A Mini Project Report

on

Passenger Security – Online FIR Registration System

by

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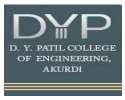

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Date: ___ / ___ /2019

CERTIFICATE

This is to certify that,

Mr. Shreyas Sharad Patil (_____)
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of class T.E IT; have successfully completed their mini project work on "Passenger Security – Online FIR/Complaint Filing System" at D. Y. Patil College of Engineering in the partial fulfillment of the Graduate Degree course in T.E at the Department of **Information Technology**, in the academic Year 2019-2020 Semester – I as prescribed by the Savitribai Phule Pune University, Pune-07.

Mr.Niket Bhatambre
Guide

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Acknowledgement

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Acronyms

GRP	Government Railway Police
RPF	Railway Police Force
FIR	First Information Report
SDK	Software Development Kit
VS	Visual Studio
PHP	Hypertext Preprocessor
SQL	Structured Query Language
HTML	Hypertext Markup Language
CSS	Cascading Style Sheets
JS	JavaScript
JDK	Java Development Kit
JRE	Java Runtime Environment
JVM	Java Virtual Machine

Abstract

Nowadays, if we are travelling in a Train and if any incident or crime happens then the registration procedure of FIR becomes hectic for a passenger because there is no facility for a passenger to file FIR online. The passenger needs to visit GRP (Government Railway Police) to file FIR. There is no guarantee that he/she would get the desired justice. Government has provided a helpline 182 for lodging FIR. Though it's not much helpful. We have developed a system from which passenger travelling in a train can now file a FIR through his mobile in just a few steps and it's guaranteed that his/her all details will be valid. Passenger won't need to visit Railway Police station to file a FIR. The basic aim of this project is to provide hassle-free service to passengers travelling in a train and to provide the interface to easily interact with GRP.

Chapter 1

Introduction (Passenger Security)

1.1 Motivation

Being a good human being, it is our mere responsibility to help people by solving their problem. Being in the IT profession we are developing an Android app to ensure the safety of the passenger. This application can reduce the time for passengers as well as Government Railway Police and will work as mediator between them.

1.2 Problem Statement

The problem is here to create a robust "Android Application for Passenger Security" which will help passengers travelling in train to file FIR online through mobile app if any incident is happened. FIR registered by passenger will directly visible to GRP person. GRP will have to help that passenger in that case. By this interface, it'll be helpful for passengers and Government Railway Police to communicate with each other.

1.3 Framework of the proposed work in project

1.3.1 Android Studio IDE:

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.

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.[12]

Since May 7, 2019, Kotlin is Google's preferred language for Android app

development. Still, other programming languages are supported by Android Studio, such as Java and C++.

Features of Android Studio:

- Visual Layout Editor
- APK Analyzer
- Fast emulator
- Intelligent Code Editor.
- Flexible build system
- Real-time profilers.
- Support for Java/Kotlin/Native C++.

1.3.2 Visual Studio Code:

At its heart, Visual Studio Code features a lightning fast source code editor, perfect for day-to-day use. With support for hundreds of languages, VS Code helps you be instantly productive with syntax highlighting, bracket-matching, auto-indentation, box-selection, snippets, and more. Intuitive keyboard shortcuts, easy customization and community-contributed keyboard shortcut mappings let you navigate your code with ease.

For serious coding, you'll often benefit from tools with more code understanding than just blocks of text. Visual Studio Code includes built-in support for IntelliSense code completion, rich semantic code understanding and navigation, and code refactoring.

And when the coding gets tough, the tough get debugging. Debugging is often the one feature that developers miss most in a leaner coding experience, so we made it happen. Visual Studio Code includes an interactive debugger, so you can step through source code, inspect variables, view call stacks, and execute commands in the console.

VS Code also integrates with build and scripting tools to perform common tasks making everyday workflows faster. VS Code has support for Git so you can work with source control without leaving the editor including viewing pending changes diffs. Architecturally, Visual Studio Code combines the best of web, native, and language-specific technologies. Using Electron, VS Code combines web technologies such as JavaScript and Node.js with the speed and flexibility of native apps. VS Code uses a newer, faster version of the same industrial-strength HTML-based editor that has powered the “Monaco” cloud editor, Internet Explorer's F12 Tools, and other

projects. Additionally, VS Code uses a tools service architecture that enables it to integrate with many of the same technologies that power Visual Studio, including Roslyn for .NET, TypeScript, the Visual Studio debugging engine, and more.

Visual Studio Code includes a public extensibility model that lets developers build and use extensions, and richly customize their edit-build-debug experience.

1.3.3 Android SDK:

A software development kit that enables developers to create applications for the Android platform. The Android SDK includes sample projects with source code, development tools, an emulator, and required libraries to build Android applications. Applications are written using the Java programming language and run on Dalvik, a custom virtual machine designed for embedded use which runs on top of a Linux kernel.

1.3.4 License:

Android Studio IDE was licensed under Freeware license and its source code is available in Google's Open source. Visual Studio Code known as VS Code is a product by Microsoft was licensed under open source MIT license and its code is available on GitHub.

1.3.5 XAMPP Server:

XAMPP is an open source software developed by Apache friends. XAMPP software package contains Apache distributions for Apache server, MariaDB, PHP, and Perl. And it is basically a local host or a local server. This local server works on your own desktop or laptop computer. The use of XAMPP is to test the clients or your website before uploading it to the remote web server. This XAMPP server software gives you the suitable environment for testing MYSQL, PHP, Apache and Perl projects on the local computer.

The full form of XAMPP is X stands for Cross-platform, (A) Apache server, (M) MariaDB, (P) PHP and (P) Perl. The Cross-platform usually means that it can run on any computer with any operating system.

Next MariaDB is the most famous database server and it is developed by MYSQL team. PHP usually provides a space for web development. PHP is a server-side scripting

language. And the last Perl is a programming language and is used to develop a web application. The XAMPP installation process is very simple and fast. Once XAMPP is installed on your local computer it acts as a local server or localhost. You can test the websites before uploading it to the remote web server. This XAMPP server software gives you a suitable environment for testing MYSQL, PHP, Apache and Perl applications on a local computer.

1.3.6 Java Platform:

The Java platform is a suite of programs that facilitate developing and running programs written in the Java programming language. A Java platform will include an execution engine (called a virtual machine), a compiler and a set of libraries; there may also be additional servers and alternative libraries that depend on the requirements. Java is not specific to any processor or operating system as Java platforms have been implemented for a wide variety of hardware and operating systems with a view to enable Java programs to run identically on all of them. Different platforms target different classes of device and application domains:

1. Java Card: A technology that allows small Java-based applications (applets) to be run securely on smart cards and similar small-memory devices.
2. Java ME (Micro Edition): Specifies several different sets of libraries (known as profiles) for devices with limited storage, display, and power capacities. It is often used to develop applications for mobile devices, PDAs, TV set-top boxes, and printers.
3. Java SE (Standard Edition): For general-purpose use on desktop PCs, servers and similar devices.
4. Java EE (Enterprise Edition): Java SE plus various APIs which are useful for multi-tier client–server enterprise applications.

The Java platform consists of several programs, each of which provides a portion of its overall capabilities. For example, the Java compiler, which converts Java source code into Java bytecode (an intermediate language for the JVM), is provided as part of the Java Development Kit (JDK). The Java Runtime Environment (JRE), complementing the JVM with a just-in-time (JIT) compiler, converts intermediate bytecode into native machine code on the fly. The Java platform also includes an

extensive set of libraries. The essential components in the platform are the Java language compiler, the libraries, and the runtime environment in which Java intermediate bytecode executes according to the rules laid out in the virtual machine specification.

1.3.7 PHP:

PHP is typically used as a server-side language (as opposed to a language like JavaScript that's generally executed on the client-side). So what does that mean? In programming terms, client-side refers to website activity that takes place locally on a user's computer through the user's web browser. Client-side languages like HTML, CSS, and JavaScript give instructions that web browsers can parse and translate into content on your computer screen. Notice JavaScript (a scripting language like PHP) is on that list. Again, the processes scripted by JavaScript take place on the client-side—JS provides instructions that can be understood by and executed in your web browser. Client-side is the side you see when you're using the internet.

1.3.8 MySQL:

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, Yahoo! and many more.

Oracle drives MySQL innovation, delivering new capabilities to power next generation web, cloud, mobile and embedded applications.

1.3.9 Firebase:

Firebase Storage provides secure file uploads and downloads for Firebase apps, regardless of network quality. The developer can use it to store images, audio, video, or other user-generated content. Firebase Storage is backed by Google Cloud Storage.

Firebase Inc. raised in May 2012. The company further raised Series A funding in June 2013. In October 2014, Firebase was acquired by Google. In October 2015, Google acquired Divshot to merge it with the Firebase team. Since the acquisition, Firebase has grown inside Google and expanded their services to become a unified platform for mobile developers. Firebase now integrates with various other Google services to offer broader products and scale for developers. In January 2017, Google acquired Fabric

and Crashlytics from Twitter to join those services to the Firebase team. According to the report, Firebase would be launching Cloud Firestore, a Document Database, in October 2017.

1.3.10 Google Maps:

Google Maps is a web mapping service developed by Google. It offers satellite imagery, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions (Google Traffic), and route planning for traveling by foot, car, bicycle (in beta), or public transportation.

Google Maps began as a C++ desktop program designed by Lars and Jens Eilstrup Rasmussen at Where 2 Technologies. In October 2004, the company was acquired by Google, which converted it into a web application. After additional acquisitions of a geospatial data visualization company and a real time traffic analyzer, Google Maps was launched in February 2005. The service's front utilizes JavaScript, XML, and Ajax. Google Maps offers an API that allows maps to be embedded on third-party websites, and offers a locator for urban businesses and other organizations in numerous countries around the world. Google Map Maker allowed users to collaboratively expand and update the service's mapping worldwide but was discontinued from March, 2017. However, crowdsourced contributions to Google Maps were not discontinued as the company announced those features will be transferred to Google Local Guides program.

Chapter 2

Requirement Specification

2.1 Hardware Details:

1. Intel i3 Processor (Minimum).
2. 8GB RAM Recommended, 4GB RAM Minimum.
3. Storage – 20GB

2.2 Software Details:

1. Front End: Java, HTML, CSS, JavaScript.
2. Back End: PHP.
3. Database: MySQL, Firebase Database.

Chapter 3

Entity-Relationship Diagram

An entity–relationship model (or ER model) describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between entities (instances of those entity types).

In software engineering, an ER model is commonly formed to represent things a business needs to remember in order to perform business processes. Consequently, the ER model becomes an abstract data model, that defines a data or information structure which can be implemented in a database, typically a relational database.

Entity–relationship modelling was developed for database and design by Peter Chen and published in a 1976 paper. However, variants of the idea existed previously. Some ER models show super and subtype entities connected by generalization-specialization relationships, and an ER model can be used also in the specification of domain-specific ontologies.

An ER diagram is a means of visualizing how the information system produces is related.

Following are the components of ER Diagram

1. Entity:

An entity is an object or component of data. An entity is represented as rectangle in an ER diagram.
For example: In the following ER diagram we have two entities Student and College and these two entities have many to one relationship as many students study in a single college. We will read more about relationships later, for now focus on entities.

2. Attribute:

An attribute describes the property of an entity. An attribute is represented as Oval in an ER diagram. There are four types of attributes: Simple, Composite, Multivalued, Derived

3. Relationship:

A relationship is represented by diamond shape in ER diagram, it shows the relationship among entities. There are four types of relationships.

4. Actions:

Actions are represented by diamond shapes, shows how two entities share information in the database.

5. Connecting Lines:

Solid lines that connects attributes to show the relationship of entities in the diagram.

6. Cardinality:

Cardinality specifies how many instances of an entity of an entity relate to one instance of another entity. Ordinality is also linked closely to Cardinality.

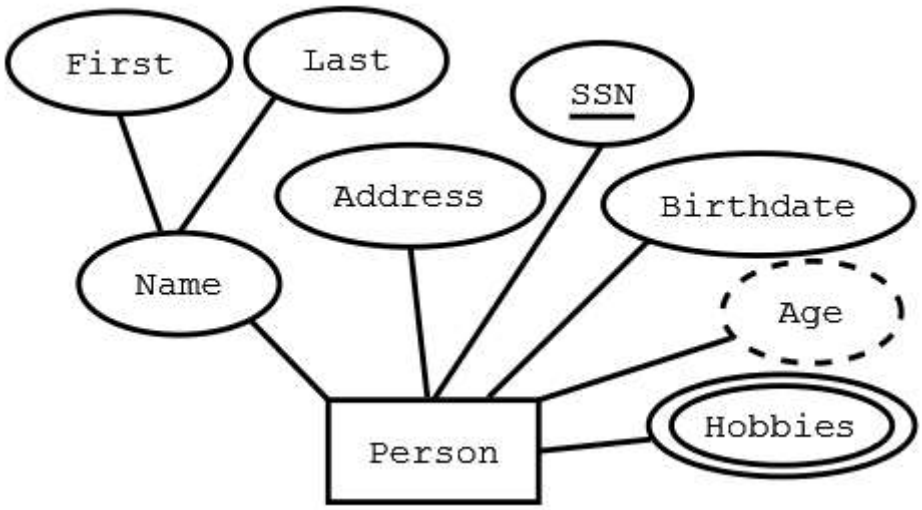

Figure 3.1. Graphical Representation of E-R Diagram. (Courtesy: Wikipedia)

Entity Relationships and Semantic modeling:

Semantic model

A semantic model is a model of concepts, it is sometimes called a "platform independent model". It is an intensional model. At the latest since Carnap, it is well known that:

"...the full meaning of a concept is constituted by two aspects, its intension and its extension. The first part comprises the embedding of a concept in the world of concepts as a whole, i.e. the totality of all relations to other concepts. The second part establishes the referential meaning of the concept, i.e. its counterpart in the real or in a possible world".

Extension model

An extensional model is one that maps to the elements of a particular methodology or technology, and is thus a "platform specific model". The UML specification explicitly states that associations in class models are extensional and this is in fact self-evident by considering the extensive array of additional "adornments" provided by the specification over and above those provided by any of the prior candidate "semantic modelling languages "UML as a Data Modeling Notation, Part 2"

Entity–relationship origins

Peter Chen, the father of ER modeling said in his seminal paper:

"The entity-relationship model adopts the more natural view that the real world consists of entities and relationships. It incorporates some of the important semantic information about the real world."

In his original 1976 article Chen explicitly contrasts entity–relationship diagrams with record modelling techniques:

"The data structure diagram is a representation of the organization of records and is not an exact representation of entities and relationships."

E-R Diagram – Passenger Security

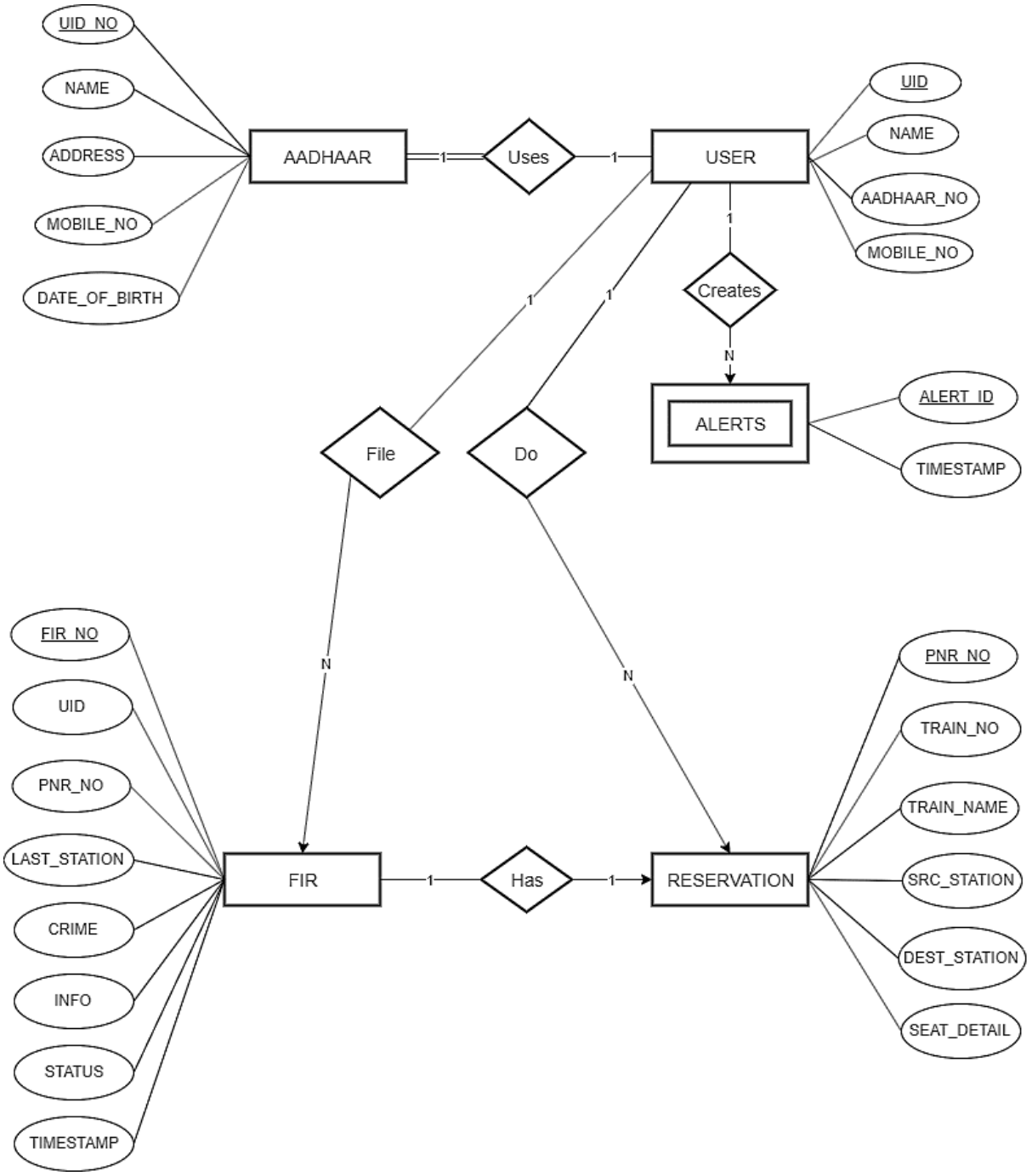

Figure 3.2. E-R Diagram of Passenger Security

Chapter 4

Tables/Collections/Use Case Diagram

List of Tables

Table 4.1. AADHAAR (Dummy Dataset for Storing Aadhaar Details of Users).

Field	Description
AADHAAR_NO	Unique UID number of user
NAME	Name of user
MOBILE_NO	Mobile number of user.
ADDRESS	Address of User.
DATE_OF_BIRTH	Date of Birth of user.

Table 4.2 USER (Table to store personal details of users).

Field	Description
UID	Unique UID number of user
NAME	Name of user
MOBILE_NO	Mobile number of user.
AADHAAR_NO	Aadhaar Number of user

Table 4.3 RESERVATION (Dummy dataset of Train Reservations).

Field	Description
PNR_NO	Unique Reservation/Booking number (i.e. Passenger Record Number).
TRAIN_NO	Number of Train.
TRAIN_NAME	Name of Train.
SRC_STATION	Source Station of Journey.
DEST_STATION	Destination Station of Journey.
SEAT_DETAIL	Allocated Seat details of passenger.

Table 4.4 ALERTS (Table to store panic alerts of users).

Field	Description
ALERT_ID	Unique alert id of user.
TIMESTAMP	Date and time of alert.

Table 4.5 FIR (Table to store filed FIRs).

Field	Description
FIR_NO	Unique FIR Number
UID	Unique User ID
PNR_NO	Reservation number
LAST_STATION	Last station passed while in journey.
CRIME	Type of crime/incident happened.
INFO	Any additional information about crime.
TIMESTAMP	Date and Time when FIR is filed.
STATUS	Status of FIR.

Use Case Diagram

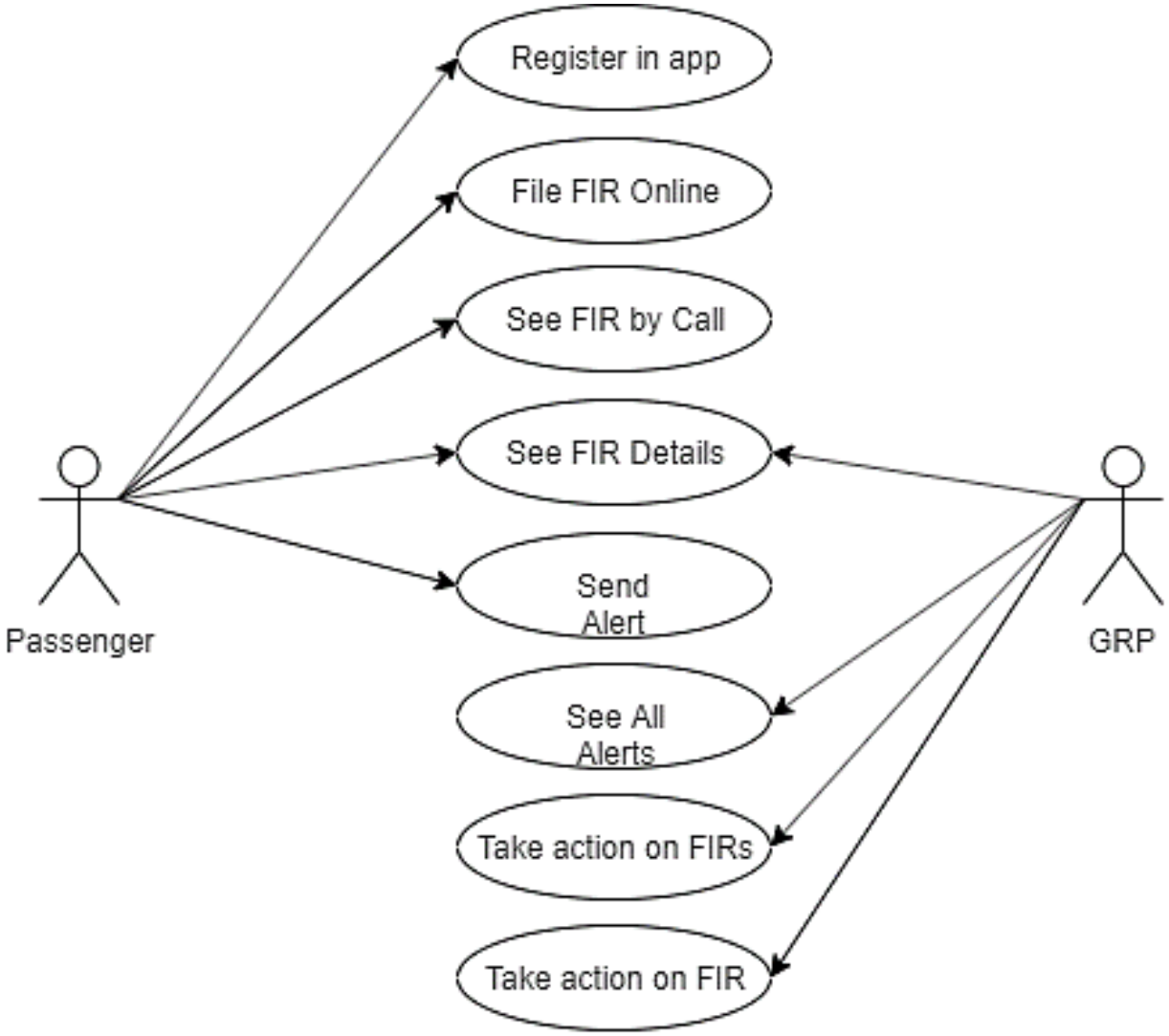

Figure 4.1. Use case diagram of Passenger Security

Chapter 5

Forms/jFrames

1. Native App interface for Passenger

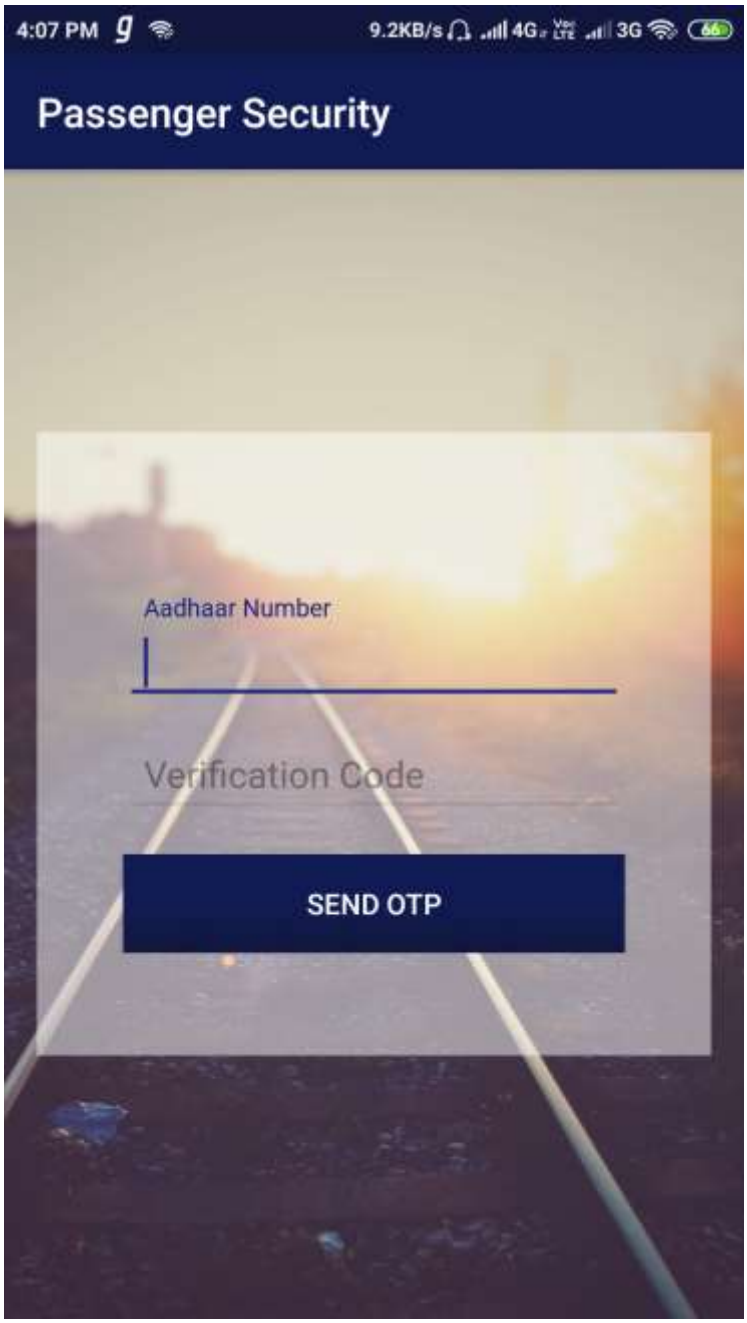

Figure 5.1. Authentication of Passenger using Aadhaar number.

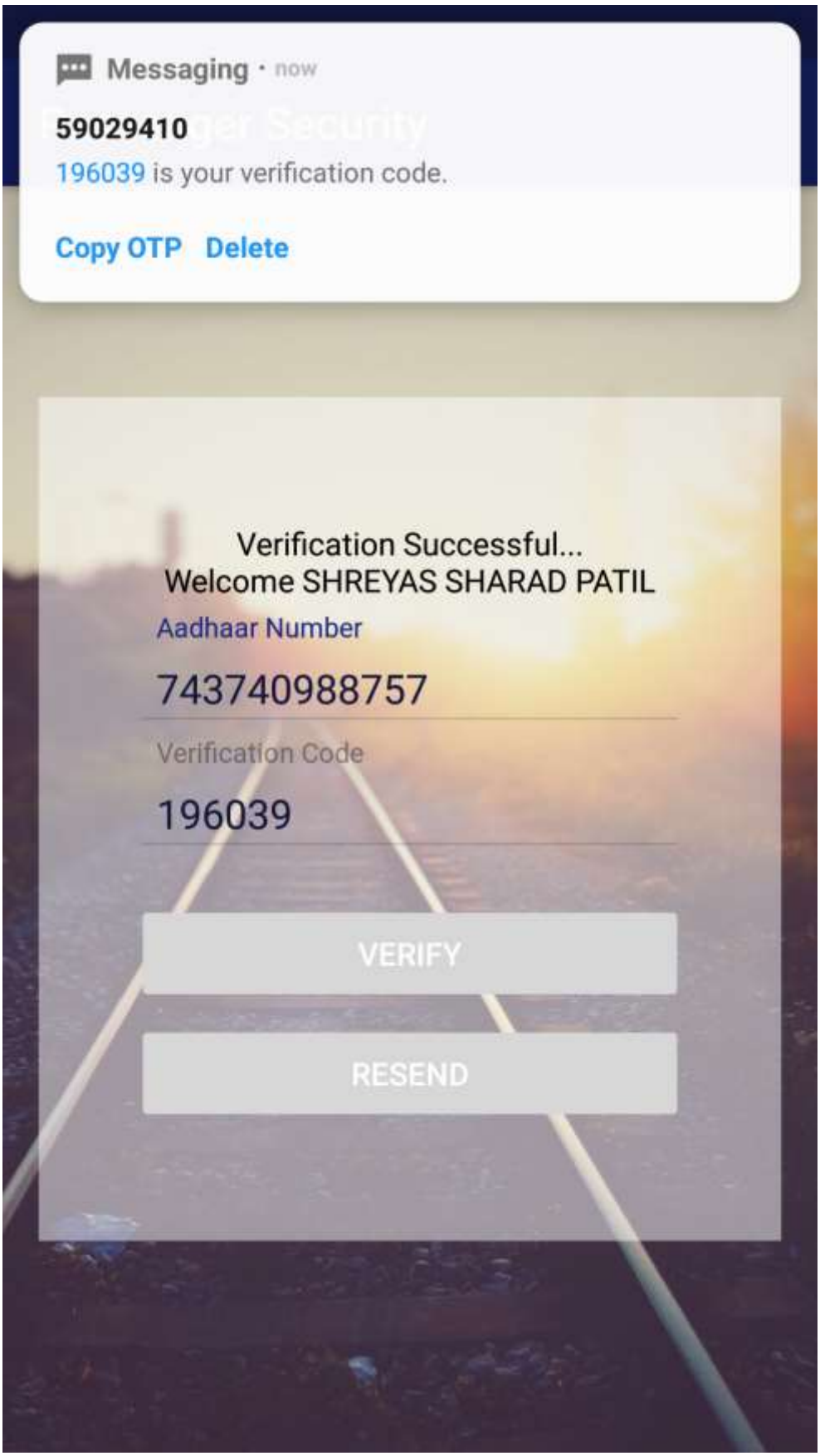

Figure 5.2. Successful Authentication of Passenger.

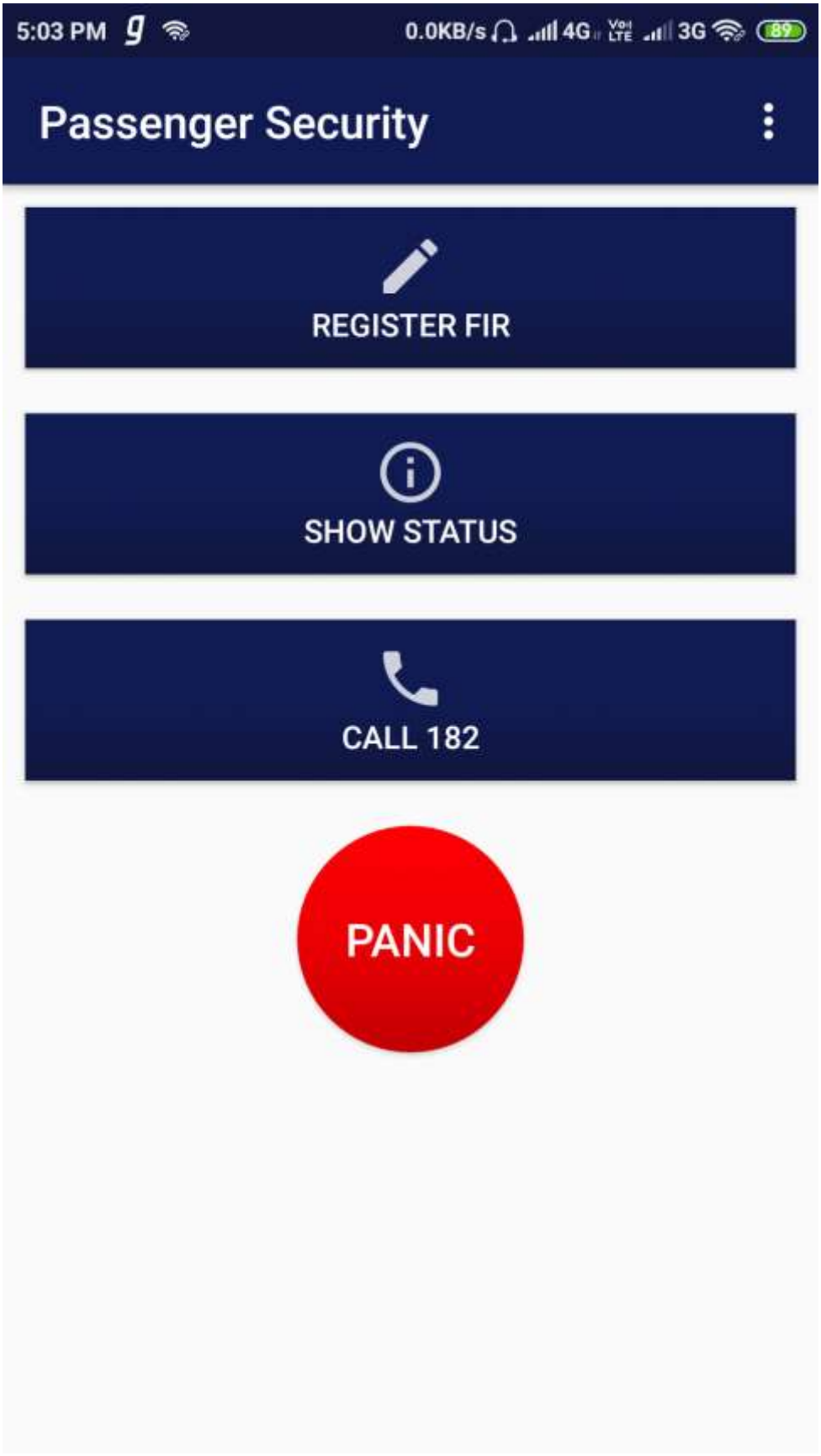

Figure 5.3. Dashboard/Main screen of App.

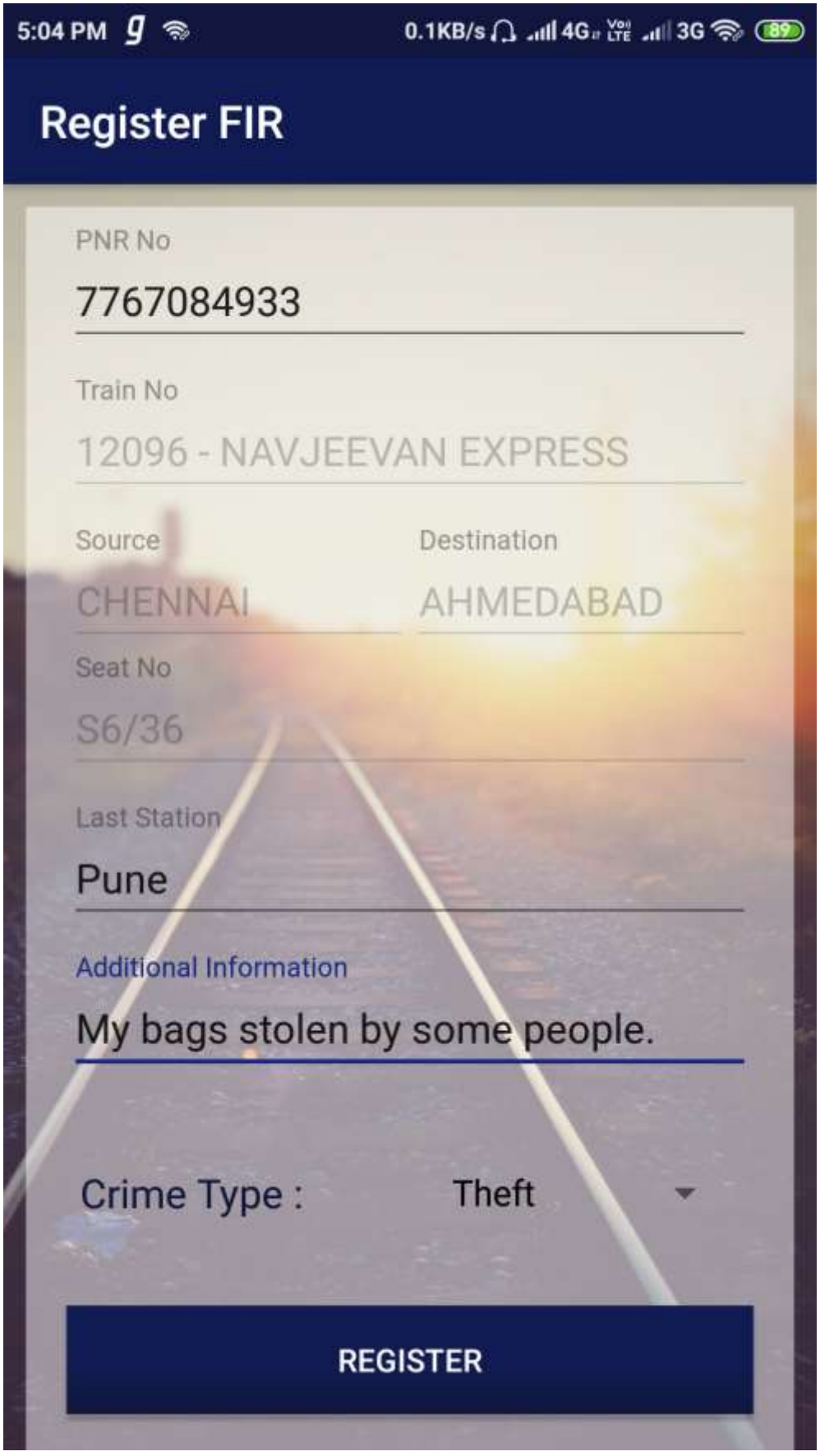

Figure 5.4. FIR Filing Activity/Form.

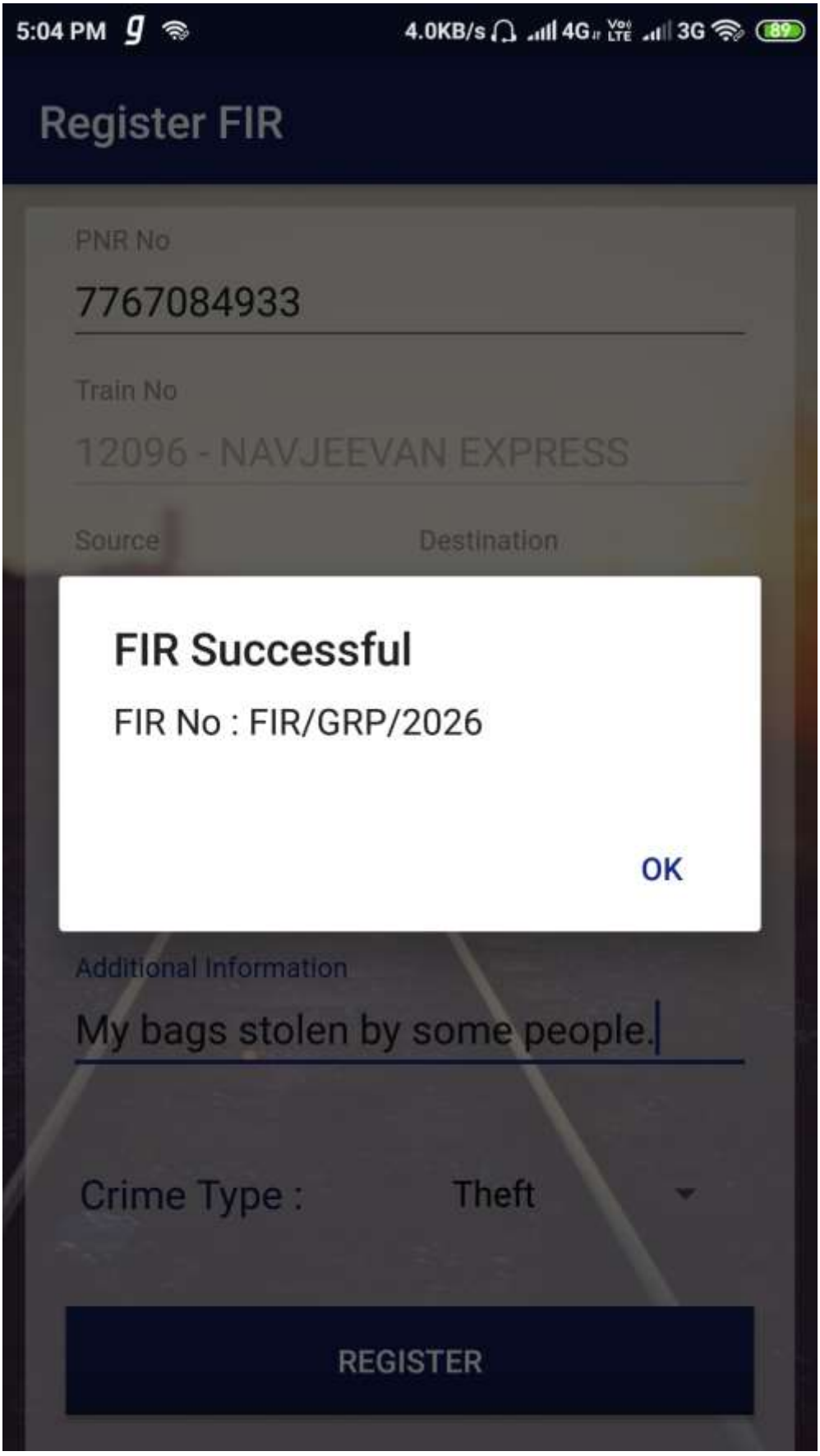

Figure 5.5. Confirmation after filing FIR.

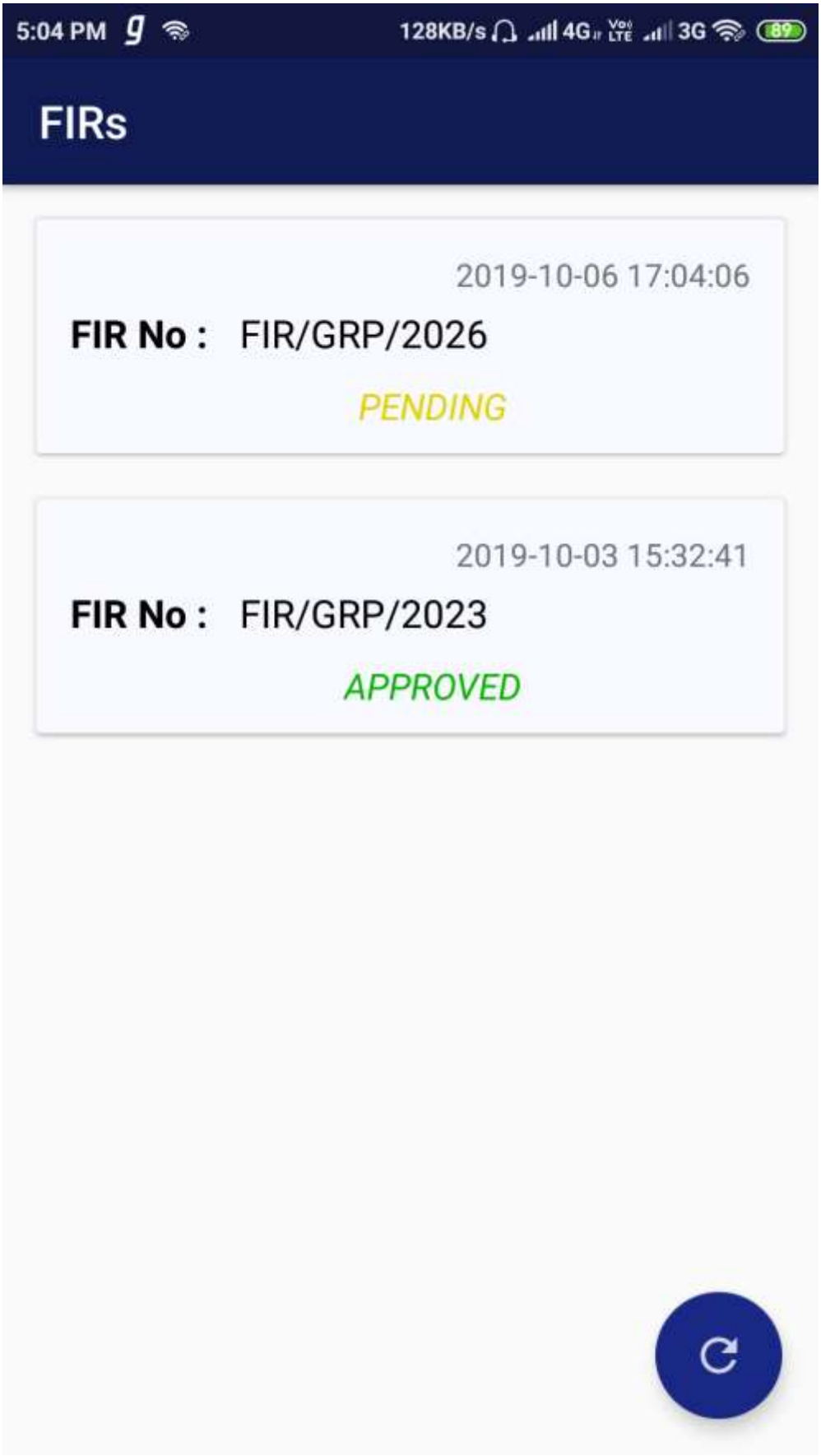

Figure 5.6. FIR Details/Status view activity

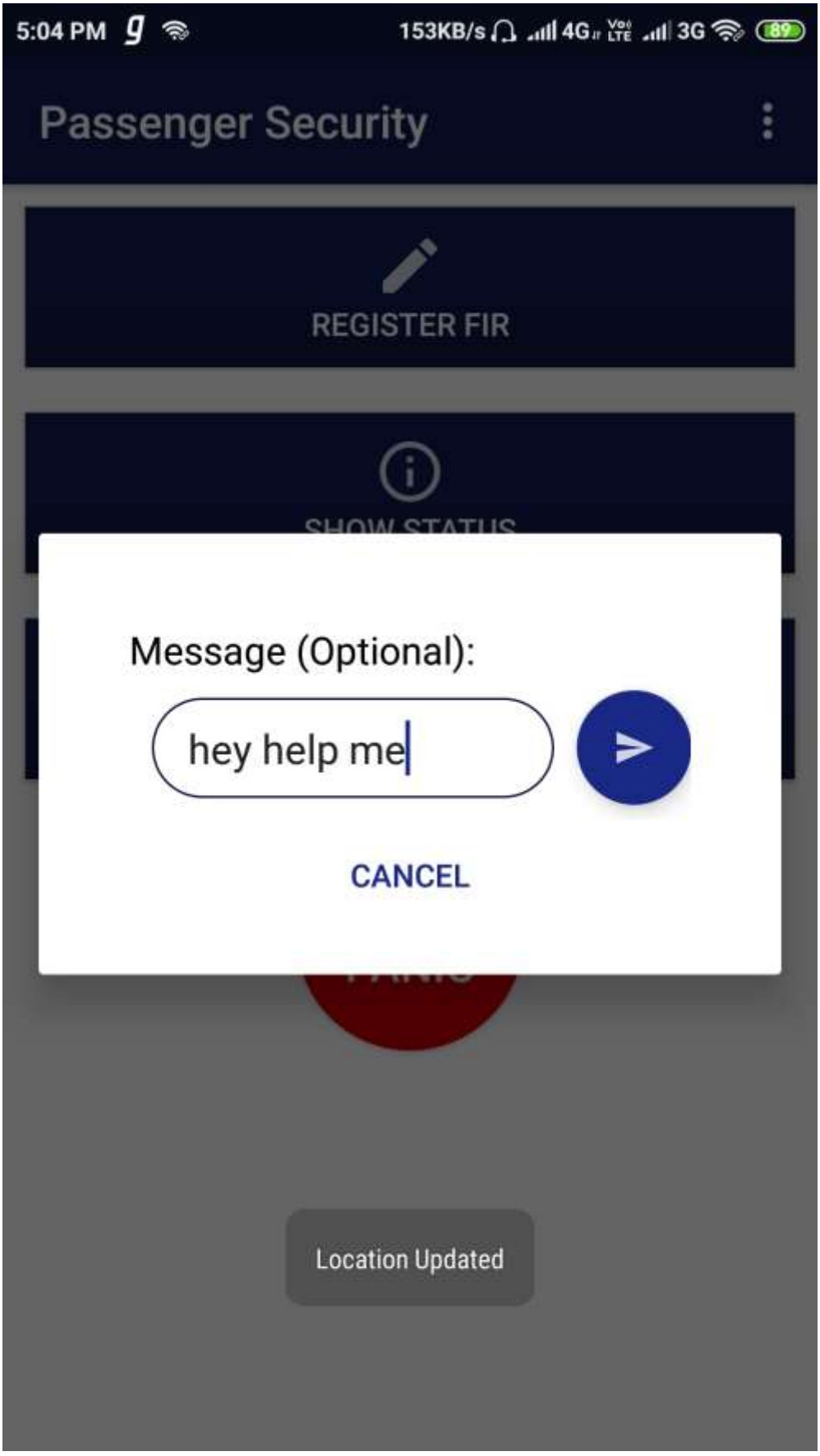

Figure 5.7. Message Input Dialog after Clicking Panic button.

2. Web interface for GRP

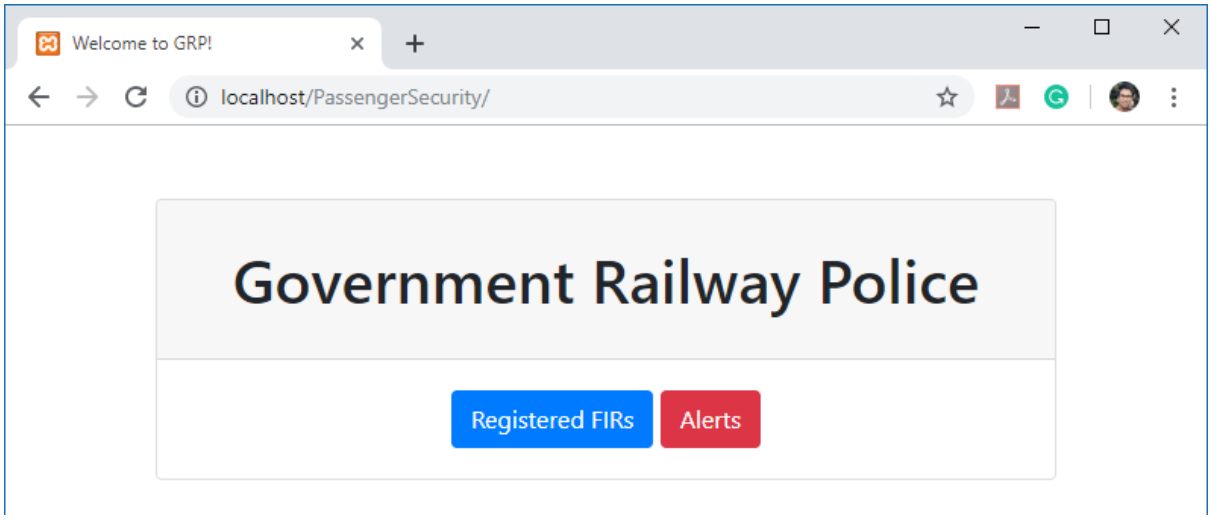

Figure 5.8. Dashboard of GRP.

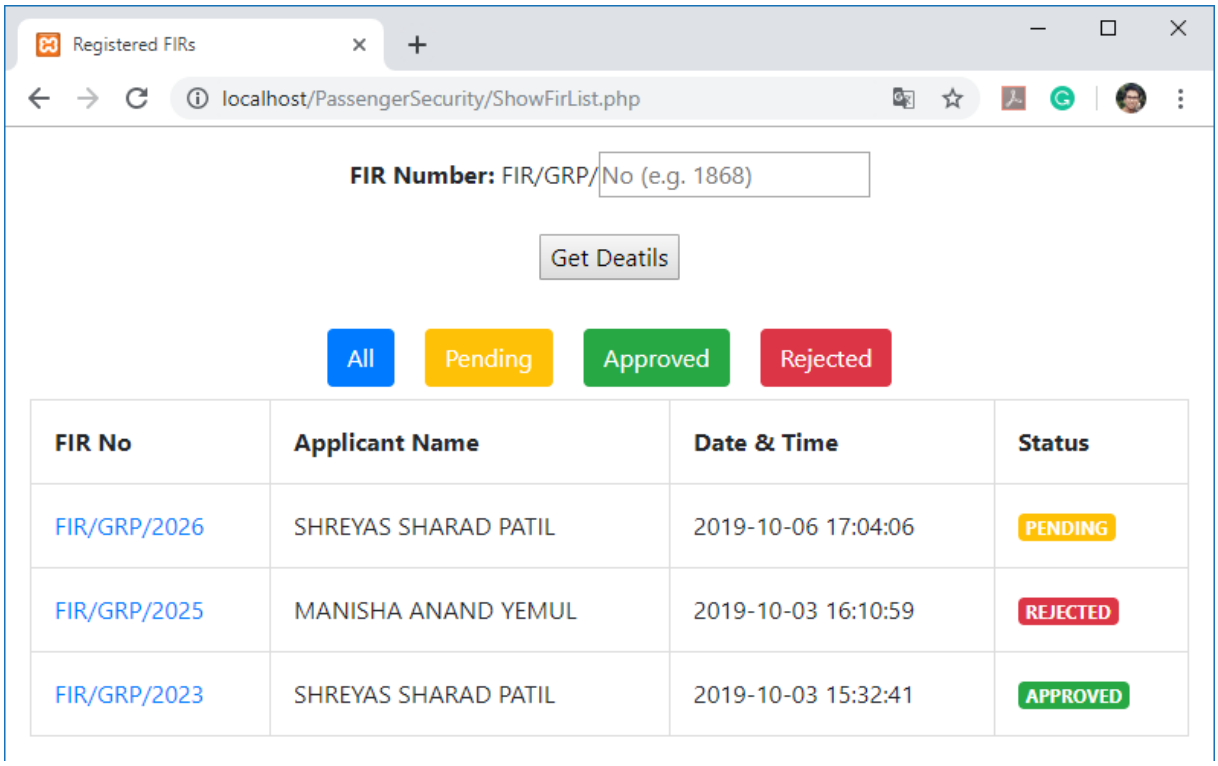

Figure 5.9. List of filed FIRs.

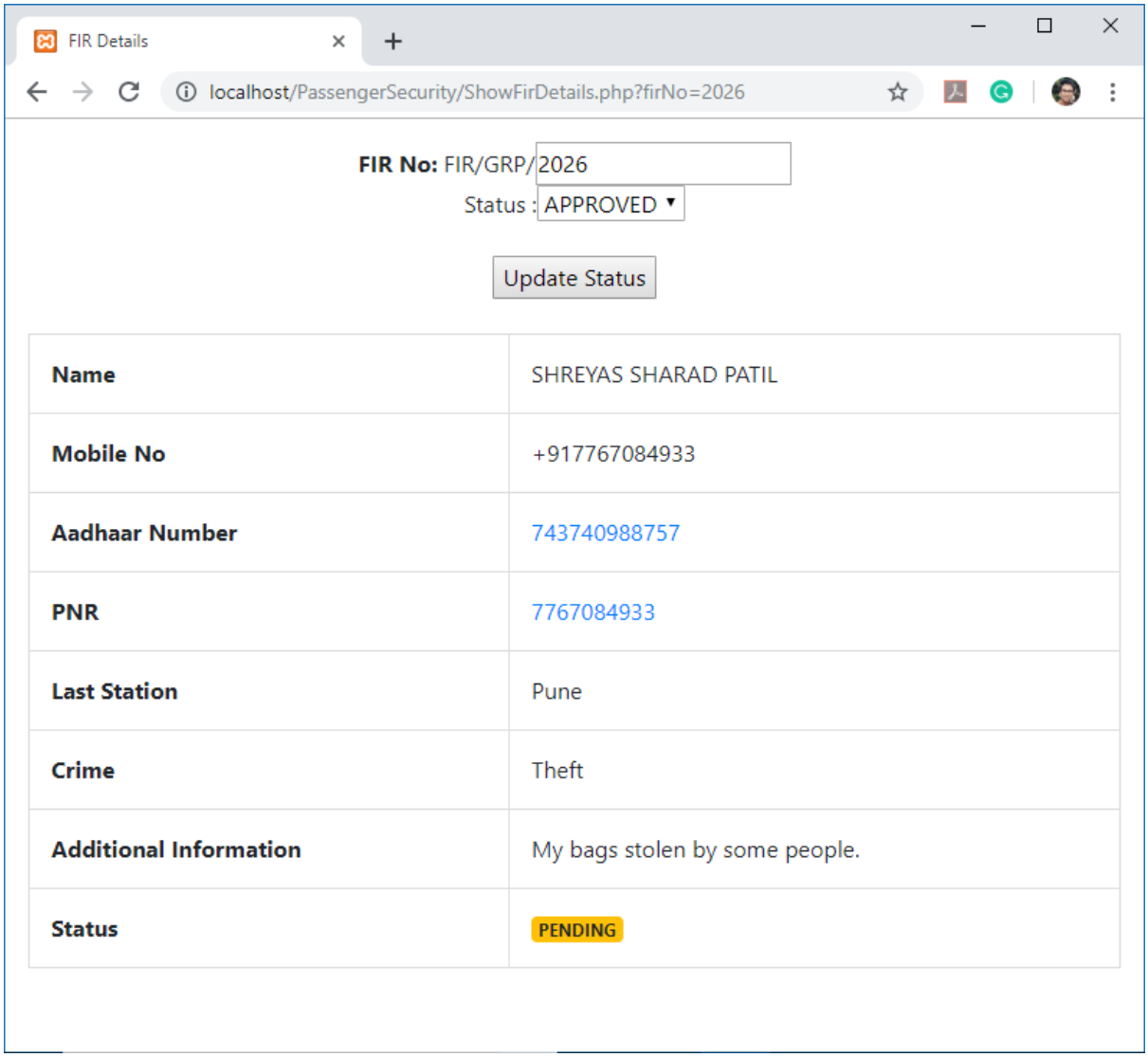

Figure 5.10. Details of Filed FIR.

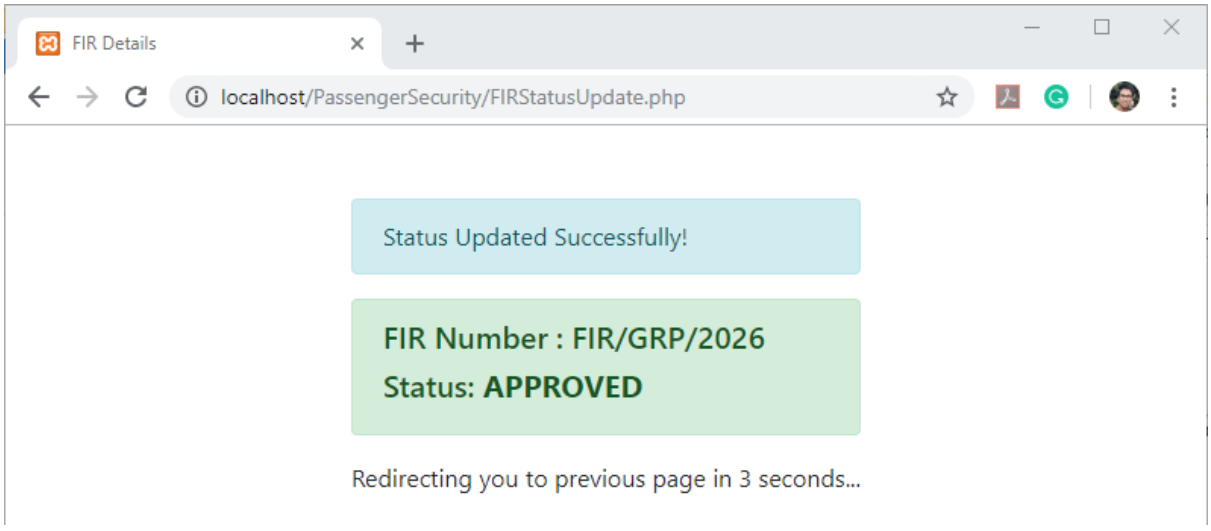

Figure 5.11. Confirmation after updating FIR status.

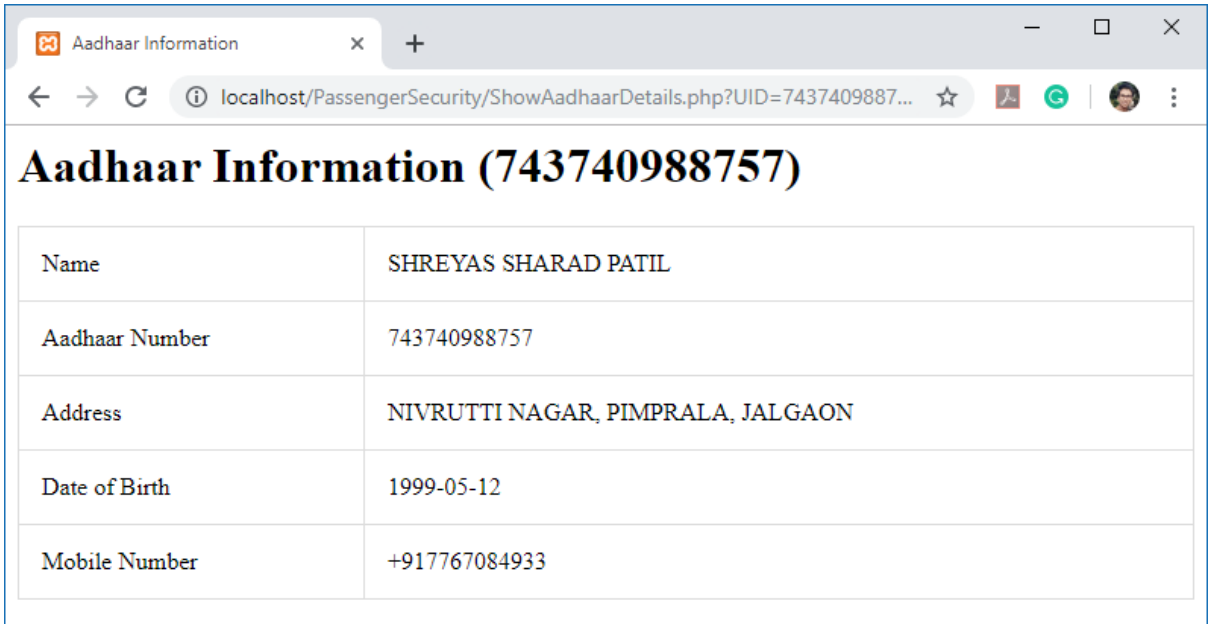

Figure 5.12. Aadhaar Details of Passenger who filed FIR.

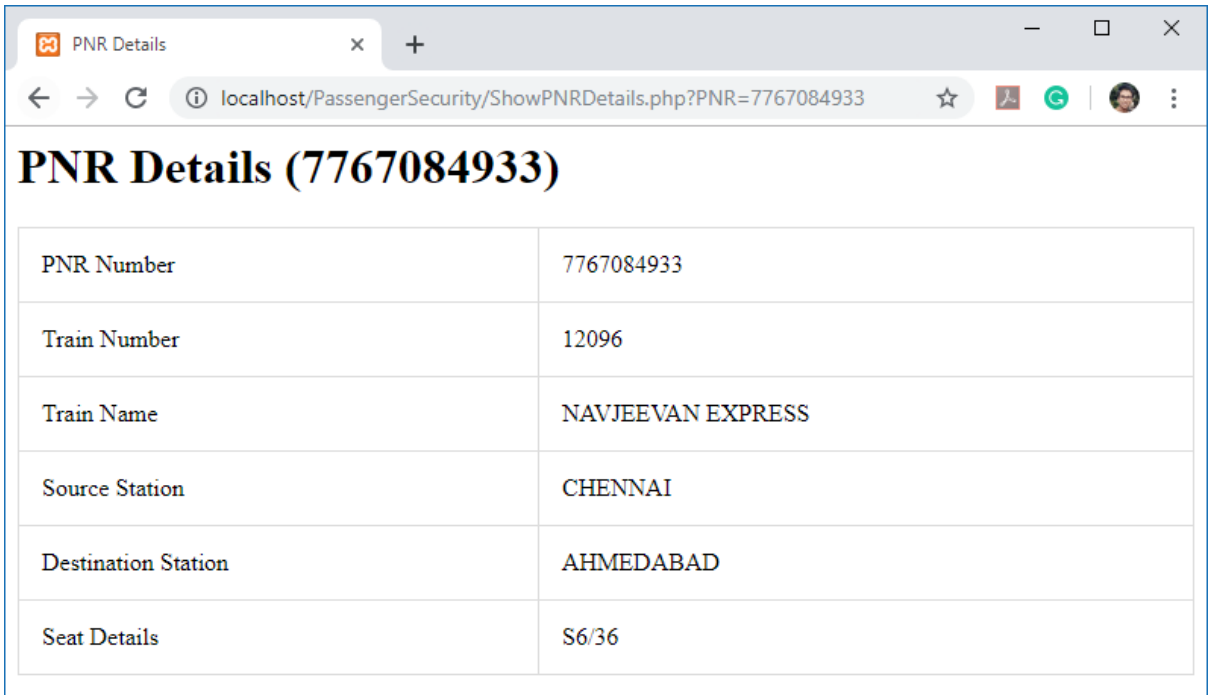

Figure 5.13. PNR Details of passenger who filed FIR.

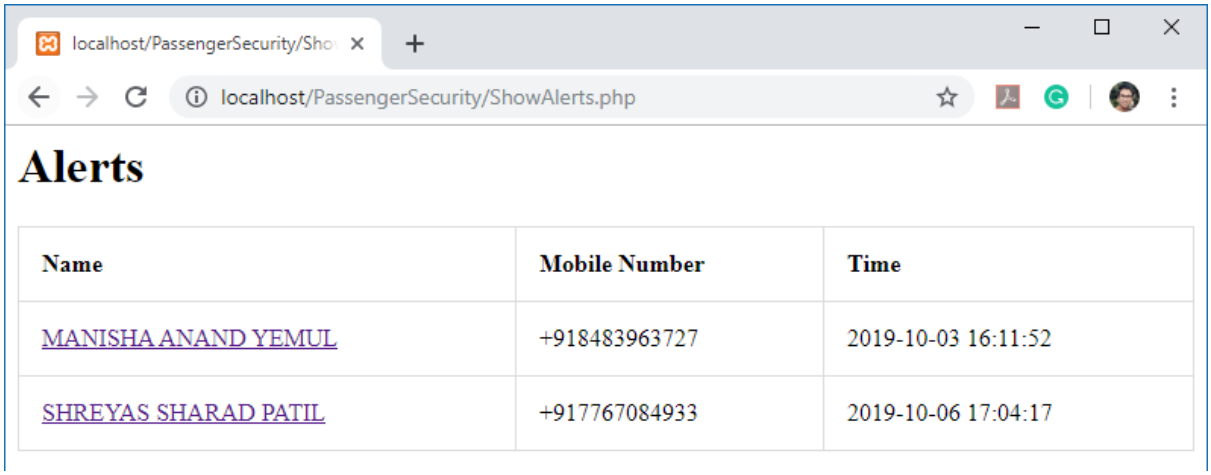

Figure 5.14. List of users who alerted (Panic situation).

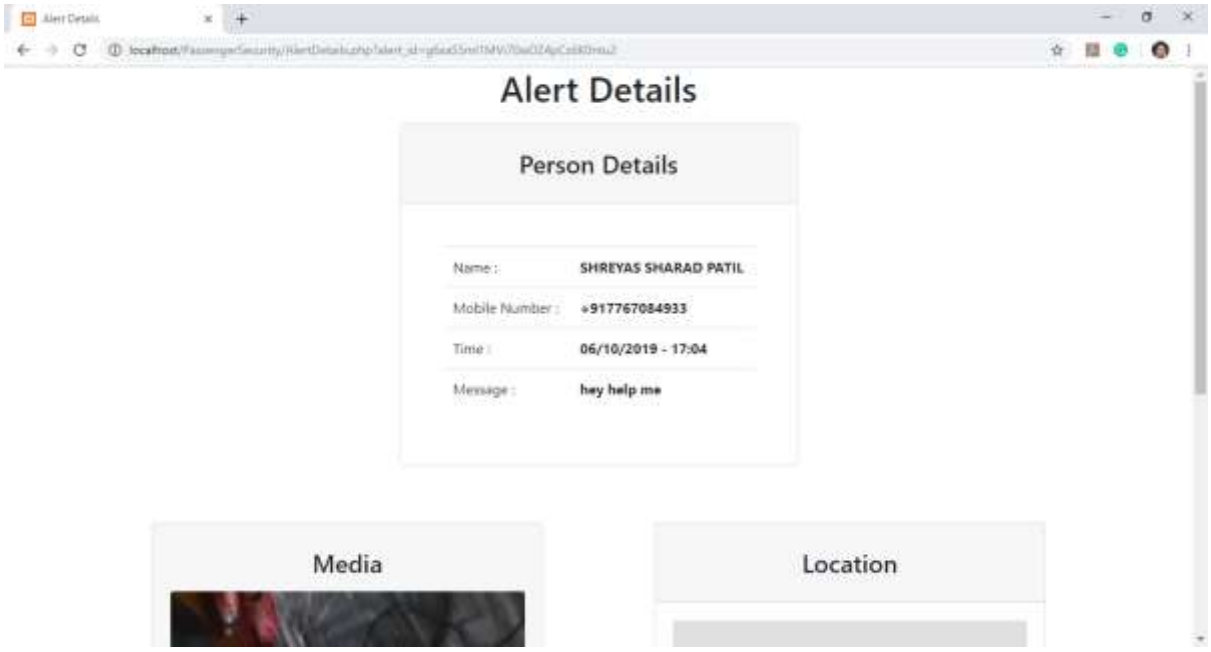

Figure 5.15. Personal Details of user who alerted (Panic).

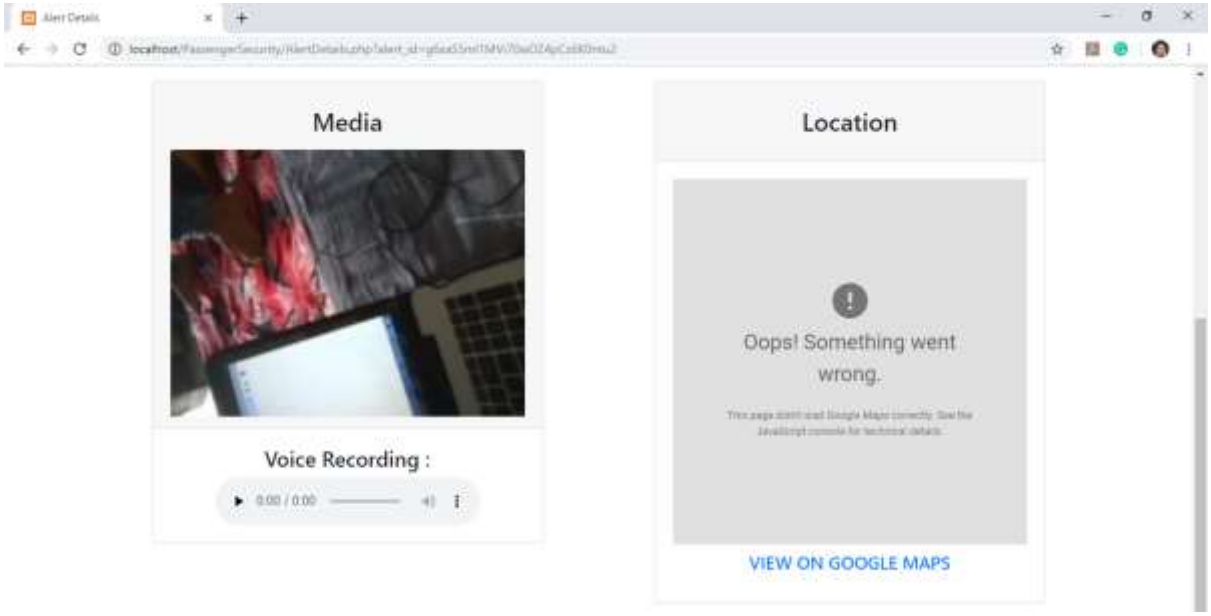

Figure 5.16. Media and location received from passenger in Panic situation.

Chapter 6

Features

- **User Friendly UI:**

  This application is easy to use for passengers. It's not hectic for users. Also, all actions can be performed quickly so that they can report about their situation.

- **Time saving:**

  Rather than the process of filing the FIR form by visiting Railway Police Station, this app saves time of passenger as well as police.

- **Real-time Updates:**

  It provides accurate real-time updates of user location. Change in location will immediately reported to GRP.

- **Anti-Fraud support:**

  Passenger needs to be authenticated using Aadhaar. It means user will be always authenticated and it's guaranteed than filed FIRs won't be fraud. This will help police to rectify genuine cases. Also, it saves time.

Chapter 7

Conclusion

The development of android application result in providing quick and emergency services to passengers. This application implementation will reduce the time of passengers as well as load of Government Railway Police or Railway Police Force. It will help to reduce efforts of police force as well. Also, It will reduce crimes and help to decrease the rate of crimes happing now days in the cities.

Moreover, this application will be proved to be simple to use and reliable in performance. The Passenger security is main goal to develop the application. The passenger can raise alert by simply clicking the “Panic” button provided in the application through a user friendly Graphical User Interface (GUI). As a result the passenger security which is important issue will take place more seriously.

The process of raising alert will successfully send location coordinates as well as voice recording and picture of rear camera of the person in trouble. The full control will be in the hands of citizen for the emergency services as well as their personal security. It’ll help the police to track the details of passenger by collecting location, voice recording and photo from user. This will be used as a proof.

Final conclusion is that while development of this project we understood many aspects of project development that were unknown to us.

References

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