifies them. Optionally, multiple optimization passes can be performed, each typically followed by another shrinking step. Pro Guard writes the processed results to one or more output jars (or wars, ears, zips, or directories). The input may contain resource files, whose names and contents can optionally be updated to reflect the obfuscated class names.

Google Play Services

With Google Play services, your app can take advantage of the latest, Google-powered features such as Maps, Google+, and more, with automatic platform updates distributed as an APK through the Google Play store. This makes it faster for your users to receive updates and easier for you to integrate the newest that Google has to offer.

The Google Play services client library

The client library contains the interfaces to the individual Google services and allows you to obtain authorization from users to gain access to these services with their credentials. It also contains APIs that allow you to resolve any issues at runtime, such as a missing, disabled, or out-of-date Google Play services APK. The client library has alight footprint if you use ProGuard as part of your build process, so it won't have an adverse impact on your app's file size.

The Google Play services APK

The Google Play services APK contains the individual Google services and runs as a background service in the Android OS. You interact with the background service through the client library and the service carries out the actions on your behalf.

An easy-to-use authorization flow is also provided to gain access to the each Google service, which provides consistency for both you and your users.

Maps SDK

With the Maps SDK for Android, you can add maps based on Google Maps data to your application. The API automatically handles access to Google Maps servers, data downloading, map display, and response to map gestures. You can also use API calls to add markers, polygons, and overlays to a basic map, and to change the user's view of a particular map area. These objects provide additional information for map locations, and allow user interaction with the map.

Audience

This documentation is designed for people familiar with Android development and object-oriented programming concepts. You should also be familiar with Google Maps from a user's point of view. This conceptual documentation is designed to let you quickly start exploring and developing applications with the Maps SDK for Android. You may also wish to refer to the reference documentation for specific details of classes and methods.

Location Services

Android gives your applications access to the location services supported by the device through classes in the android location package. The central component of the location framework is the Location Manager system service, which provides APIs to determine location and bearing of the underlying device (if available).

As with other system services, you do not instantiate a Location Manager directly .Rather, you request an instance from the system by calling get System Service (Context LOCATION SERVICE). The method returns a handle to a new Location Manager instance.

User Interface (UI)

In information technology, the user interface (UI) is everything designed into an information device with which a person may interact. This can include display screens, keyboards, a mouse and the appearance of a desktop. It is also the way through which a user interacts with an application or a website. The growing dependence of many companies on web applications and mobile applications has led many companies to place increased priority on UI in an effort to improve the user's overall experience.

IV. EXPERIMENTAL RESULTS

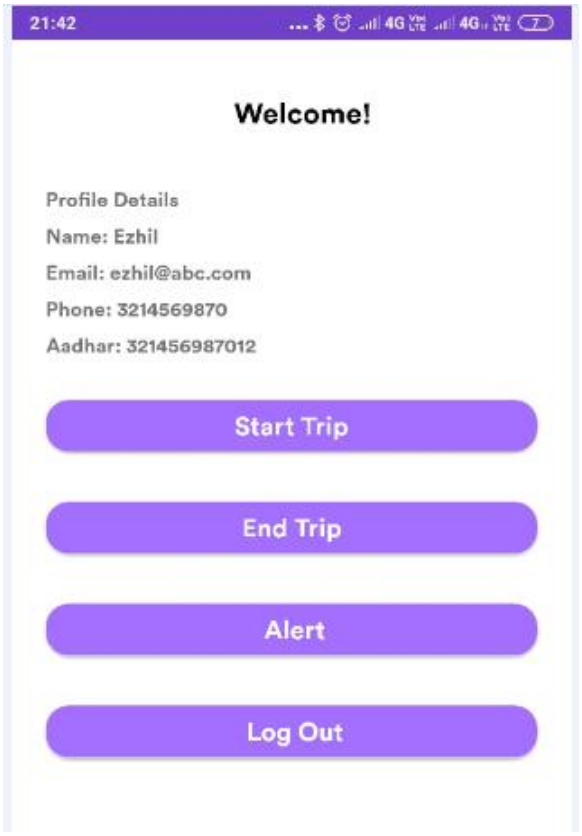

Fig 4 ; .Homepage

Application page after providing the necessary login details the homepage appears as above.

S.No	Vehicle Details	Entry Time	Entry Location	Exit Time	Exit Location
1	Driver's RC	2019-02-08 13:14:25	lat: 44.5/ long: 65.2	2019-02-08 13:14:25	
2	Driver's RC	2019-02-08 13:17:50	lat: 44.5/ long: 65.2	2019-02-08 13:17:50	
3	Driver's RC	2019-02-10 13:42:04	lat: / long:	2019-03-07 10:04:38	lat: / long:
4	Driver's RC	2019-02-10 13:42:04	lat: / long:	2019-03-07 10:04:38	lat: / long:
5	Driver's RC	2019-02-11 02:14:58	lat: / long:	2019-03-07 10:04:38	lat: / long:
6	Driver's RC	2019-02-11 06:53:18	lat: / long:	2019-03-07 10:04:38	lat: / long:
7	Driver's RC	2019-02-11 15:27:11	lat: / long:	2019-03-07 10:04:38	lat: / long:
8	Driver's RC	2019-02-11 15:45:18	lat: / long:	2019-03-07 10:04:38	lat: / long:
9	Driver's RC	2019-02-15 16:17:40	lat: / long:	2019-03-07 10:04:38	lat: / long:
10	Driver's RC	2019-02-16 01:50:20	lat: / long:	2019-03-07 10:04:38	lat: / long:
11	Driver's RC	2019-02-18 18:37:25	lat: / long:	2019-03-07 10:04:38	lat: / long:
12	Driver's RC	2019-02-18 18:38:08	lat: / long:	2019-03-07 10:04:38	lat: / long:
13	Driver's RC	2019-02-20 22:11:46	lat: / long:	2019-03-07 10:04:38	lat: / long:
14	Driver's RC	2019-02-25 18:04:38	lat: / long:	2019-03-07 10:04:38	lat: / long:
15	Driver's RC	2019-02-26 20:44:37	lat: / long:	2019-03-07 10:04:38	lat: / long:
16	Driver's RC	2019-02-26 20:44:43	lat: / long:	2019-03-07 10:04:38	lat: / long:
17	Driver's RC	2019-03-02 14:03:01	lat: / long:	2019-03-07 10:04:38	lat: / long:

Fig 5 ;Application's Database

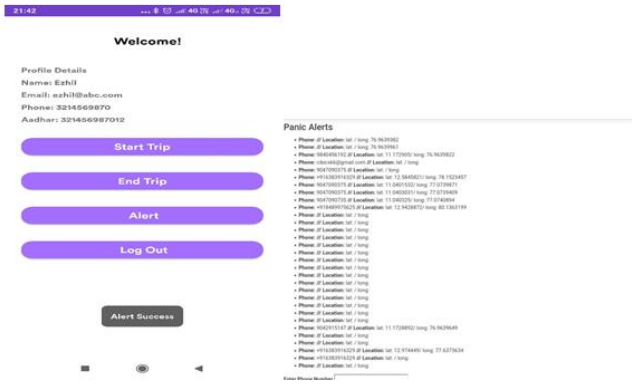

Fig 6; Figure Representing the Successful Sending Of Alert Message

Fig 7 ; Figure Representing The Successful Receiving Of Location

V. CONCLUSION AND FUTURE SCOPE

In this modern world safety has become a integrated part of women's daily life. The digitalized system developed will be very useful and it helps in better way for the current generation. This project will be greatly ensuring the safety for the travelling women. Since most of the users are using Android OS, the app has to be user friendly and fast working. So we are using Android studio technology. The Android studio platform is easy to configure and it supports Google cloud platform, Cloud messaging. The live tracking is done with the help of GPS, it accurately positions the user. GPS also reduces the manpower involvement in tracking. QR codes can be scanned using our smart phone itself and there is no need of any scanning devices. QR codes are versatile, they can encode all types of data like alphabets, numbers, special characters and also binary. It has good fault tolerance, fast scanning and huge number of information can be integrated. Using panic button increases the safety for women. On selecting the panic button option in the application instant alert is sent to the control room. This application greatly reduces the time taken for the investigation of the Police and suffering woman can be rescued from danger as quick as possible. This Project is very helpful and a useful one which will reduce the damage caused to the life of the woman due to harassments. As they are tracked live, crimes are reduced and also the culprits are stopped from performing further crimes.

Our future enhancement is to make the application support in all the major platforms like iOS and Windows for benefitting all people in the world. New separate website should be created for making the information more secure. The application should be made available for the public by providing to the government. This will be of greater use in future days as it provides a good and secure monitoring and controlling system.

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