Watchful Eyes



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**2024**

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**Acknowledgement**

###### We would like to express our gratitude and appreciation to all those who gave us the possibility of completing this final-year project. Special thanks to our final year project supervisor, Mr. Rizwan ul Haq, whose help, stimulating suggestions, and encouragement helped us to complete our project.

###### We would also like to acknowledge the faculty of the Department of Soft- ware Engineering, especially Mr. Tahir Farooq, for their cooperation, val- uable information, suggestions, and guidance in the completion and prep- aration of this final-year project.

**Abstract**

###### “Watchful Eyes” is a crime reporting program an organization sponsored to reduce criminal incidences by easy reporting and improving the police working mechanism. It is a web-based application where the functionality is targeted on many platforms, some of the existing problems like complexity, time consuming and issues related to corruption from the side of law enforcement are solved here. The reasons are listed below: It enables the residents to report a crime as it happens sending such details as, opting for anonymity and data mapping with markers placed at the crime locations. Some of the features include a registration system in which users who are registered are privileged than the other users, and special measures that are taken for the safety of women such as having a special tab that contains information on safety measures to be taken for women. This is why the intended goals of “Watchful Eyes” can be summarized as follows: facilitating crime reporting, enhancing the awareness of policing services, and promoting rational data categorization for further usage to help build safer neighborhoods, while adhering to legal norms and respecting users’ privacy to enhance crime prevention and contribute to creating more secure environments for people within communities

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# Introduction

Reporting a crime is often complicated and frustrating as it raises concern and concern about law enforcement. It might take some time; the knowledge is not centralized and hence we do not have comprehensive information regarding local security. Therefore, “Watchful Eyes” gives the easiest method of what needs to be done to fast forward the reporting of the crimes, better understanding by the police and improvement of security. Here, in this very talk, we will discuss the functions and utilities of the system talking mainly about the possibilities of the system that can revolutionize the whole community safety and crime reporting.

# Project Vision

### Problem Statement

Crime reporting is difficult and not very easy to go through, hence the reason why it is very hard to report crimes. It is time-consuming and complicated; that is why most people shy away from going to the police station. Another factor that leads to low crime reporting stands in a relation to the risk of the police officers taking bribes and acting therefore corruptly or police brutality. Another challenge that is associated with crime data is the confusion and disorderliness of the information. That is like an indication that one cannot tell what is going on in his or her own head. The problem stated means the need for a new program, the implementation of which would enable residents to report crimes, increase the awareness of law enforcement officers of incidents and make the community safer, like the “Watchful Eyes” program.

### Business Opportunity

One of the significant problems that the “Watchful Eyes’ crime reporting system resolves is the fact that one can easily get discouraged when reporting criminal activities by the police. Besides “Watchful Eyes” also helps police in terms of gaining an understanding of issues taking place within the neighborhood, when reporting crimes becomes easy. Thus, we may all have safer neighborhoods to live in. The interface of the system is quite simple and

open, one can report crimes as they are happening, and anonymity is optional. Besides, it well organizes the criminal data. And as has been mentioned, the technology may help to earn money by offering users some unique services, cooperating with police, and sharing data with local authorities. It is an ingenious idea that will foster the idea of safety in society by helping people to boost it in their businesses.

### Objectives

The following are the key objectives of our Final Year Project:

* Develop a web-based application accessible on multiple platforms.
* Crime data visualization and pinpointing locations.
* A registration system to differentiate registered and non-registered users, with registered users having additional privileges.
* Enhance women's safety measures within the app.

Women Safety Measures:

* Include a resource section within the app that offers safety tips and guidelines for women to follow in various situations.

### Scope

In a bid to eliminate the vices observed in the commission and reporting of criminal activities, the crime reporting system, watchful Eyes is expected to incorporate the use of a simpler App or website. The feedback can also be in anonymous form if any of the participants would wish to keep the identification information to himself. It shall place you in a position where you can be able to report to the police of incidences that require their actions in the process. The system will also aim at striving to compile crime related information with an aim of helping the police make correct decisions for the purpose of increasing security of our neighborhoods. We promise to protect your information and the system will be closely linked to the police departments. It will also be compliant with all the requisite legal provisions and standards in the pursuit of achieving your privacy and efficient functionality of the system.

### Constraints

Limitations of the "Watchful Eyes" Crime Reporting System A big drawback is the system cannot properly verify the reported and identified useful instances despite having the requirement to protect the identity of the users). And it relies

on someone having internet, or a smartphone connection, something that those needing the comfort of others in their time of extreme distress may not have. Also, user of the system can influence how much we can use the system, and this would be dependent on how willing law enforcement organizations are to work with the platform or integrate with it. And lastly, data privacy rules and regulations must be enforced more consistently.

### Stakeholder and User Descriptions

#### Stakeholders

Following are the stakeholders of our project:

* + - 1. Users

These are the number one people of the software who will use it for diverse purposes, such as reporting crimes, gaining access to safety facts, and making use of safety capabilities.

* + - 1. Government Authorities

These are the government companies that can be interested in the software's records to screen and cope with crime trends and public safety issues.

* + - 1. App Developers

The people that are responsible for developing and maintaining our Android App and net utility. Developers’ role includes that our platform is technically useful, secure, usable, and constantly up to date.

* + - 1. Emergency Services Providers

The project will display emergency service providers found in the user’s neighboring location.

* + - 1. Community Organizations

The project ensures women’s safety to an extra extent and hence might attract women’s safety-based organizations or societies.

#### User Description

Following are the User Description of our project:

* + - 1. Registered Users

These accounts are made by certain individuals on the application. The users can report crimes, get safety advice through the panic button and participate in community forums among other features.

* + - 1. Anonymous Users

Users with accounts prefer to remain anonymous while reporting crime.

* + - 1. Admin

To monitor and analyze crime data, view high alert maps, and manage databases.

* + - 1. Community Members

Users who actively participate in community forums, share safety tips, and exchange experiences related to crime and safety.

* + - 1. Trusted Contacts

Individuals receive real-time location sharing from registered users. They can be friends, family members or anyone trusted by the user for safety purposes.

* + - 1. Service Providers

Hospitals and police stations are listed in the app, so users can easily find and contact them in case of an emergency.

#### Market Demographics

The diverse target for our project is individuals who care about safety. Young adults, parents, and workers who want to stay safe are included. Our app intended for women security oriented, but it will help any other individual to have a secure environment around them. If you are comfortable with using mobile applications and you are a community person, this is the app for you. We want to learn more from our users, hence the study on them to better understand them, as well as have an application.

#### Stakeholder Summary

The project consists of several key stakeholders who impact the project’s success and completion:

* + - 1. Users

Users are the primary stakeholders of our app and web application, by reporting and registering crimes and accessing useful resources helpful in their safety.

* + - 1. App Developers

Developers are responsible for the development, maintenance, integration of the app and web application. It is also their responsibility to make sure the web/app is fully useful, scalable, and secure.

* + - 1. Government Authorities

Law enforcement and government agencies use the app’ data to take meaningful decisions. By using the platform they can monitor crime, respond to emergencies, or analyze the crime data.

* + - 1. Community Organizations

Women’s safety-based groups, communities and organizations can be considered stakeholders as well since their mission aligns with our app’s vision.

* + - 1. Service Providers

Hospitals and police stations are included in our local services directory. This helps them assist during emergencies and enhances public safety.

* + - 1. Community Members

Active users who participate in community discussions, share safety advice, and talk about safety issues play a crucial role in building a supportive network. Their contributions help raise safety awareness and spread valuable knowledge which can be accessed by other users.

* + - 1. Trusted Contacts

Users can save individuals they trust and send them their real-time location in case of various scenarios including emergencies.

#### User Environment

Our project’s user environment includes following key elements:

* + - 1. Digital Devices

Users gain access to the application via various digital devices, including smartphones, tablets, and computers. The Android app and web application maintain compatibility with these devices, providing a flexible and accessible user experience.

* + - 1. Internet Connectivity

A stable internet connection serves as a fundamental requirement for users to access the app and utilize its real-time data and features.

* + - 1. Mobile Operating Systems

Users typically have smartphones running on Android OS.

* + - 1. Location Services

Many features, such as real-time location sharing and crime data visualization, depend on the device's GPS and location services. Users must enable these services for full functionality.

* + - 1. User Accounts

Registered users create accounts with personal information and login credentials, while non-registered users have only access to map visualization.

#### Stakeholder Profiles

The brief profiles of stakeholders of our project are following:

* + - 1. Users

**Role:** Primary users of the android app and web application.

**Interests:** Personal safety, access to real-time data, and community engagement.

* + - 1. App Developers**:**

**Role:** Supposed to design and develop the app and web application based on the instructions.

**Interests:** Security of the platform, speed of its work, and convenience for the user.

* + - 1. Government Authorities

**Role:** They should use the platform to monitor crime and respond to incidences of any sort**.**

**Interests:** Public safety, crime data analysis, and effective emergency services.

* + - 1. Community Organizations:

**Role:** Women's safety communities aligned with the project's objectives.

**Interests:** They prioritize safety, peace and ensure everyone in the community participates.

* + - 1. Emergency Services Providers

**Role:** Local services directory containing hospitals and police stations.

**Interests:** Assisting in case of emergencies.

* + - 1. Community Members

**Role:** Individuals’ engagement in the discussion on safety practices and ventures.

**Interests**: Would like to learn about safety precautions, contributing as well as being a sharer and contributor of information and as a member of the community**.**

* + - 1. Trusted Contacts

**Role:** People that users rely on for sharing their location and getting help during emergencies

**Interests:** Ensuring the safety of their loved ones and responding to emergencies.

# System Requirement Specification

### Hardware Requirements

The following are the hardware requirements of our project:

Mobile Devices:

Processor: Quad-core 1.4 GHz or higher. RAM: Minimum 2GB, Recommended 4GB. Storage: Minimum 500MB free space.

GPS functionality required. Camera: 3G/4G/5G connectivity.

### Software Requirements

The following are the software requirements of our project:

Mobile Devices:

Operating System: Android 8.0 and above.

Browser Support: Latest versions of Chrome, Safari, Firefox, and Edge.

Server:

* Firebase Authentication
* Firebase Realtime Database
* Firebase Cloud Messaging
* Firebase Storage
* Firebase Hosting

Though there are SQLite and Firebase Storage available, we have opted to use Firebase Realtime Database for the following reasons: First, Firebase Realtime Database can be used to provide real-time

synchronization of data for applications that must be updated continually. Second, it ensures that the application we create might get popular and big someday without the need for extensive command of servers through the feature scalability. The tool serves as an effective method for a smooth and efficient run of the development procedure, as well as for collaboration with other tools of Firebase infrastructure including cloud messaging and authentication.

Development Environment:

* Flutter Development Tools
* IDE
* Version Control

### Functional Requirements

The following are the functional requirements of our project:

#### Authenticate and Register User

Users will start creating accounts without getting worried about their information being stolen. They must also have to login to their account and by entering his/her login credential, system will verify it.

#### Register Crime

Using the platform, users should be able to effectively report criminal incidences.

#### Report Crime

Through the platform, users should also be able to report various crimes. They should also be allowed to report such incidents using anonymous reporting platforms so that their privacy and safety are not compromised.

#### Record Voice

The system provides a choice to the users in which they can record audio at the time of incident captured.

#### Map Feature

Based on where most criminal incidences are recorded, high-alert maps make it possible for users to view the areas. On the map provided, the crimes are mapped to the geographical locations and the distribution of colors indicates the crimes intensities. Additionally, this map provides secure directions and off-route directions if a user wants to go a different way.

#### Analyze and Notify

The system should let older criminal records or a past situation of someone to be seen on charts or accounts, and it must also send an alert with the reported incident within a kilometer perimeter at the earliest possible time.

#### User Interaction

The service will allow users to store emergency contacts onto their devices and broadcast real-time location information to those contacts when need arises. The users can collaborate with other community members who are concerned about safety or share their experiences using Community Forums.

#### Emergency Features

The system should allow users to inform their family and friends in cases of emergencies by actively using the panic button embedded in this system. The application sends real-time location automatically to a pre-defined list of emergency contacts once the user triggers an alarm.

#### Safety Resources

The system shall provide users with security resources and tools which include videos, articles, and tutorials for well-being mental conditions as well as physical defense techniques; finally, they should have ability of purchasing self-defense equipment through links provided by the application.

## Non-Functional Requirements

The following are the Non-functional requirements of our project:

#### Security

The system employs encryption techniques to keep user data safe, and as a result gives top priority to information security. In addition, if users opt for anonymity when they report crimes then they will be strictly safeguarded by the system from the revelation of their personal details, so a safe reporting environment is maintained.

#### Usability

The platform offers an interface which is easy for users to interact with so that all users can easily find what they need on it and have good navigation experience. Besides this, accessibility options are present and these guarantee

that users will access important functions in no time during their emergency situations.

#### Performance

To ensure ultimate user satisfaction, the system is engineered to respond instantly to every user input/interaction/request. The promptness of response has been set as one of the priorities so that users can interact with the platform effectively without having such time-wasting barriers like slow feedback.

#### Reliability

With reliability being one of its most important features, our platform strives to always make its services accessible and reliable around the clock every day of the week.

#### Scalability

The system is designed with scalability allowing it to handle increased traffic and data flow volume scalability, ready to handle increased traffic and data demands. As the user base grows and traffic intensifies, the system is well- prepared to handle increased demands without compromising performance.

#### Privacy

The system provides user data security using encryption and strict protocols on data handling so you can be sure that your information is confidential and protected from unauthorized access.

#### Notifications

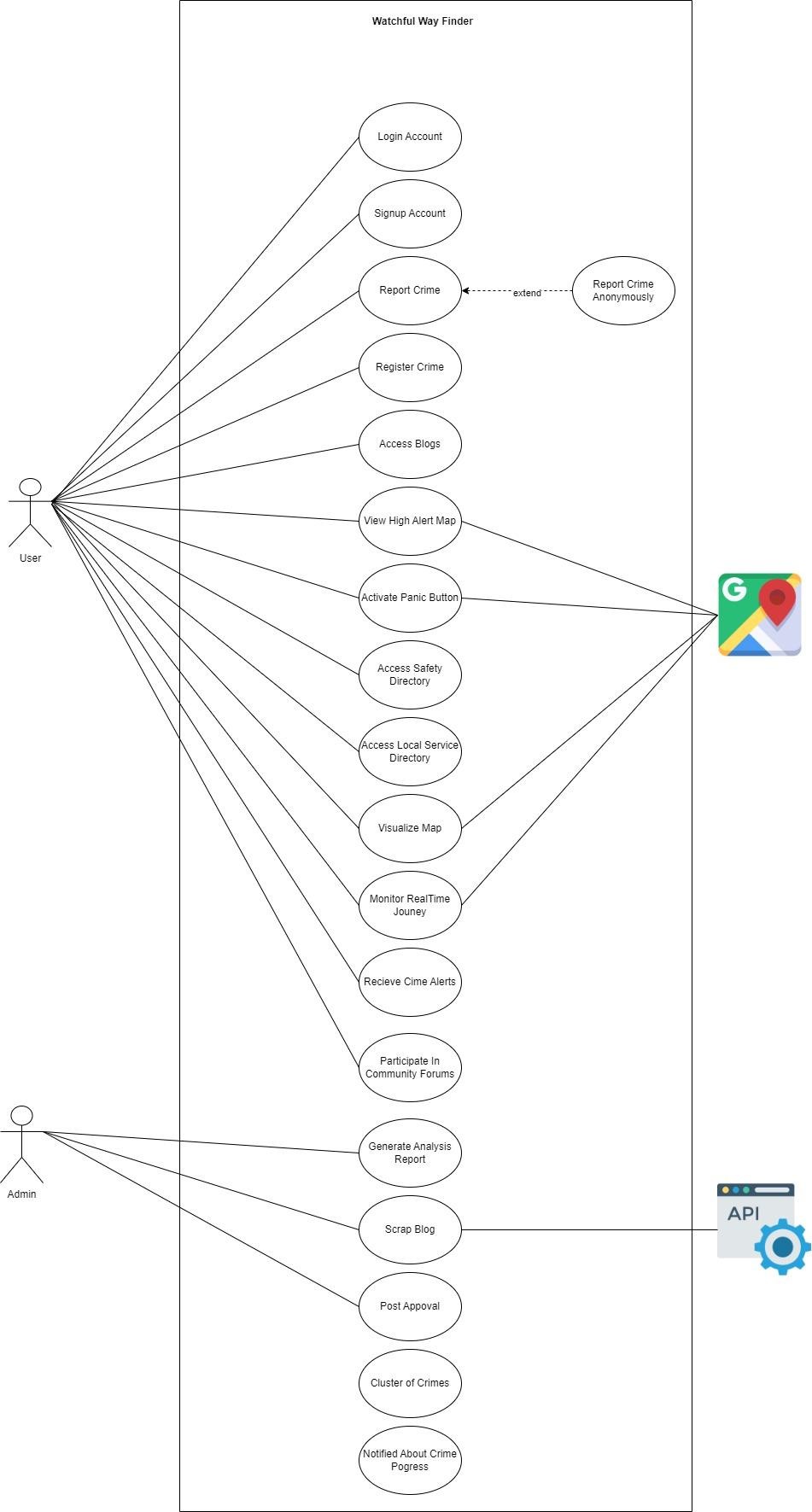
The platform commits to the principle that no notification will be delayed thus making sure that there is a timely exchange of information with users.

#### Maintainability

For the sake of sustainability in the long-run and for ease of development, version control systems as well as collaboration tools like GitHub are utilized by the platform. Through this method, it is possible to effectively manage codes, follow changes and work together on developing the platform itself. By using Git and GitHub, our development team works collaboratively by tracking issues and making updates without compromising code quality and reliability so that functionality and performance of our platform can be improved over time; meanwhile security also needs to be ensured as well.

# Use Cases

### Use Case Diagram



### High Level Use Cases

|  |  |
| --- | --- |
| **Use case-Name** | Login Account |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The user will log in to his/her account to access reporting and registering mechanisms and to monitor crimes near their location. |

*Table 1:UC-1 Login Account*

|  |  |
| --- | --- |
| **Use case-Name** | Signup Account |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The user will create a new account to join the system where they can perform various functions and participate in community forums. |

*Table 2:UC-2 Signup Account*

|  |  |
| --- | --- |
| **Use case-Name** | Report Crime Anonymously |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The registered users can report crimes without revealing their identities so that their anonymity is preserved while providing crucial information for law enforcement purposes. |

*Table 3:UC-3 Report Crime Anonymously*

|  |  |
| --- | --- |
| **Use case-Name** | Register Crime |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The users can register crimes and provide crucial information for law enforcement purposes. Users can report crimes of different types. |

*Table 4:UC-4 Register Crime*

|  |  |
| --- | --- |
| **Use case-Name** | View High Alert Map |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The registered and non-registered users can access “High Alert Map” which displays areas with higher crime rates so that the users have an idea of potential high-risk areas |

*Table 5:UC-5 View High Alert Map*

|  |  |
| --- | --- |
| **Use case-Name** | Crime Clustering |
| **Actors** | Admin |
| **Type** | Primary |
| **Description** | Using a color-coded scheme the system displays areas with varying levels of crime rates. Zones are marked with different colors: green for normal, yellow for higher, and red for the  highest crime rates. User can view this |

|  |  |
| --- | --- |
|  | and be aware of potential high-risk areas. |

*Table 6:UC-6 Crime Clustering*

|  |  |
| --- | --- |
| **Use case-Name** | Access Blogs |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The users can watch content and read blogs related to women empowerment. The user navigates through different sections of blogs designated to women empowerment and safety. |

*Table 7:UC-7 Access Blogs*

|  |  |
| --- | --- |
| **Use case-Name** | View Safety Directory |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The system consists of safety directory that allows users to watch content related to self-defense techniques which can help users in case of emergencies. |

*Table 8:UC-8 View Safety Directory*

|  |  |
| --- | --- |
| **Use case-Name** | Access Local Service Directory |
| **Actors** | User |
| **Type** | Primary |
| **Description** | Users can identify hospitals and  emergency facilities within 2m radius. |

|  |  |
| --- | --- |
|  | The system uses real-time location data and provides an essential list emergency location within the radius of 2m and details such as addresses, contact numbers. |

*Table 9:UC-9 Access Local Service Directory*

|  |  |
| --- | --- |
| **Use case-Name** | Crime Progress Notification |
| **Actors** | System |
| **Type** | Primary |
| **Description** | The system sends WhatsApp notifications to users about update in their registered crime incidents |

*Table 10:Crime Progress Notification*

|  |  |
| --- | --- |
| **Use case-Name** | Monitor Real-Time Journey |
| **Actors** | User |
| **Type** | Primary |
| **Description** | It allows a user to accompany someone by tracking their journey in real-time. The user can receive updates about the progress during the journey. |

*Table 11:Monitor Real-Time Journey*

|  |  |
| --- | --- |
| **Use case-Name** | Analysis Report |
| **Actors** | Admin |
| **Type** | Primary |
| **Description** | The admin generates analysis reports  based on past crime records to create |

|  |  |
| --- | --- |
|  | charts and figures for analysis of past crime records. |

*Table 12:UC-13 Analysis Report*

|  |  |
| --- | --- |
| **Use case-Name** | Activate Panic Button |
| **Actors** | User |
| **Type** | Primary |
| **Description** | In case of emergency users can activate a panic button when they feel unsafe or threatened. Activating the button would a message along with their location to the saved emergency contacts. |

*Table 13:UC-14 Activate Panic Button*

|  |  |
| --- | --- |
| **Use case-Name** | Participate in Community Forums |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The users can participate in community forums and discuss their safety concerns, share personal experiences or exchange safety tips with other users using the platform. |

*Table 14:UC-15 Participate in Community Forums*

|  |  |
| --- | --- |
| **Use case-Name** | Map Visualization of Safe Path |
| **Actors** | User |
| **Type** | Primary |

|  |  |
| --- | --- |
| **Description** | The system displays a map that highlights secure routes within a 1- kilometer radius guiding the users through areas with reduced risk. Users can travel along paths with low crime rates to reach their destination. |

*Table 15:UC-16 Map Visualization of Safe Path*

|  |  |
| --- | --- |
| **Use case-Name** | Blog |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The system displays images and videos content related to different topics. The users can scroll through relevant blogs. |

*Table 16:UC-17 Blog*

|  |  |
| --- | --- |
| **Use case-Name** | Post Approval |
| **Actors** | Admin |
| **Type** | Primary |
| **Description** | This system enables the admin to manage the content posted by users on the community forums by keeping or deleting posts. The admin can delete any post that goes against community guidelines and standards thus ensuring a safe environment for all community forum users. |

*Table 17:UC-18 Post Approval*

|  |  |
| --- | --- |
| **Use case-Name** | Receive Crime Alerts |
| **Actors** | User |
| **Type** | Primary |
| **Description** | The system notifies the user about any new crime reported within a 2-mile radius of an area where they have previously registered a crime. |

*Table 18:Receive Crime Alert*

### Extended Use Cases

|  |  |
| --- | --- |
| **Use case-Name** | Report Crime Anonymously |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Law Enforcement Agencies, Local Communities, Individual Users (Citizens), Emergency Response Services. |
| **Pre-condition** | 1. The user has access to the  reporting feature. |
| **Post-condition** | 1. The system stores an anonymous crime report and notifies the authorities for further action,   maintaining the user's anonymity. |
| **Main Success Scenario** | 1. The user selects the option to report a crime anonymously. 2. The system displays the reporting screen for the user to provide details about the crime they want to report. 3. The user enters relevant details about the crime, such as location, type of crime, time, and any additional information they wish to provide. 4. The user submits the crime report to the system. 5. The system anonymizes the provided information, removing any identifying details about the user to maintain anonymity. 6. The system securely stores   anonymous crime report. |

|  |  |
| --- | --- |
|  | 1. The system notifies the appropriate authorities about the anonymous crime report, providing the anonymized details. 2. The system confirms to the user that their crime report has been   submitted anonymously. |

*Table 19:UC-1 Report Crime Anonymously Extended*

|  |  |
| --- | --- |
| **Use case-Name** | Register Crime |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Law Enforcement Agencies, Local Communities, Individual Users (Citizens), Emergency Response Services. |
| **Pre-condition** | 1. The user has access to the crime  registration feature. |
| **Post-condition** | 1. The system registers the crime report, making it available for monitoring and action by relevant   authorities. |
| **Main Success Scenario** | 1. The user initiates the process to register a crime through the app. 2. The system provides a form or interface for the user to enter details about the crime, such as type of crime, location, date, time, description, and any other relevant information. 3. The user enters accurate and   comprehensive details about the crime in the provided form. |

|  |  |
| --- | --- |
|  | 1. The user submits the crime report to the system for further processing. 2. The system validates the submitted crime report for completeness and correctness. 3. If the information is valid, the system registers the crime report, and it becomes part of the database for crime monitoring and law enforcement purposes. 4. The system sends a confirmation to the user that the crime report   has been successfully registered. |
| **Alternative Flow** | 3.a If the provided information is incomplete or incorrect   1. The system displays an error message and allows the user to correct and resubmit the information. 2. The user decides to cancel the crime report before submission. The   user cancels the report. |

*Table 20:UC-2 Register Crime Extended*

|  |  |
| --- | --- |
| **Use case-Name** | View High Alert Map |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Law Enforcement, Local Government, Individual, Emergency Services. |
| **Pre-condition** | 1. The user can access the high  alert map feature |
| **Post-condition** | 1. User views the map showing areas of increased crime, receiving valuable information concerning areas of potential   increased risk. |
| **Main Success Scenario** | 1. The user requests to view the high alert map by activating an option within the application. 2. The server accesses current crime data and processes it to show areas of increased crime. 3. The server presents the map to the user with visual colors or overlays indicating areas of increased crime. 4. The user navigates the map to examine particular areas and the intensity of crime in those areas by zooming and panning. 5. The user selects a marker to view additional information about that particular crime. 6. The user can also access   additional features or options related to safety measures or |

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|  | reporting crimes while viewing the map.  7. The user can exit the map view when they have obtained the  desired information. |
| **Alternative Flow** | 6.a If the system determines that there are no areas with heightened crime rates based on the available data, it displays a message indicating so to the  user. |

*Table 21:UC-3 View High Alert Map Extended*

|  |  |
| --- | --- |
| **Use case-Name** | Crime Clustering |
| **Primary Actors** | Admin |
| **Stakeholders and Interests** | Law Enforcement, Local Government, Individual, Emergency Services. |
| **Pre-condition** | 1. The system requires updated crime data so that every calculated update reflects actual crime cases. 2. It should be compatible with accurate mapping software to perfectly overlay the map and   show crime density. |
| **Post-condition** | 1. The system must have access to real-time or regularly updated crime data for accurate mapping. 2. The system should be integrated   with a robust mapping software |

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|  | to accurately display crime  density on a map. |
| **Main Success Scenario** | 1. The admin logs into the system and selects the 'Enhanced Crime Clustering' feature. 2. The system retrieves the most recent crime data from its database. 3. It then processes this data to create a color-coded map, clearly illustrating crime density across different areas. 4. When observing the map, it is possible to see that regions with typical criminality are colored green, those with increased criminality are colored yellow, and areas with extremely high criminality levels are colored   red. |
| **Alternative Flow** | 2.a. In case the system fails to fetch the latest crime data, it will indicate an error to inform the admin to check the data source or internet connection.  3.a If the system encounters a problem with the mapping software, it displays messages and suggests the admin to check the mapping tool and its configuration for a potential  problem. |

*Table 22:UC-4 Crime Clustering Extended*

|  |  |
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| **Use case-Name** | Access Blogs |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens) |
| **Pre-condition** | 1. The user has an account. 2. The device has active internet connection. |
| **Post-condition** | 3. The user has expanded their knowledge on the topic, shared relevant articles with their  network. |
| **Main Success Scenario** | 1. The user opens the platform where women empowerment blogs are hosted. 2. The blog’s screen is displayed. 3. A list of relevant content   appears, and users select the one they want to watch. |
| **Alternative Flow** | 2.a. The user is not interested in any of the topics or available  content. |

*Table 23:UC-5 Access Blogs Extended*

|  |  |
| --- | --- |
| **Use case-Name** | View Safety Directory |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens) |
| **Pre-condition** | 1. The user has an active internet connection and location services enabled. 2. The user is logged into the   system or application |
| **Post-condition** | 3. The user has viewed safety-  related content within the directory |
| **Main Success Scenario** | 1. The user opens the application. 2. Within the application, the user heads to the security directory section. 3. The system provides a user- friendly interface that includes categories or topics related to security and protection mechanisms. 4. Users select groups or topics they are interested in. 5. The system displays a list of safety-related content items within the selected category. 6. If the user clicks on a specific content item the system provides detailed information which include images, text and   links to external resources. |

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|  | 7. The user can navigate back to the list of content items or return to the main directory as needed. |
| **Alternative Flow** | 1. The user can filter or search the list based on specific services they need. |

*Table 24:UC-6 View Safety Directory Extended*

|  |  |
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| **Use case-Name** | Access Local Service Directory |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens) |
| **Pre-condition** | 1. The user has an active internet connection and location services   enabled. |
| **Post-condition** | 1. The user has identified and possibly navigated to or contacted a nearby hospital or emergency location based on their needs. 2. The user is more informed and prepared to handle emergencies due to immediate access to   crucial location data. |
| **Main Success Scenario** | 1. User selects “Emergency Locations” from main menu or   dashboard. |

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|  | 1. The app fetches the user’s current location using location services. 2. The app processes the location against its database and displays a list of nearby hospitals, clinics and other emergency locations. 3. The user can tap on a particular facility to view more details such as contact number, services   provided. |
| **Alternative Flow** | 1. The user can filter or search the list based on specific services   they need. |

*Table 25:UC-7 Access Local Service Directory Extended*

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| **Use case-Name** | Crime Progress Notifications |
| **Primary Actors** | User |
| **Stakeholders and Interests** | **User**: Interested in being informed about any developments related to their reported incident, ensuring their safety, and staying updated on the situation.  **System**: Aims to efficiently and accurately notify users about incident updates. |
| **Pre-condition** | 1. The app is installed and operational on the user's device. 2. The user successfully sets up a valid account within the system. 3. The user has previously reported   an incident. |

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| **Post-condition** | 1. After the user submits an incident report, they receive a WhatsApp notification containing updates about the   reported incident. |
| **Main Success Scenario** | 1. The user has submitted an incident report. 2. An event related to the reported incident occurs, such as a change in status. 3. The system detects new developments. 4. The system generates a WhatsApp notification containing information about the incident update. 5. the system forwards the WhatsApp notification to the user's mobile phone number that's registered with the system. 6. The user receives the WhatsApp notification on their mobile device. |
| **Alternative Flow** | 6.a If the user's mobile phone number is not registered: WhatsApp notifications cannot be sent. In such a scenario, the user will be prompted to register their account with  WhatsApp to ensure they |

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|  | receive important updates in  the future. |

*Table 26:UC-8 Crime Progress Notification Extended*

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| **Use case-Name** | Monitor Real-Time Journey |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens). |
| **Pre-condition** | 1. The user must have an account. 2. The journey is confirmed by the passenger. 3. The traveler must have a suitable tracking device (such as   GPS) on their device or vehicle. |
| **Post-condition** | 1. Users receive updates on their travel schedule and status. |
| **Main Success Scenario** | 1. User logs into the account 2. The user initiates the Monitor Real-Time Journey section. 3. Details of the user's including contact information, are entered. 4. The system sends a monitoring request to the traveler. 5. The traveler accepts the monitoring request and grants access. 6. The system immediately starts tracking the traveler's GPS. 7. User receives updates on the traveler's location. 8. User can view the journey's   progress on a map showing the |

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|  | traveler's current location and the route taken.  9. The journey ends when the  traveler reaches a safe place |
| **Alternative Flow** | * 1. If the traveler rejects the monitoring request, the user is notified, and the monitoring process is not start.   2. If the GPS signal is lost during the trip, the system warns the user and attempts to reconnect when the signal returns.   3. If the passenger disables tracking during the trip, the user is informed, and tracking is stopped until it is restarted. |

*Table 27:UC-10 Monitor Real-Time Journey Extended*

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| **Use case-Name** | Analysis Report |
| **Primary Actors** | Admin |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens). |
| **Pre-condition** | 1. The admin must have access to  past crime records |
| **Post-condition** | 1. Analysis reports with charts and   figures are available for users to view |
| **Main Success Scenario** | 1. Admin logs into the system. 2. Admin selects the "Analysis Report" functionality. 3. The system searches for past criminal records. 4. Admin configures the parameters for the analysis such as time period and types of crimes to analyze. 5. The system creates tables and graphs according to the options. 6. The administrator looks at the analysis report created. 7. Admin publishes analysis reports for users to access. 8. Users can log in and access the analysis reports from their accounts. 9. Users view the charts and figures to gain insights into crime trends. |

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| **Alternative Flow** | 3.b If there are no past crime records available, the admin cannot generate analysis reports.   * If the admin encounters technical issues during the report generation process, the system should provide error messages   and support for troubleshooting. |

*Table 28:UC-11 Analysis Report Extended*

|  |  |
| --- | --- |
| **Use case-Name** | Participate in Community Forums |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens). |
| **Pre-condition** | 1. The user must be logged into the app. 2. The user must navigate to the   Community Forums section. |
| **Post-condition** | 1. The user engages in a community forum discussion by posting a   message or reply. |
| **Main Success Scenario** | 1. User log into their registered ac- count on the mobile application. 2. They navigate to the Community Forums section. 3. The user selects a forum topic or creates a new one 4. Users write their message. 5. The user sends or replies to a message. 6. The application posts the user’s   message. |

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|  | 1. Other users can view the user’s   message and may reply to it.   1. The user can also reply to other messages in the discussion. |
| **Alternative Flow** | 6.a Instead of successfully posting the user encounters a technical error such as a server timeout or loss of Internet connection.   1. The user attempts to submit their message or reply. 2. A technical error occurs, and the application displays an error message indicating that the message couldn't be sent at this time. 3. Users can choose to click the "Retry" button to attempt the submission again or cancel the operation. 4. If the user taps Retry the application attempts to post the content again. 5. If the submission is successful, the message is sent as intended. 6. If the error persists after   several attempts, users are advised to check their |

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|  | network connection or try again later.  vii. Users can also choose to cancel the operation and return to the previous screen without sending  any messages. |

*Table 29:UC-12 Participate in Community Forums Extended*

|  |  |
| --- | --- |
| **Use case-Name** | Map Visualization of Safe Path |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Local Communities, Individual Users (Citizens). |
| **Pre-condition** | 1. The user is logged into their registered account on the mobile application and has  accessed the map feature |
| **Post-condition** | 1. The user successfully views the map with highlighted safe paths and can select a safe route to   their destination |
| **Main Success Scenario** | 1. To access the feature, the user logs into their account on the mobile application. 2. They navigate to the Map Visualization feature. 3. The application displays a map with the user’s current location as the center. 4. The map highlights safe paths   within a 1-kilometer radius using visual cues such as color lines. |

|  |  |
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|  | 1. The user identifies the safest route to take for their journey. 2. The application provides turn- by-turn navigation instructions or integrates with a navigation app for the user to follow the chosen safe route. |
| **Alternative Flow** | 1. The application conducts check to find safe routes within a one- kilometer radius around the user's location. 2. If no safe routes are found, the application alerts the user and   discontinues the process. |

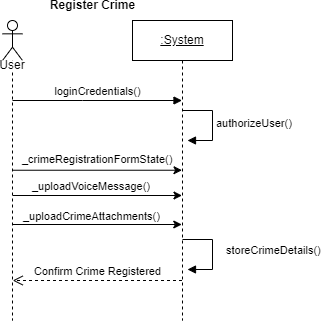
*Table 30:UC-13 Map Visualization of Safe Path Extended*

|  |  |
| --- | --- |
| **Use case-Name** | Receive Crime Alerts |
| **Primary Actors** | User |
| **Stakeholders and Interests** | Individual Users (Citizens). |
| **Pre-condition** | 1. The user is logged into their registered account on the mobile application and has previously  registered a crime. |
| **Post-condition** | 1. The user is successfully alerted of a new crime registered within   that area. |
| **Main Success Scenario** | 1. The user logs into their registered account on the mobile application. 2. They register a crime. |

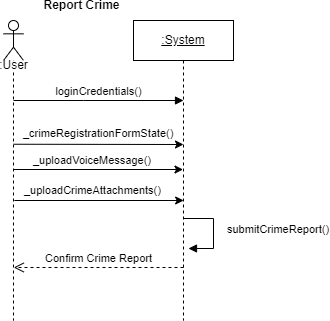
|  |  |
| --- | --- |
|  | 1. Within the 2m radius of registered crime a new crime is reported/registered. 2. The user successfully receives a   WhatsApp message containing the details of the crime. |
| **Alternative Flow** | 1. The application won’t send any   notification if crime is not registered. |

*Table 31:UC-14 Receive Crime Alerts Extended*

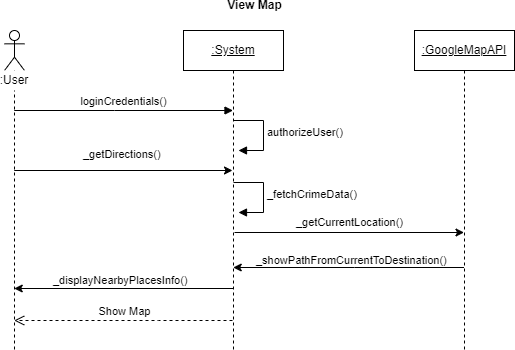
### SSD’s



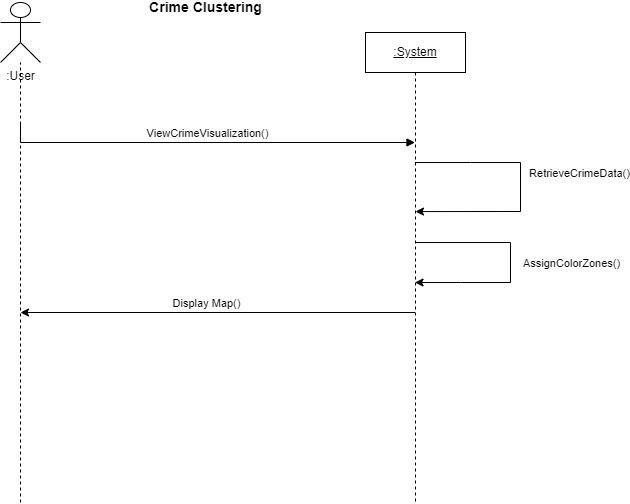
*Figure 1: SSD-1 Register Crime: Users can report crimes via the app, with validation, confirmation, and options for corrections or cancellations.*



*Figure 2:SSD-2 Report Crime: Users can anonymously report crimes, with the system forwarding reports to authorities and confirming submission.*

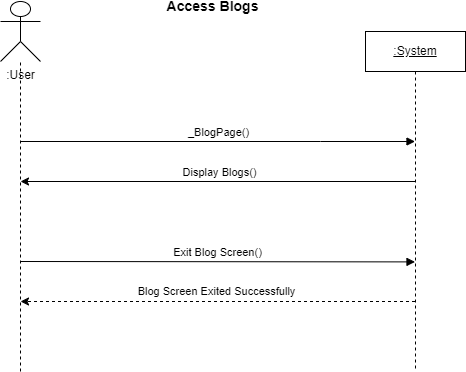


*Figure 3:SSD-3 View Map: Users can access a map of secure routes within a 1-kilometer radius, helping them choose safer paths to their destination.*

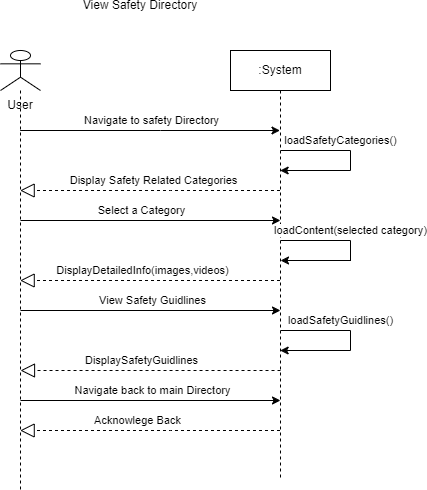


*Figure 4:SSD-4 Crime Clustering: Admins analyze real-time crime data, generating a color-coded map with error handling for troubleshooting.*

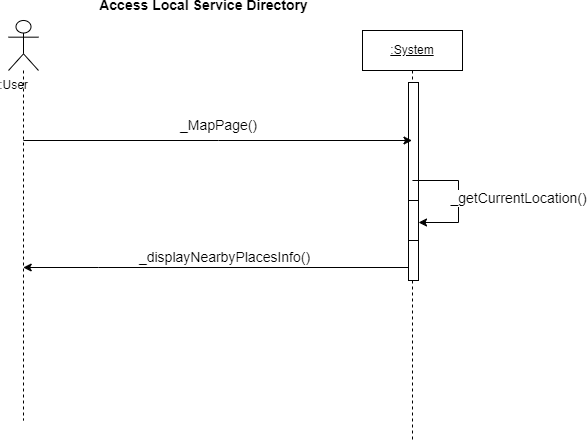
.



*Figure 5:SSD-5 Access Blogs: Users access women empowerment blogs, browsing content and exploring other topics.*

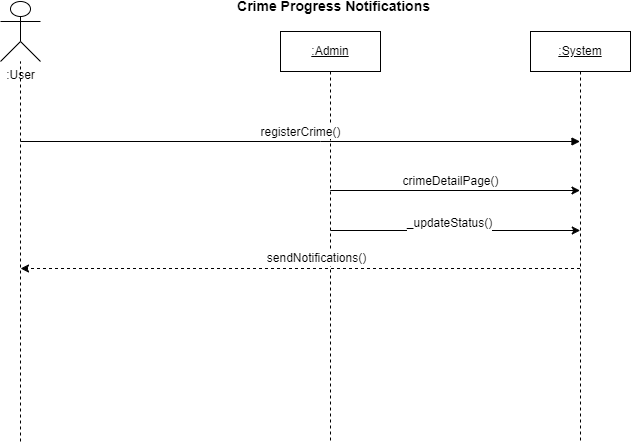


*Figure 6:SSD-6 View Safety Directory: Users access safety content in the Safety Directory, navigating categories, viewing details, and filtering services.*

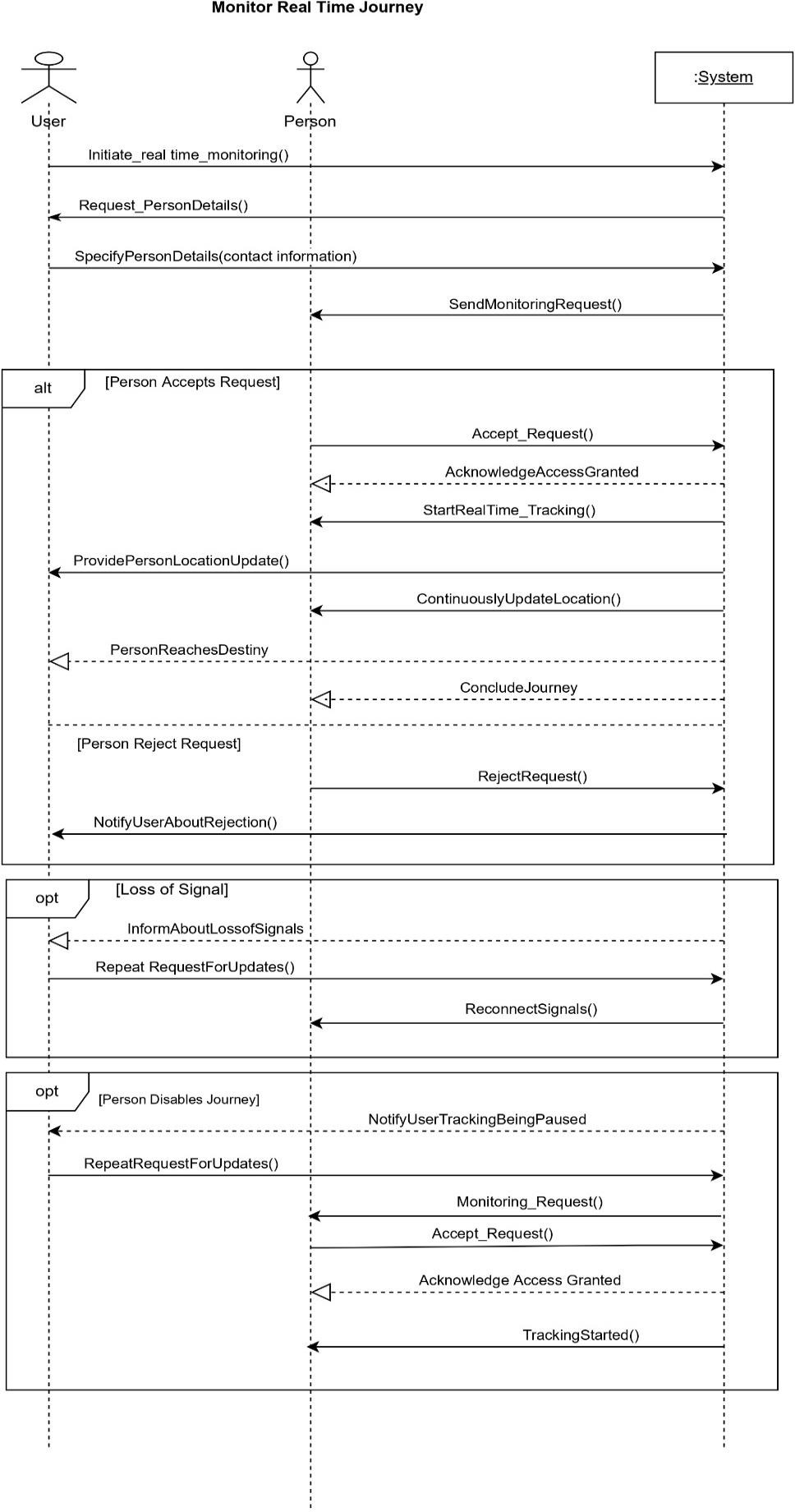


*Figure 7:SSD-7 Access Local Service Directory: Users access emergency locations nearby facilities, and filter for specific services, ensuring quick access.*

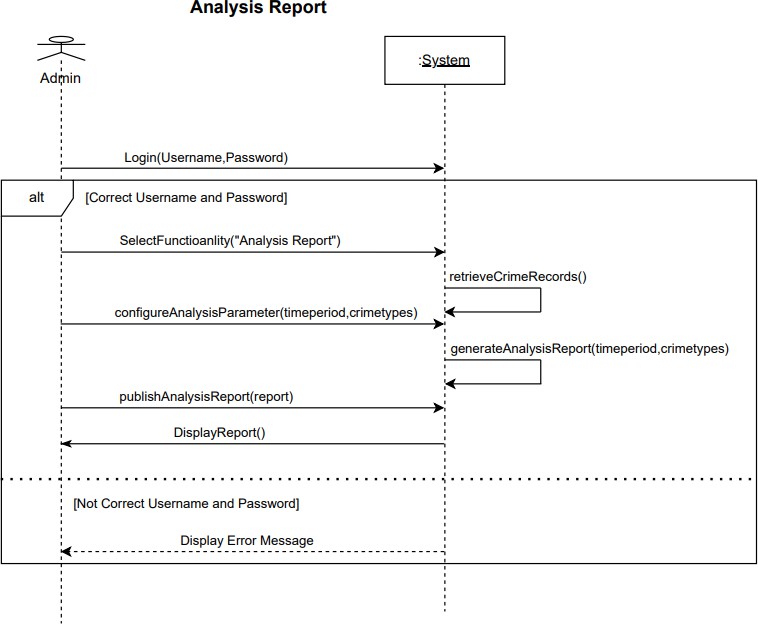
.



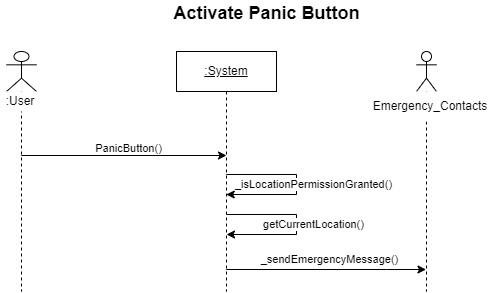
*Figure 8: SSD-8 Crime Progress Notification: Users get WhatsApp updates for incidents, ensuring safety, with efficient notification generation.*



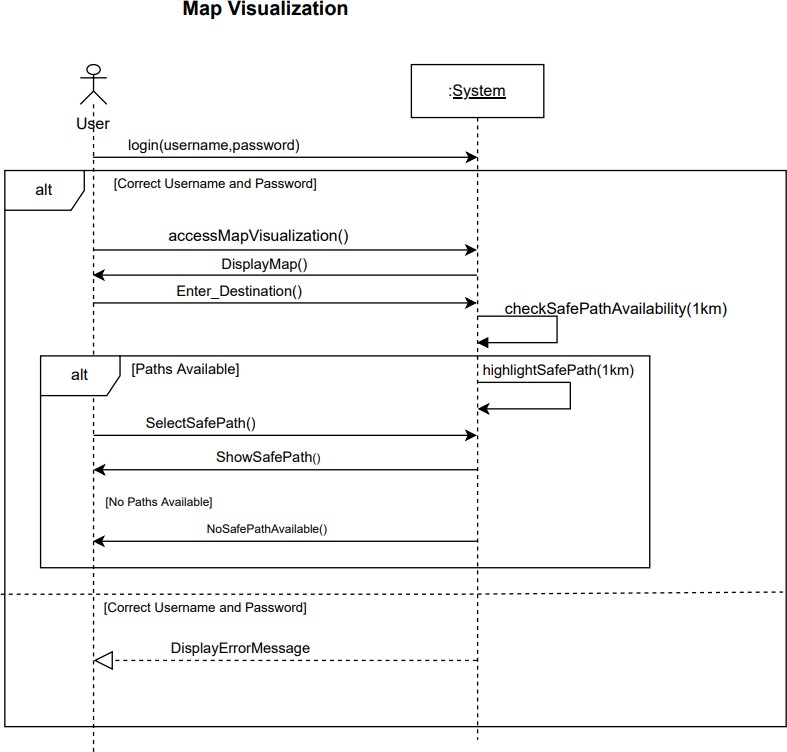
*Figure 9: SSD-9 Monitor Real Time Journey: Users monitor a traveler's GPS-tracked journey in real-time, viewing map progress and receiving interruption alerts until safe arrival.*



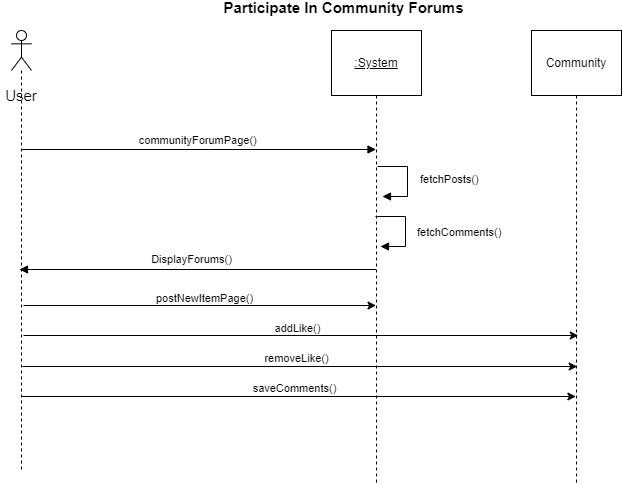
*Figure 10: SSD-10 Analysis Report: Admins generate and publish crime analysis reports with charts, providing user access and error support.*



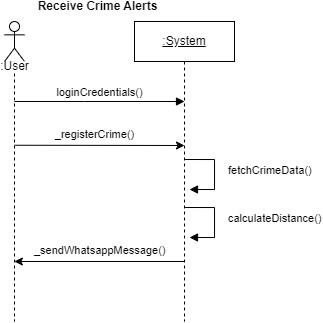
*Figure 11: SSD-11 Activate Panic Button: Users can send a distress message with their location to emergency contacts by activating a panic button when threatened.*



*Figure 12: SSD-12 Map Visualization: Users view and navigate safe paths within 1 km, receiving turn-by- turn instructions.*



*Figure 13: SSD-13 Participate in Community Forums: Users engage in community forum discussions by posting messages or replies, with error prompts for smooth interaction.*

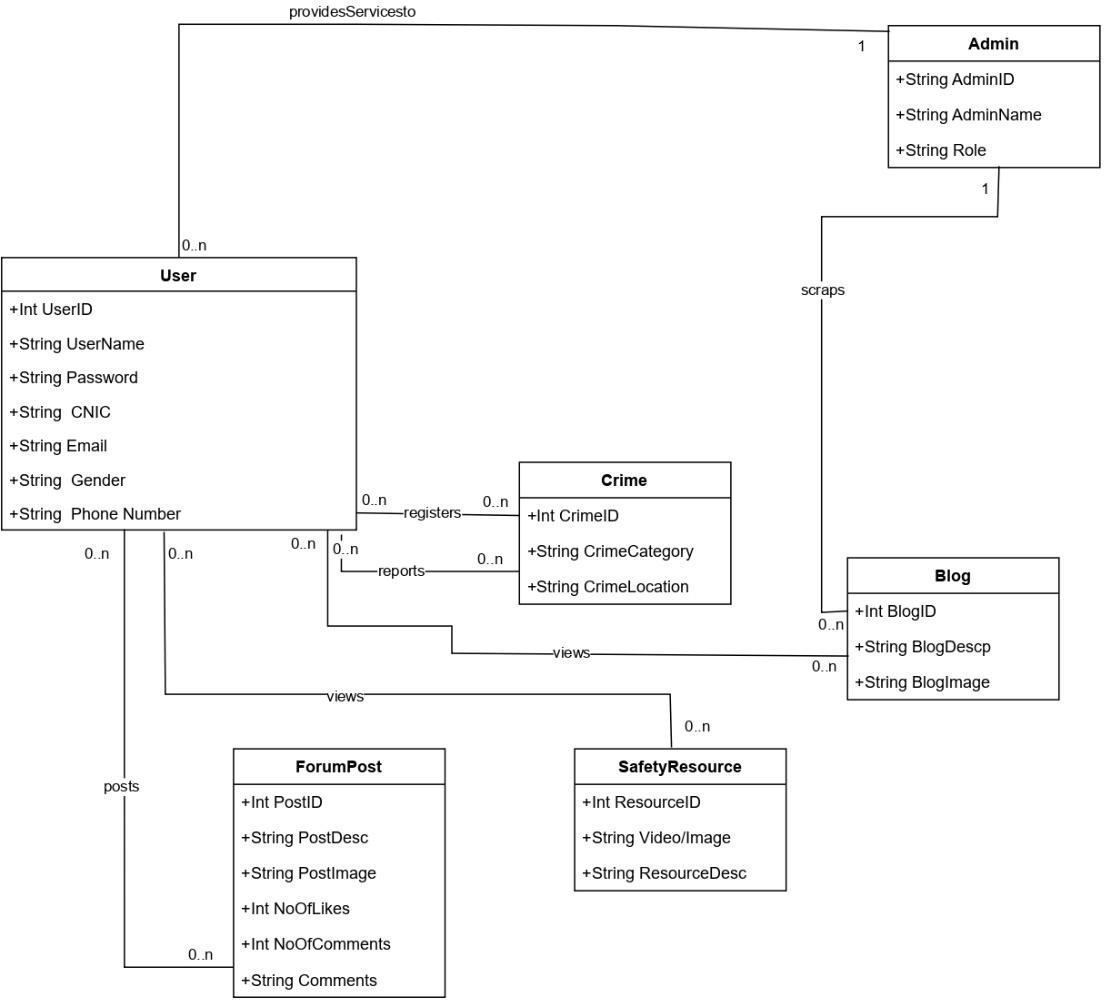


*Figure 14: SSD-14 Receive Crime Alerts: Users receive WhatsApp alerts for new crimes within a 2-meter radius of their registered crime after logging in and registering on the mobile app.*

# Design Phase

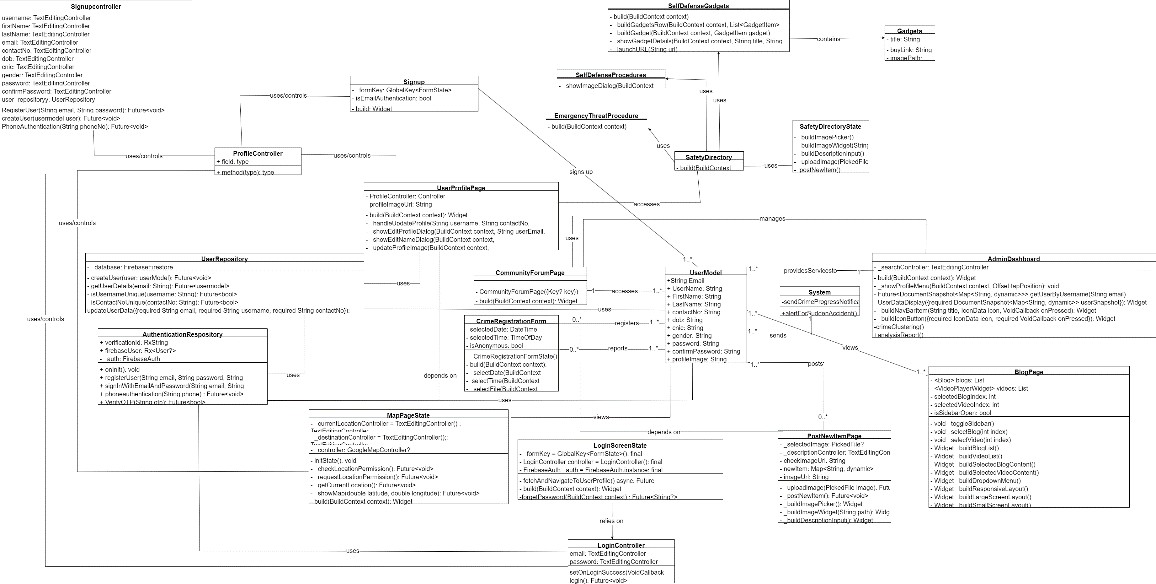
### Structure Design

#### Domain Model



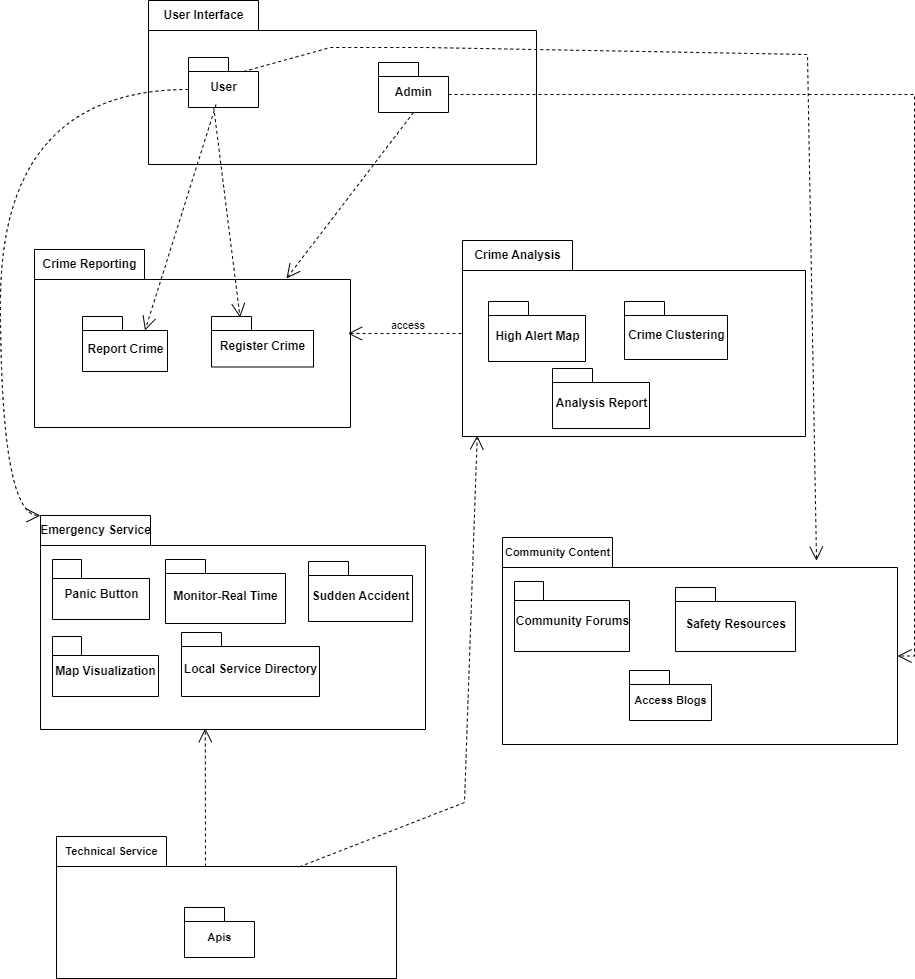
*Figure 8:Domain Model*

#### Class Diagram



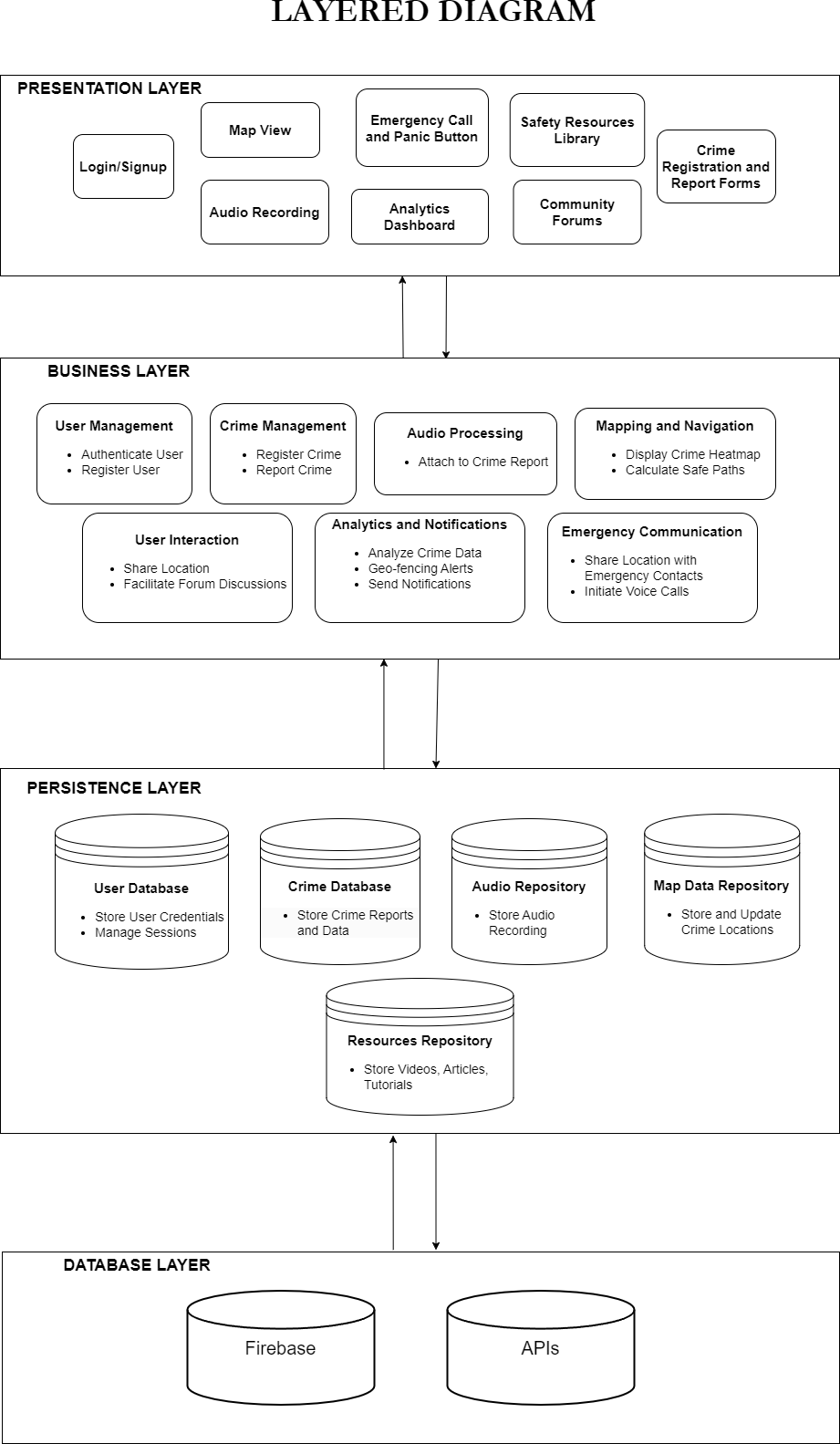
*Figure 9:Class Diagram*

#### Package Diagram



*Figure 10:Package Diagram*

#### Layer Diagram

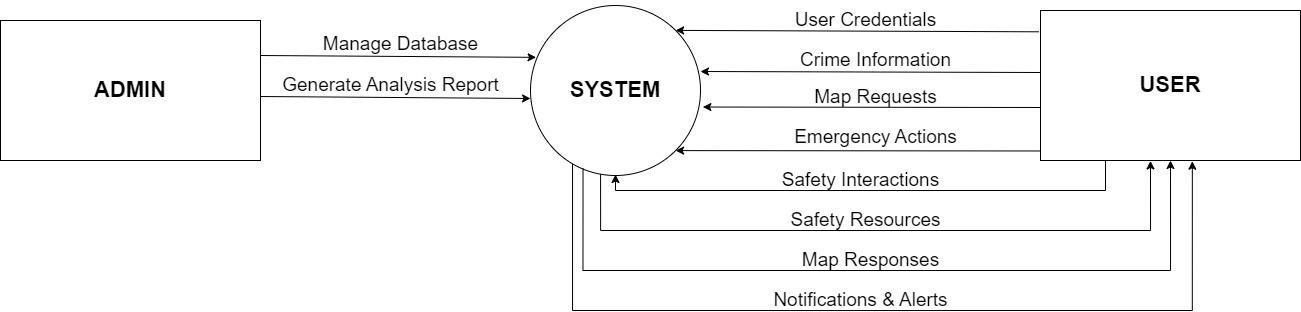


*Figure 11:Layered Diagram*

### Behavior Design

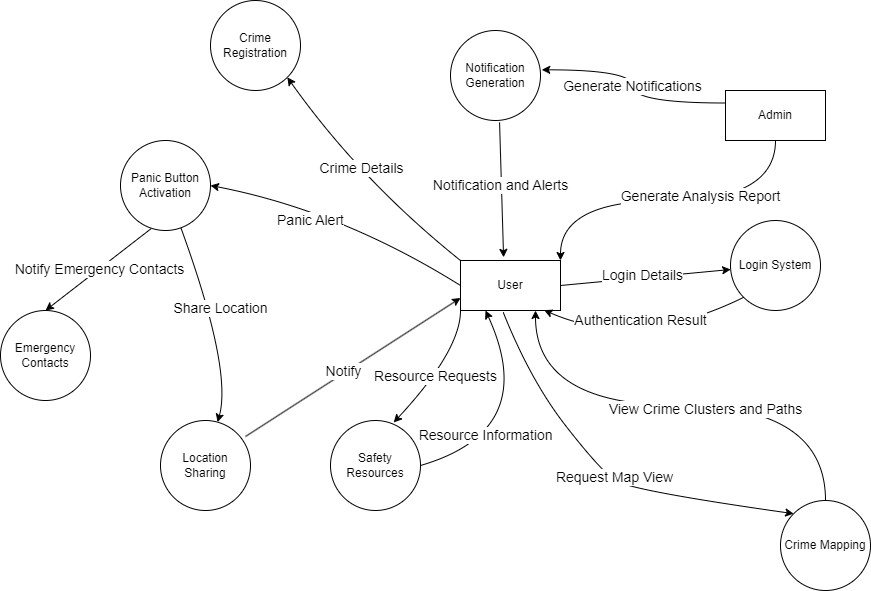
#### Data Flow Diagram

* + - 1. DFD LEVEL-0



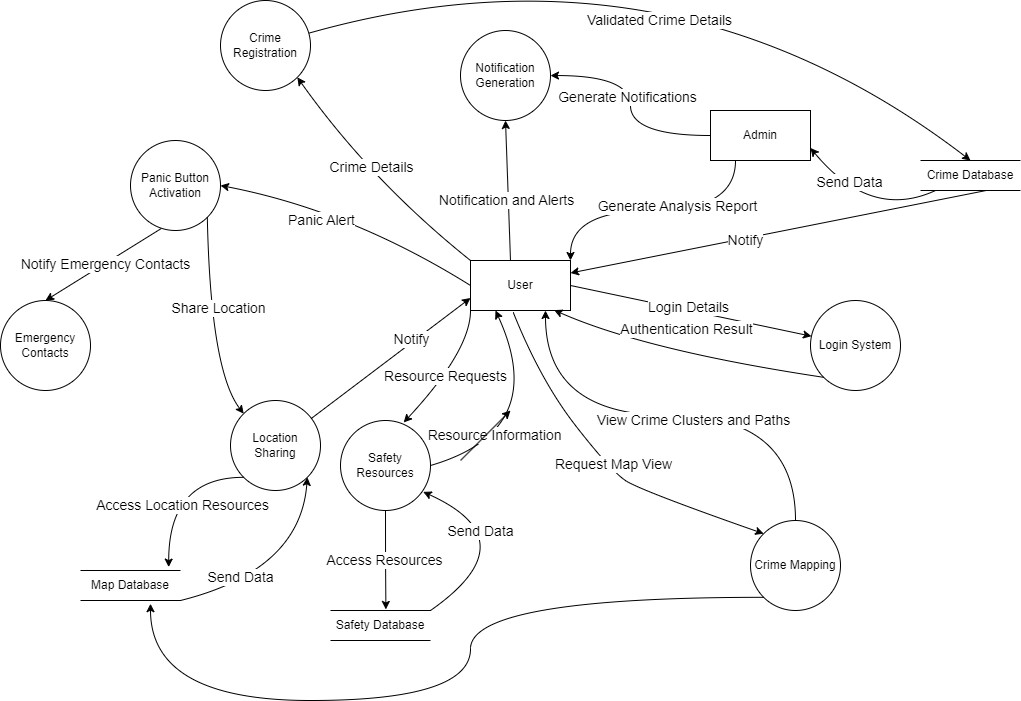
*Figure 12:DFD Level 0*

* + - 1. DFD LEVEL-1



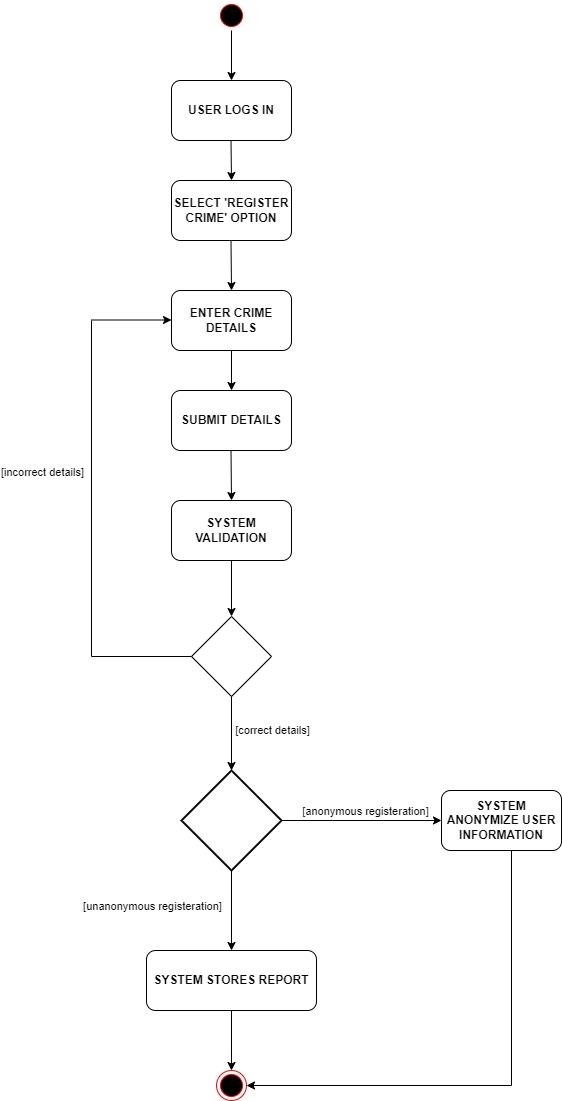
*Figure 13:DFD Level 1*

* + - 1. DFD-LEVEL 2

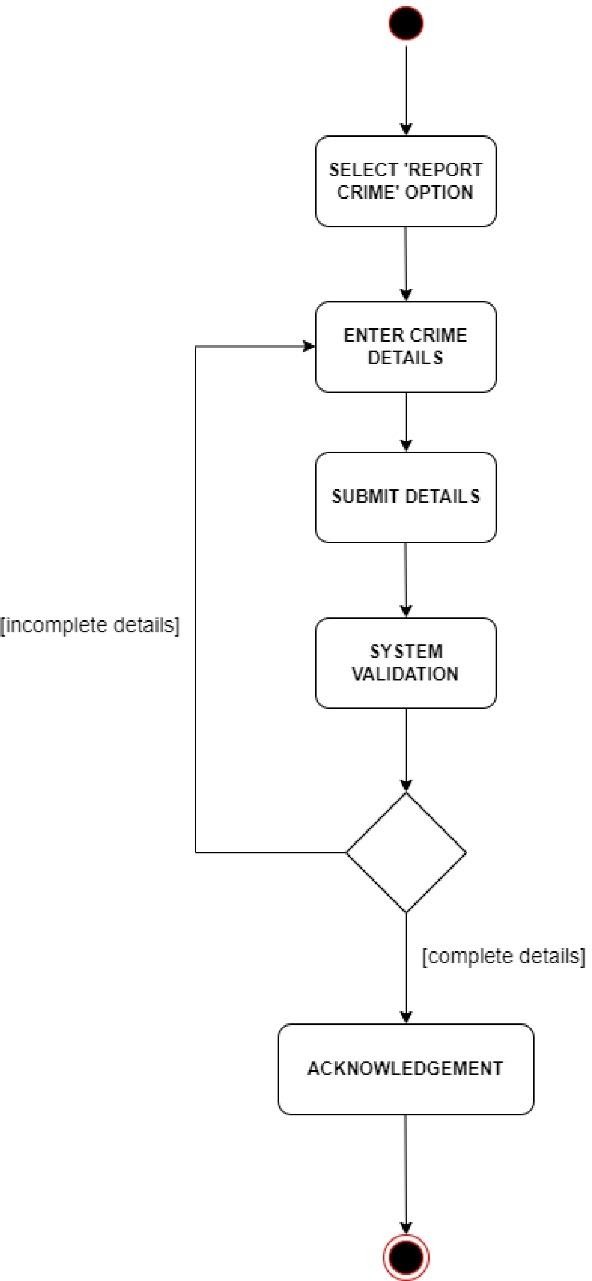


*Figure 14:DFD Level 2*

#### Activity Diagram

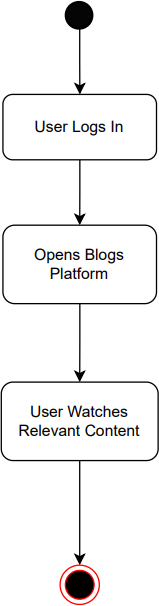
* + - 1. Register Crime

*Figure 15:Activity Diagram 1*

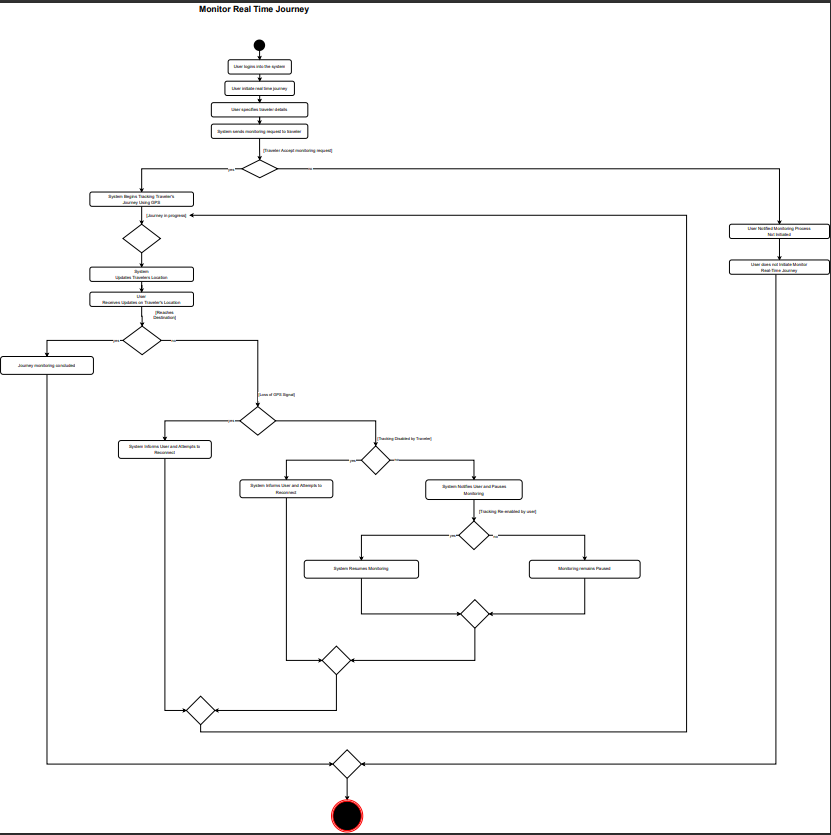
* + - 1. Report Crime

*Figure 16:Activity Diagram 2*

* + - 1. Access Blogs

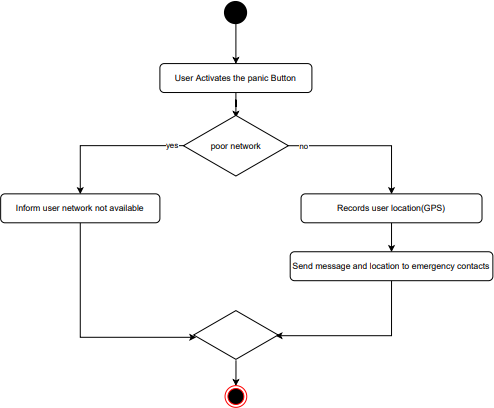


*Figure 17:Activity Diagram 3*

* + - 1. Monitor Real Time Journey

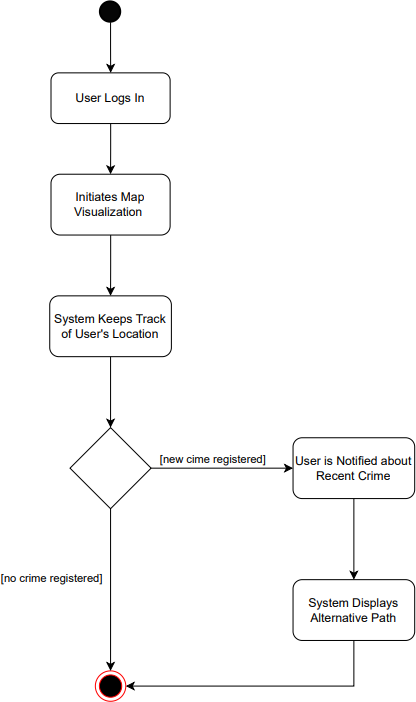
*Figure 18:Activity Diagram 4*

* + - 1. Activate Panic Button

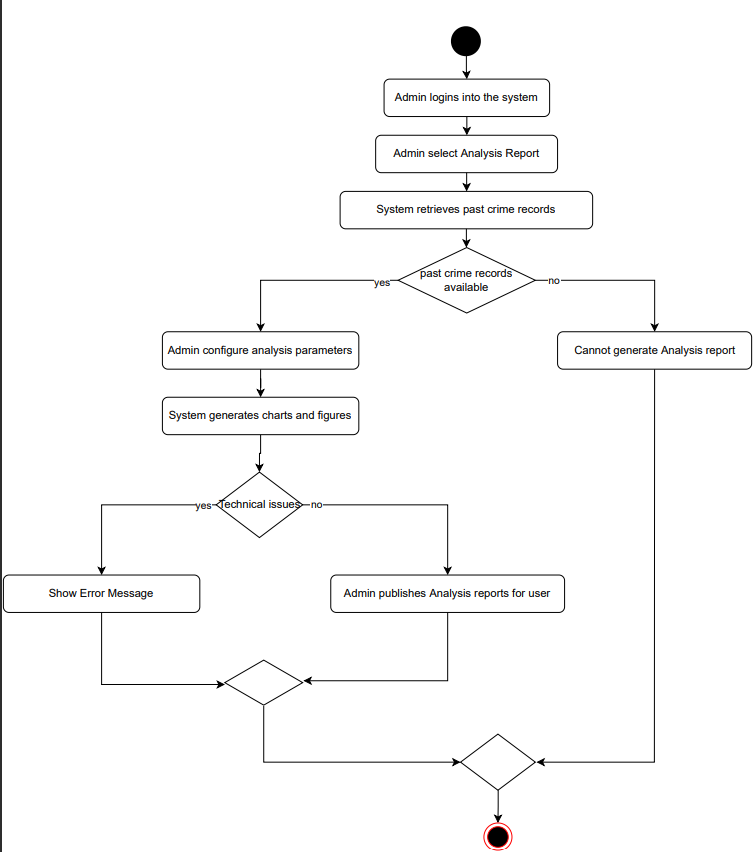


*Figure 19:Activity Diagram 5*

* + - 1. Alert For Sudden Accident

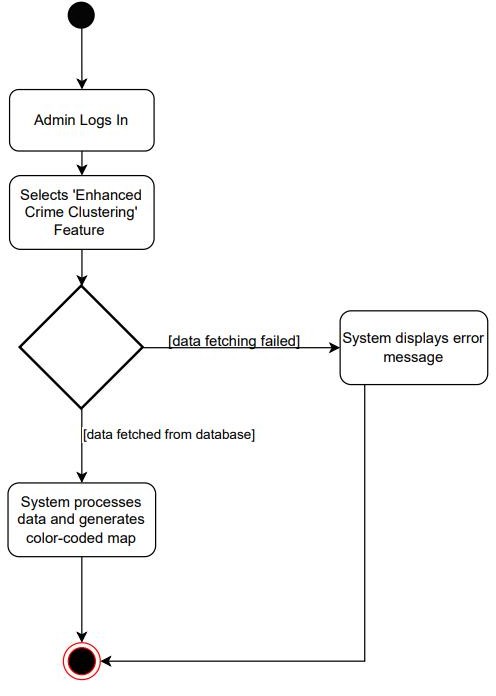


*Figure 20:Activity Diagram 6*

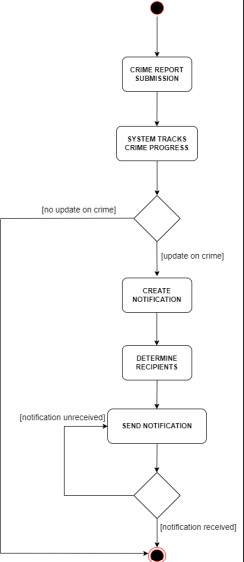
* + - 1. Activate Analysis Report

*Figure 21:Activity Diagram 7*

* + - 1. Crime Clustering



*Figure 22:Activity Diagram 8*

* + - 1. Crime Progress Notification

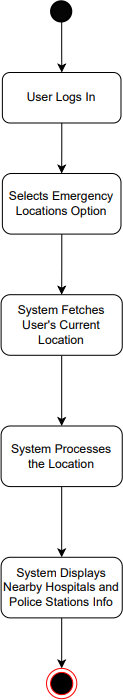
*Figure 23:Activity Diagram 9*

* + - 1. Safety Directory

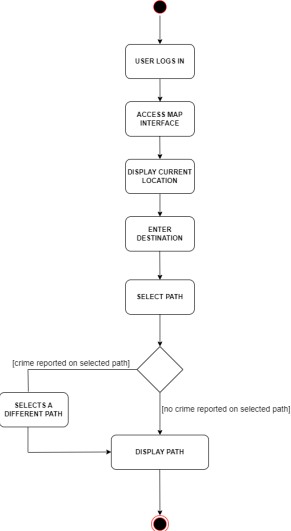


*Figure 24:Activity Diagram 10*

* + - 1. Local Service Directory

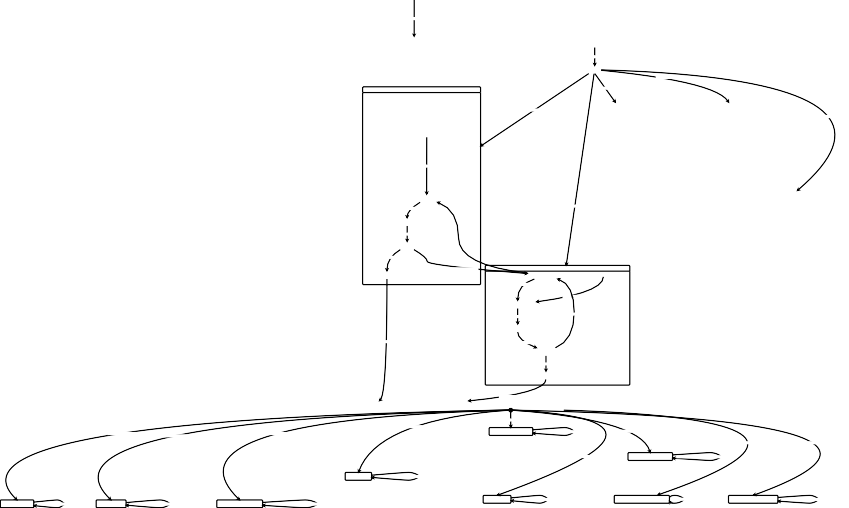


*Figure 25:Activity Diagram 11*

* + - 1. View Map

*Figure 26:Activity Diagram 12*

#### State Machine Diagram



App Launched

**NotLoggedln**

User is at home screen

Home

User view s safety directory

**Login**

User accesses blogs

**AccessBlogs**

**ViewSafetyDirectory**

User initiates login

User accesses local service directory

User view s available blogs

User selects a safety category

ViewBlogs

SelectCategory

User selects a blog

User view s locations w ithin the category

SelectBlog User goes back to blog list

ViewLocations

User starts login process

User view s the selected blog

User view s details of a location User goes back to location list

ViewBlogContent

ViewLocationDetails

**AccessLocalServiceDirectory**

DisplayLoginScreen

User initiates sign-up

User provides credentials

User selects a service category

EnterCredentials

SelectService

User submits credentials

User view s service providers w ithin the category

ValidateCredentials

ViewServiceProviders

Credentials are valid

User view s details of a service provider User goes back to service provider list

User retries login

Credentials are invalid

**SignUp**

DisplayErrorMessage

ViewProviderDetails

SuccessfulLogin

User retries sign-up

User starts sign-up process

DisplaySignUpScreen

Sign-up information is invalid

User provides sign-up information

EnterSignUpDetails

User successfully logs in

User submits sign-up information

ValidateSignUp

Sign-up information is valid

SuccessfulSignUp

User successfully signs up

**HomeLoggedln**

User initiates navigation

User registers a crime

User view s high alert map

User reports a crime anonymously

AlertForSuddenAccident User interacts w ith the navigation feature User initiates journey monitoring

User view s crime clustering

User participates in community forums User accesses map visualization

Admin accesses analysis report MonitorRealTimeJourney User interacts w ith the journey monitoring feature

RegisterCrime User interacts w ith the crime registration feature

AnalysisReport Admin interacts w ith analysis report

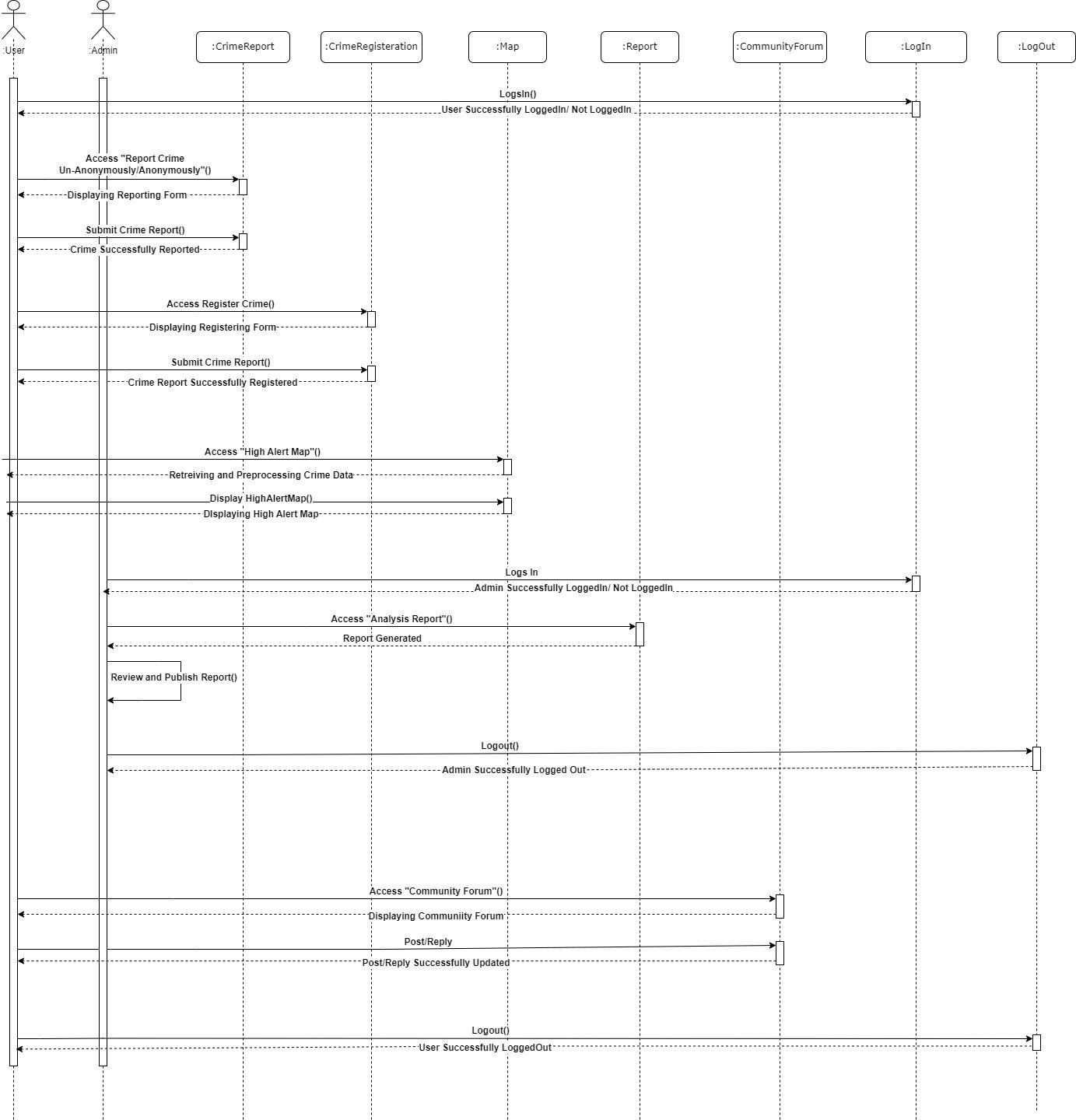
ParticipatelnCommunityForums User interacts w ith the community forums MapVisualizationOfSafePath User interacts w ith the map visualization

ViewHighAlertMap User interacts w ith the map CrimeClustering User interacts w ith the crime clustering view ReportCrimeAnonymously User interacts w ith the anonymous crime reporting feature

Text is not SVG - cannot display

*Figure 27:State Machine Diagram*

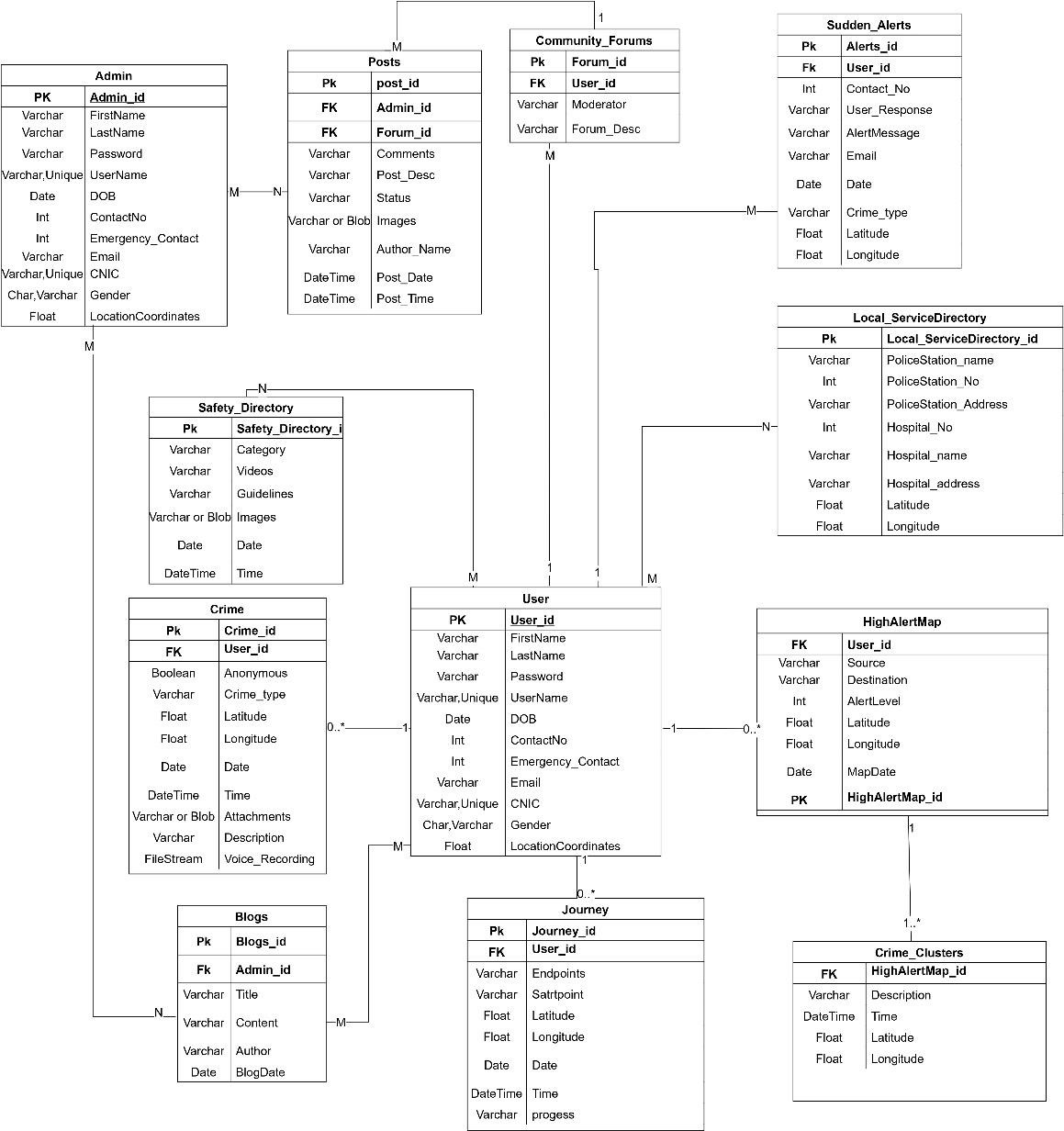
#### Sequence Diagram



*Figure 28:Sequence Diagram*

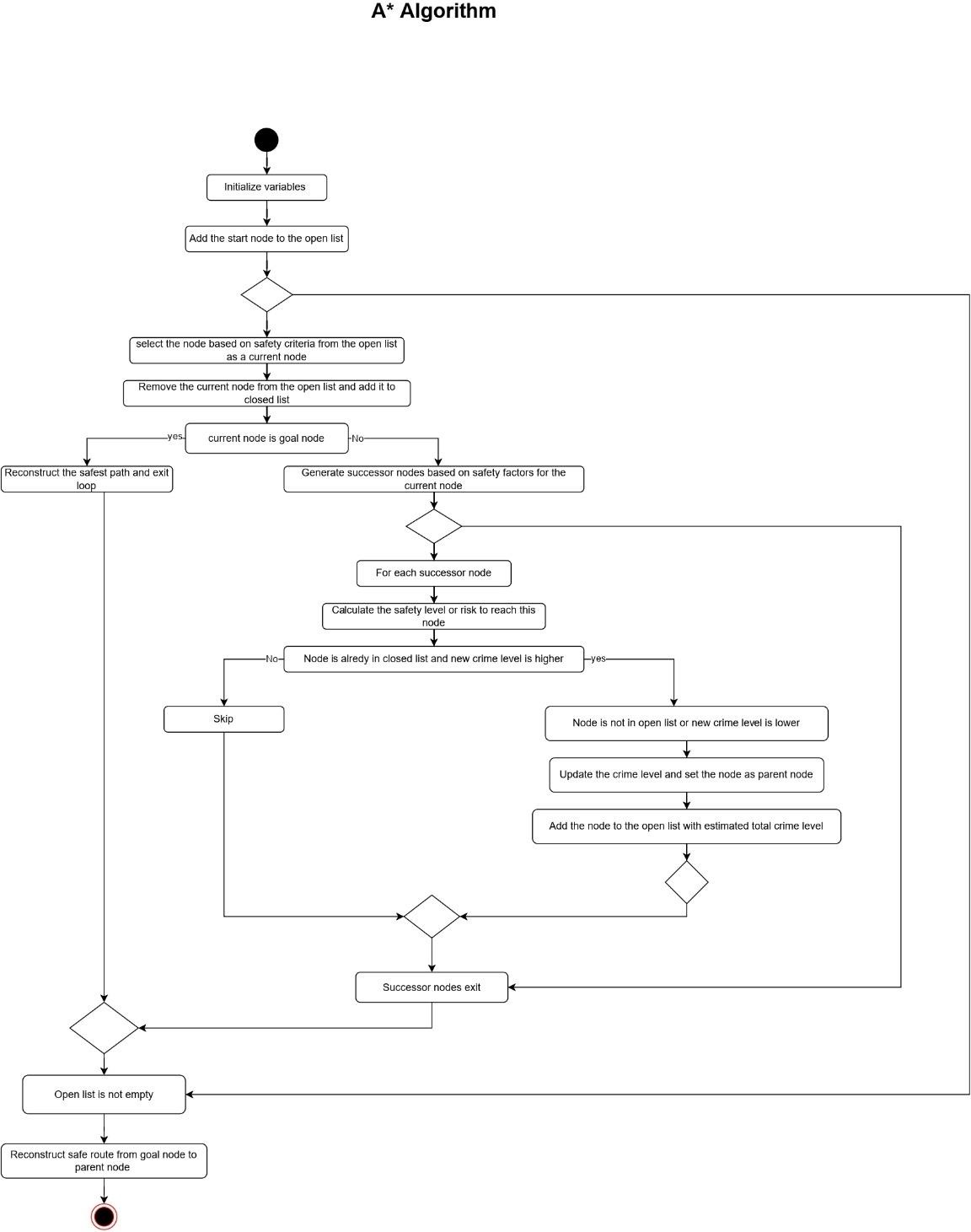
### DB Representation

#### DB Schema



*Figure 29:DB Schema*

### Algorithm Design



*Figure 30:Algorithm Design*

# Unit Testing

### Introduction

Watchful Eye is a system that aims to change how crime is reported and security within communities. The Unit Test Plan defines what types of tests will be conducted on the entire system. It lets you report crimes, which can assist authorities in understanding the situation better for your city’s safety in general. Speedy crime reporting; thorough data analysis; instant notifications;

and tools for involving the community are some important features among many others incorporated into Watchful Eye. The system gives law enforcement agencies wide-ranging insights into incidences while also making them easily reportable by the public thus promoting collaboration among different stakeholders. Consistent performance throughout all its attributes with no glitches noted so far has been guaranteed due to the fact that Watchful Eye’s unit test plan covers every single feature it has in place.

### Test Environment

* Android Studio
* Flutter

### Test Approach

Unit testing of modules is implemented which:

* Tests modules by providing Inputs that truthify.
* Also tests modules by providing Inputs that falsify.

### Test Reporting

Test results are reported in the following format:

* Test case ID.
* Input values.
* Expected output.
* Actual output.
* Pass/Fail status.

### Test Management

The developers will be responsible for conducting and verifying the unit tests i.e., writing the unit tests, executing them, verifying the test results, and reporting any issues.

### Unit Test Report

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.1 Module: signup.Dart*** | | | | |
| Unit: testValidSignup () | | | | |
| **Test case ID** | **Input Values** | **Expected Output** | **Actual Output** | **Pass/Fail Status** |
| 00001 | usernameField= testUser, firstNameField= John, lastNameField= Doe,  emailField= [f200107@cfd.n.edu.pk,](mailto:f200107@cfd.n.edu.pk) contactNoField= +923215722553,  cnicField= 12345-3389712-0, dobField: 01/01/1990, genderField: Male, passwordField: Password@123, confirmPasswordField: Pass-  word@123; | True | True | Passed |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 00002 | usernameField= testUser1, firstNameField= Alex, lastNameField= Doe,  emailField= [f200134@cfd.nu.edu.pk,](mailto:f200134@cfd.nu.edu.pk) contactNoField= +923215712553,  cnicField= 12345-3009712-0, dobField: 01/01/2000, genderField: Male, passwordField: Password@123,  confirmPasswordField: Password@123 | True | True | Passed |
| Unit: testInvalidSignup () | | | | |
| 00003 | usernameField= “ ”, firstNameField= “ ”, lastNameField= “ ”, emailField= [test@cfd.n.edu.pk,](mailto:test@cfd.n.edu.pk)  contactNoField= +923215722553,  cnicField= 12345-3389712-0, dobField: 01/01/1990, genderField: Male, passwordField: Password@123, confirmPasswordField: Pass-  word@123; | False | False | Passed |
| 00004 | usernameField= “ ”, firstNameField= “ ”, lastNameField= “ ”, emailField= [test@cfd.n.edu.pk,](mailto:test@cfd.n.edu.pk) contactNoField= “ ”, cnicField= 12345-3389712-0, dobField: 01/01/2025, genderField: Male, passwordField: Password@123,  confirmPasswordField: Pass- word@123; | False | False | Passed |

*Table 32: signupTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.2 Module: login.Dart*** | | | | |
| Unit: testValidLogin () | | | | |
| **Test case ID** | **Input Values** | **Expected Output** | **Actual Output** | **Pass/Fail Status** |
| 00001 | email: [hadia-](mailto:hadiahadia402@gmail.com) [hadia402@gmail.com,](mailto:hadiahadia402@gmail.com) password: 123456@; | Login Success- fully. Users navi- gate to UserPro-  filePage | Login Success- fully. Users navi- gate to UserPro-  filePage | Passed |
| 00002 | email: [adansal-](mailto:adansalman0987@gmail.com) [man0987@gmail.com,](mailto:adansalman0987@gmail.com) password: as@12345; | Login Success- fully. Users navi-  gate to UserPro- filePage | Login Success- fully. Users navi-  gate to UserPro- filePage | Passed |
| Unit: testInvalidLogin () | | | | |
| 00003 | email= [test@cfd.n.edu.pk,](mailto:test@cfd.n.edu.pk) password: Password@123; | Login Unsuccess- ful | Login Unsuc- cessful | Passed |
| 00004 | email= [abcd@cfd.n.edu.pk,](mailto:abcd@cfd.n.edu.pk) password: Password@123; | Login Unsuccess- ful | Login Unsuc- cessful | Passed |

*Table 33: LoginTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.2 Module: crimeRegisteration.Dart*** | | | | |
| Unit: testValidRegisteration () | | | | |
| **Test case ID** | **Input Values** | **Expected Output** | **Actual Output** | **Pass/Fail Status** |
| 00001 | fullName: Adan Salman, phoneNumber: +923007675900, date: 01/01/2023,  time: 12:23, crimeType: Theft,  attachments: "https://firebasestor- age.googleapis.com/v0/b/watchful- eyes-c2a9d.appspot.com/o/cri- meAttach- ments%2F1711486808020.jpeg?alt=m edia&token=b1388ea6-2012-4783- 9500-356b3caa9f6e",  description: this is desc 1, isAnonymous: True, voiceMessageUrl: [https://firebasestor-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [age.googleapis.com/v0/b/watchful-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [eyes-c2a9d.appspot.com/o/voiceMes-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  [sages%2F1711486825403.mp3?alt=me](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [dia&token=3febfb15-f0bb-49e7-b097-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [bce74cb3058d,](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  location: latitude:31.43267998985598 longitude:73.13110068440437; | True | True | Passed |
| 00002 | fullName: Hadia Muhyyud Din, phoneNumber: +923056675900, date: 01/01/2023,  time: 11:23, crimeType: Others,  attachments: "https://firebasestor- age.googleapis.com/v0/b/watchful- eyes-c2a9d.appspot.com/o/cri- meAttach- ments%2F1711486808020.jpeg?alt=m edia&token=b1388ea6-2012-4783- 9500-356b3caa9f6e",  description: this is desc 2, isAnonymous: True, voiceMessageUrl: [https://firebasestor-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [age.googleapis.com/v0/b/watchful-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [eyes-c2a9d.appspot.com/o/voiceMes-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  [sages%2F1711486825403.mp3?alt=me](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [dia&token=3febfb15-f0bb-49e7-b097-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [bce74cb3058d,](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  location: latitude:31.43267900985598 longitude:73.13110068440437; | True | True | Passed |
| Unit: testInvalidRegisteration () | | | | |
| 00003 | fullName: Fatima, phoneNumber: 03056675900, date: 23/15/2029,  time: 1:23, crimeType: “ ”,  attachments: "https://firebasestor- age.googleapis.com/v0/b/watchful- | False | False | Passed |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | eyes-c2a9d.appspot.com/o/cri- meAttach- ments%2F1711486808020.jpeg?alt=m edia&token=b1388ea6-2012-4783- 9500-356b3caa9f6e",  description: this is desc 2, isAnonymous: True, voiceMessageUrl: [https://firebasestor-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [age.googleapis.com/v0/b/watchful-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [eyes-c2a9d.appspot.com/o/voiceMes-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  [sages%2F1711486825403.mp3?alt=me](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [dia&token=3febfb15-f0bb-49e7-b097-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [bce74cb3058d,](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  location: latitude: abscd longitude: bgvh; |  |  |  |
| 00004 | fullName: Sana, phoneNumber: 030565900, date: 23/15/-0989,  time: 100:23, crimeType: “ ”,  attachments: "https://firebasestor- age.googleapis.com/v0/b/watchful- eyes-c2a9d.appspot.com/o/cri- meAttach- ments%2F1711486808020.jpeg?alt=m edia&token=b1388ea6-2012-4783- 9500-356b3caa9f6e",  description: this is desc 2, isAnonymous: True, voiceMessageUrl: [https://firebasestor-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [age.googleapis.com/v0/b/watchful-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [eyes-c2a9d.appspot.com/o/voiceMes-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  [sages%2F1711486825403.mp3?alt=me](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [dia&token=3febfb15-f0bb-49e7-b097-](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d) [bce74cb3058d,](https://firebasestorage.googleapis.com/v0/b/watchfuleyes-c2a9d.appspot.com/o/voiceMessages%2F1711486825403.mp3?alt=media&token=3febfb15-f0bb-49e7-b097-bce74cb3058d)  location: latitude: null longitude: null; | False | False | Passed |

*Table 34: crimeRegisterationtTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.2 Module: panicButton.Dart*** | | | | |
| Unit: testValidPanicButtonInputs () | | | | |
| **Test case ID** | **Input Values** | **Expected Output** | **Actual Output** | **Pass/Fail Status** |
| 00001 | Volume button pressed three times sequentially | Emergency mes- sage sent to emer- gency contacts along with current  location | True | Passed |
| 00002 | Location permission granted, current location re- trieved successfully, mes- sage sent successfully | Toast message displays "Message sent successfully" | True | Passed |
| Unit: testInvalidPanicButtonInputs () | | | | |
| 00003 | SMS permission not granted | Toast message displays "SMS permission not granted" | False | Passed |
| 00004 | Location permission not granted | Toast message displays "Location permission not granted" | False | Passed |
| 00005 | Location permission granted, but failed to re- trieve current location | No message sent; Error message logged | False | Passed |

*Table 35: panicButton.Dart*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.3 Module: map.Dart*** | | | | |
| Unit: testValidLocation () | | | | |
| **Test case ID** | **Input Values** | **Expected Output** | **Actual Out- put** | **Pass/Fail Status** |
| 00001 | Current location: lati- tude:31.43267998985598  longitude:73.13110068440437, Destination location: lati- tude:31.4272114967152  longitude:73.1293378025; | Display map, show nearby places, Dis- play crimes info, Show path from current to  destination | Displayed map, showed nearby places, displayed crimes info, Shown path from current  to destination | Passed |
| 00002 | Current location: lati- tude:31.724820900734752  longitude:72.97999810427427, Destination location: lati- tude:31.726987675364153  longitude:72.9861980304122; | Display map, show nearby places, Dis- play crimes info, Show path from current to  destination | Displayed map, showed nearby places, displayed crimes info, Shown path from current  to destination | Passed |
| Unit: testInvalidLocation () | | | | |
| 00001 | Current location: latitude: null longitude:73.13110068440437, Destination location: lati- tude:31.4272114967152  longitude:73.1293378025; | Show error location not fetched | Showed error location not fetched | Passed |
| 00002 | Current location: lati- tude:31.724820900734752  longitude:72.97999810427427, Destination location: latitude: null longitude:72.9861980304122; | Show error wrong desti- nation | Showed error wrong desti- nation | Passed |

*Table 36: mapTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.4 Module: addContact.Dart*** | | | | |
| Unit: testValidContact () | | | | |
| **Test case ID** | **Input Values** | **Expected Out- put** | **Actual Output** | **Pass/Fail Status** |
| 00001 | Name: "John Doe", Phone Number: "+923001234567" | Contact added successfully | Contact added successfully | Passed |
| 00002 | Name: "Alex Doe", Phone Number: "+9231201234567" | Contact added successfully | Contact added successfully | Passed |
| Unit: testInvalidContact () | | | | |
| 00001 | Name: "John Doe",  Phone Number: "+03001234567" | Please enter a valid phone number | Please enter a valid phone number | Passed |
| 00002 | Name: " ", Phone Number:  "+9231201234567" | Incomplete Form  Please fill in both name and phone number | Incomplete Form  Please fill in both name and phone number | Passed |

*Table 37: addContactTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.5 Module: editContact.Dart*** | | | | |
| Unit: testValidContact () | | | | |
| **Test case ID** | **Input Values** | **Expected Out- put** | **Actual Output** | **Pass/Fail Status** |
| 00001 | Name: "John", Phone Number: "+923000034567" | Contact edited successfully | Contact edited successfully | Passed |
| 00002 | Name: "Alexa", Phone Number: "+9231201234567" | Contact added successfully | Contact added successfully | Passed |
| Unit: testInvalidContact () | | | | |
| 00001 | Name: "John Doe", Phone Number: "+03001234567" | Please enter a valid phone num- ber | Please enter a valid phone number | Passed |
| 00002 | Name: " ", Phone Number:  "+9231201234567" | Name field can- not be empty | Name field can- not be empty | Passed |

*Table 38: editContactTest*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***6.7.5 Module: communityForum.Dart*** | | | | |
| Unit: testValidPostsActivity () | | | | |
| **Test case ID** | **Input Values** | **Expected Out- put** | **Actual Output** | **Pass/Fail Status** |
| 00001 | User likes a post by tapping like button | Post likes count incremented by 1, like button turns blue indi-  cating like" | True | Passed |
| 00002 | User adds a new comment to a post | New comment displayed in the comments sec- tion of the post | True | Passed |
| 00003 | User tries to like a post while offline | Like action not performed | True | Passed |
| 00004 | User tries to unlike a post while offline | Unlike action not performed | True | Passed |
| 00005 | User unlike a post by tapping like button again | Post likes count decremented by 1, like button re- turns to its origi-  nal state | True | Passed |
| Unit: testInvalidPostsActivity () | | | | |
| 00001 | Error in fetching posts | Error message dis- played in place of posts | False | Passed |
| 00002 | User tries to add a comment while offline | No comment added | False | Passed |
|  | User tries to like a post while offline | Like action not performed | False | Passed |
|  | User tries to unlike a post while offline | Unlike action not performed | False | Passed |

*Table 39: communityForumTest*

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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Turnitin Originality Report | | | | | |  | |
| Processed on: 03-Jun-2024 09:38 PKT | | | | | |
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|  | | | | | |
|  |  | 1% match (student papers from 14-Aug-2021) | | | |
| Submitted to LSU, Alexandria on 2021-08-14 | | | |
| 1% match (Internet from 13-Dec-2023) | | | |
| <https://www.coursehero.com/file/28529635/CMIS242-P2-TestCasespdf/> | | | |
| < 1% match (Internet from 26-Dec-2020) | | | |
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| Submitted to Higher Education Commission Pakistan on 2015-05-28 | | | |
| < 1% match (student papers from 16-Jul-2010) | | | |
| Submitted to Higher Education Commission Pakistan on 2010-07-16 | | | |
| < 1% match (student papers from 15-Sep-2023) | | | |
| Submitted to North Shore International Academy on 2023-09-15 | | | |
| < 1% match (Internet from 28-May-2023) | | | |
| <https://fdocuments.in/download/usecase-ppt.html> | | | |
| < 1% match (student papers from 08-Dec-2009) | | | |
| Submitted to Help University College on 2009-12-08 | | | |
| < 1% match (student papers from 07-Nov-2014) | | | |
| Submitted to Western Governors University on 2014-11-07 | | | |
| < 1% match (Internet from 21-Oct-2023) | | | |
| <https://pw.lacounty.gov/general/faq/index.cfm?action=NewQuestion&emerg=1&showtemplate=false> | | | |
| < 1% match (student papers from 28-Nov-2009) | | | |
| Submitted to Informatics Education Limited on 2009-11-28 | | | |
| < 1% match (student papers from 02-Oct-2018) | | | |
| Submitted to Asia Pacific University College of Technology and Innovation (UCTI) on 2018-10-02 | | | |
| < 1% match (student papers from 02-Jun-2020) | | | |
| Submitted to University of Bahrain on 2020-06-02 | | | |
| < 1% match (Internet from 17-Jan-2020) | | | |
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