

Final Report

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Report submitted in partial fulfillment of the requirements for the BSc in Computing at Dorset College.

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Abstract

The aim of developing this crime reporting application is to provide a quick, easy, and efficient way for people to report crimes and incidents to law enforcement agencies. In many cases, people may be hesitant to report crimes for fear of retaliation, embarrassment, or other reasons. By providing an anonymous and user-friendly way to report crimes, this application can help to increase reporting rates, which can provide such law enforcement agencies with a more accurate understanding of crime trends and hotspots. As we know that traditional methods of reporting crimes, such as calling a police station or filling out a paper form, can be time-consuming and difficult for people to navigate.

Overall, the purpose for developing this crime reporting application is the recognition of the need for a more efficient and effective way for people to report crimes and for law enforcement agencies to respond to them. By leveraging technology and developing user-friendly applications, it may be possible to improve public safety and build stronger relationships between law enforcement agencies and the communities they serve.

The steps involved in the development of this application

- Defining the requirements.
- Design the user interface
- Develop the application
- Test the application
- Deploy the application
- Provide ongoing support

The development of a crime reporting application involved a significant amount of planning, design, and testing to ensure that it is effective and user friendly. By following a structured development process, it was possible to create an application that meets the needs of law enforcement agencies and the public alike. Some of the key user tests that was carried out include Usability testing, Performance testing, Functionality testing etc. and some of the parts required some changes and ultimately a proper working application was achieved.

Acknowledgements

I would like to thank my supervisor, Kartikya Rana, for giving me useful suggestions, pointing out the things/faults this application had and most importantly I'd like to say Thank You to my teacher Marie Keary. Her support and guidance were extremely helpful since they provided me invaluable information on the best way to develop my project.

I would also like to thank my classmates, my college, my friends and everybody for all the help and support during this project development and over the past 3 years.

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1. Introduction

Introducing our new crime reporting application, designed to provide a fast, convenient, and secure way for the public to report crimes and suspicious activities to law enforcement agencies. With this application, anyone can quickly and easily report a crime or provide tips and information to help prevent and solve crimes in their community.

This application is designed with user-friendliness in mind, featuring a simple and intuitive interface that makes it easy for anyone to report a crime or provide information. Users can report crimes anonymously if they wish. This crime reporting application is built with the latest security features to ensure that user information is protected at all times. We believe that our crime reporting application has the potential to revolutionize the way that crimes are reported and investigated, making it easier for the public to play an active role in preventing and solving crime in their communities. We invite you to try our application today and join us in the fight against crime.

As crime rates continue to rise in many communities around the world, it has become more important than ever for members of the public to have an effective and reliable way to report crimes and suspicious activities. That's why we are proud to introduce our new crime reporting application, designed to provide a fast, easy, and secure way for anyone to report a crime and help keep their community safe.

With our application, users can quickly and easily submit reports on a wide range of crimes and suspicious activities, from theft and vandalism to drug dealing and gang activity. The application allows users to provide detailed information about the incident, including location, time, and description of the perpetrator or suspects, helping law enforcement agencies to quickly and effectively respond to the report. Our crime reporting application is designed to be user-friendly and accessible to everyone, regardless of their technical expertise or familiarity with law enforcement procedures. Users can easily navigate the application using intuitive menus and buttons, and can submit reports anonymously if they wish.

At the same time, we recognize that security and privacy are of utmost importance when it comes to reporting crimes. That's why we have implemented state-of-the-art security features in our application, including encryption of user data and secure data storage.

We believe that our crime reporting application has the potential to be a game-changer in the fight against crime, empowering members of the public to take an active role in making their communities safer and more secure. We invite you to download our application today and join us in this important mission.

In terms of deploying and development, I used Android studio to achieve android application which is useful for reporting any incidents that were encounter around us anytime anywhere, I have also used many libraries like firebase authentication, fire store to store all the data in the database, also for designing XML is used which is very helpful and very useful when it comes to aligning or arranging your layout, every was gradient colours from [gradient.io](https://www.gradient.io/)ⁱ etc., and the next part was cheque if everything was functional or not maybe end of the app I was successfully able to upload all the user inputs along with their details in database.

2. Requirements

2.1 Requirements

Here are some potential requirements for this application:

1. User registration and authentication: Users should be able to create an account and log in to the application securely.
2. Permission: This application requires location and Camera permission to work properly, without permissions it is not going to work as expected.
3. Report submission: The application should allow users to submit reports on crimes and suspicious activities, including the location, time, and description of the incident and any suspects involved.
4. Anonymity: The application should allow users to submit reports anonymously if they wish, to protect their privacy and safety.
5. Geolocation: The application is able to determine the user's location using GPS, This allows to track user's location and incident's location for accurate reporting of incidents and quick response by law enforcement agencies.
6. Multimedia support: The application should allow users to attach photos or videos to their reports to provide additional evidence and context.
7. Security: The application should be designed with robust security features to protect user data, including encryption of user data, secure data storage, and protection against hacking and other forms of cyberattacks.
8. Integration with law enforcement agencies: The application should be able to securely share information with authorized law enforcement agencies to allow for quick response and investigation of reported incidents.
9. Accessibility: The application should be designed to be accessible to users with disabilities, including support for screen readers and other assistive technologies.

These are the potential requirements for a crime reporting application.

2.2 Requirements gathering

2.2.1 Similar applications

Yes, there are several similar crime reporting applications available in the market today. Here are a few examples:

1. “Citizen” Crime reporting application:



Descriptions:

This is a popular crime reporting application that allows users to submit incident reports and receive real-time safety alerts in their area. Citizen also features a live video feature that allows users to broadcast incidents and emergencies to other users.

Advantages & Disadvantages:

Here are some potential advantages and disadvantages of the Citizen crime reporting application:

Advantages:

1. Real-time safety alerts: Citizen provides users with real-time safety alerts for incidents and emergencies in their area, allowing them to stay informed and take appropriate safety measures.
2. Incident reporting: The application allows users to submit incident reports directly to law enforcement officials, providing a convenient and efficient way to report crime and suspicious activity.
3. Live video: Citizen's live video feature allows users to broadcast incidents and emergencies to other users, providing additional context and information for law enforcement officials and other users.
4. Community engagement: Citizen provides a platform for users to engage with their local community and share information about crime and safety in their area.

5. Crowd-source information: Citizen's platform is powered by a network of users who can share information and provide updates on incidents and emergencies, providing a valuable source of crowd-sourced information for law enforcement officials.

Disadvantages:

1. Privacy concerns: Some users may have concerns about privacy and the collection of personal data by Citizen, particularly given the platform's real-time tracking and reporting features.
2. Accuracy of information: The reliability of information provided through Citizen's network of users may vary, and some reports may be inaccurate or misleading.
3. False alarms: Citizen's real-time safety alerts may result in false alarms or panic, particularly if reports are based on incomplete or inaccurate information.
4. Potential for abuse: The platform may be susceptible to abuse by users who use it to make false reports or engage in other forms of malicious activity.
5. Platform limitations: Citizen's platform is currently only available in select cities and regions, limiting its usefulness for users outside of these areas.

These are just some potential advantages and disadvantages of the Citizen crime reporting application, and the specific pros and cons may vary depending on the user's needs and preferences.

2. "CrimeReports" Crime reporting application:



This application provides access to a nationwide database of crime data, allowing users to search for crime statistics and maps for their area. Users can also sign up for crime alerts and submit anonymous tips to law enforcement agencies.:

Here are some potential advantages and disadvantages of the CrimeReports crime reporting application:

Advantages:

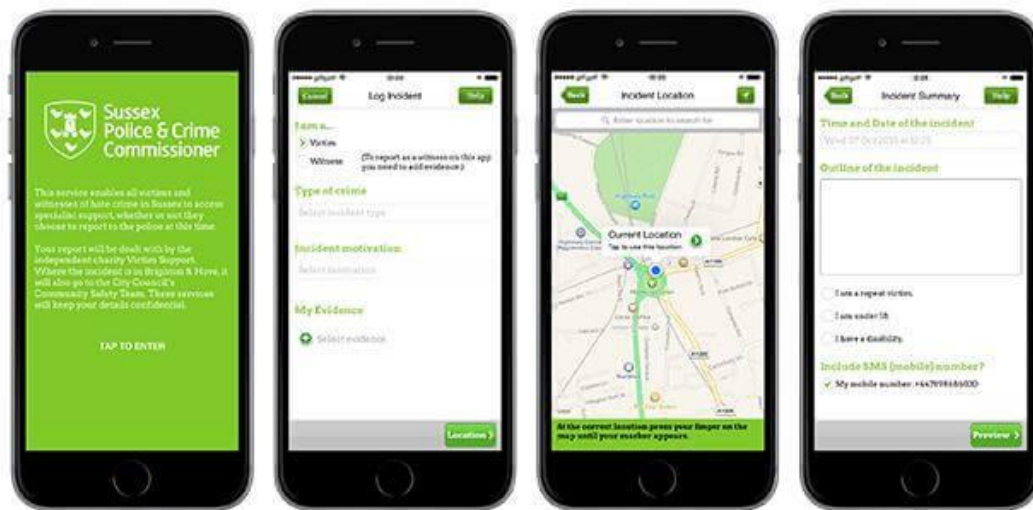
1. Access to crime data: CrimeReports provides users with access to a nationwide database of crime data, allowing them to search for crime statistics and maps for their area.
2. Crime alerts: Users can sign up for crime alerts and receive notifications when crimes occur in their area.
3. Anonymous tips: The application allows users to submit anonymous tips to law enforcement agencies, providing a safe and secure way to report crime and suspicious activity.
4. Community engagement: CrimeReports provides a platform for users to engage with their local community and stay informed about crime and safety issues in their area.
5. Data visualization: CrimeReports uses data visualization tools to present crime data in an easy-to-understand format, allowing users to quickly and easily identify crime trends and hotspots in their area.

Disadvantages:

1. Limited coverage: CrimeReports may not provide complete coverage of all crimes in a given area, as data may be limited to certain law enforcement agencies or jurisdictions.
2. Delayed data: The application's crime data may not always be up-to-date, as data may be delayed in being reported by law enforcement agencies.
3. Accuracy of information: The reliability of information provided through CrimeReports may vary, and some reports may be inaccurate or misleading.
4. Platform limitations: CrimeReports may not be available in all areas, limiting its usefulness for users outside of select cities and regions.
5. Limited interactivity: The application's platform may be less interactive than other crime reporting applications, as it primarily focuses on presenting crime data rather than providing real-time updates or community engagement features.

These are just some potential advantages and disadvantages of the CrimeReports crime reporting application, and the specific pros and cons may vary depending on the user's needs and preferences.

3. “Reporty” Crime reporting application:



iv

This is an emergency response and crime reporting application that allows users to quickly and easily report incidents and emergencies to local law enforcement agencies. The application also features a real-time video feature that allows users to share live video with emergency responders.

Here are some potential advantages and disadvantages of the Reporty crime reporting application:

Advantages:

1. Real-time emergency reporting: Reporty allows users to report emergencies in real-time, enabling faster and more efficient responses from law enforcement and emergency services.
2. Multi-media reporting: The application allows users to submit multi-media reports, including photos, videos, and audio recordings, providing additional context and information for law enforcement officials.
3. Location tracking: Reporty uses GPS tracking to locate users and provide their location to law enforcement officials, helping to expedite emergency responses.
4. Two-way communication: Reporty provides two-way communication between users and law enforcement officials, allowing for updates and additional information to be exchanged in real-time.
5. Multi-language support: The application supports multiple languages, making it accessible to a wider range of users.

Disadvantages:

1. Privacy concerns: Some users may have concerns about privacy and the collection of personal data by Reporty, particularly given the application's use of GPS tracking and multi-media reporting features.
2. False alarms: The application's real-time emergency reporting feature may result in false alarms or panic, particularly if reports are based on incomplete or inaccurate information.
3. Platform limitations: Reporty may not be available in all areas, limiting its usefulness for users outside of select cities and regions.
4. Potential for abuse: The platform may be susceptible to abuse by users who use it to make false reports or engage in other forms of malicious activity.
5. Technical issues: Users may experience technical issues or difficulties with the application, which could impede their ability to report emergencies in a timely manner.

These are just some potential advantages and disadvantages of the Reporty crime reporting application, and the specific pros and cons may vary depending on the user's needs and preferences.

2.2.2 Interviews

After showing his application to a few friends they did mentioned that this could be very useful but as I mentioned above there are people out there who don't miss a chance to fool you around/ scam you but people should be happy that an application like this can save life which probably you don't even know, that you're going to come across say in the middle of the road or somewhere something bad happening let's say I am in the middle of the night and it's hard to find somebody and by any chance if I find someone they can made this possible, even though as this application is made very easy to operate so it's a good way to inform someone about your situation and it can take literally up to 10 seconds to just after board the situation and then the help will be on their way this is the response that I got from one of the friends, however this app can be improved and can we take him to the next level bought in a security and feature wise.

Further information was provided through survey which shows people's concerns and what they expect from this application which is described below

2.2.3 Survey^v

1. How often do you witness or experience crime or suspicious activity in your community?

[More Details](#)

Never	1
Rarely	5
Occasionally	4
Frequently	1
Very frequently	0



2. How likely are you to report crimes or suspicious activity to law enforcement officials?

[More Details](#)

Very likely	3
Somewhat likely	3
Very unlikely	3
Somewhat unlikely	2
Neutral	0



3. What factors currently prevent you from reporting crimes or suspicious activity? (0 point)

[More Details](#)

Fear of retaliation	6
Lack of trust in law enforcement...	3
Lack of time or inconvenience	5
Other (please specify)	0



4. If you selected Other please specify. (0 point)

0
Responses

5. How important is it to you to have a fast and efficient way to report crimes or suspicious activity to law enforcement officials?

[More Details](#)
[Insights](#)

Not at all important	2
Slightly important	3
Moderately important	2
Very important	4



6. What features or functionality would be most important to you in a crime reporting application? (e.g., anonymous reporting, GPS location tracking, multi-media reporting)

[More Details](#)

Anonymous reporting	6
GPS location tracking	8
Multi-media reporting (photos, ...	5
Other (please specify)	2



7. If you selected Other please specify.

1 Responses

ID ↑	Name	Responses
1	anonymous	Audios

8. How important is it to you to have access to real-time crime data and alerts in your community?

[More Details](#)

● Not at all important	1
● Slightly important	3
● Moderately important	4
● Very important	3



9. How likely are you to use a crime reporting application if it were available? (0 point)

[More Details](#)

● Very likely	3
● Somewhat likely	5
● Very unlikely	2
● Somewhat unlikely	1
● Neither likely nor unlikely	0



10. What concerns or issues do you have about using a crime reporting application? (0 point)

[More Details](#)

● Privacy concerns	10
● Fear of retaliation	6
● Technical difficulties	4
● Lack of trust in law enforcement...	3
● Other	0



11. If you selected Other please specify. (0 point)

0
Responses

12. Is there anything else you would like to share or suggest regarding a potential crime reporting application? (Open-ended response)

11 Responses

ID ↑	Name	Responses
1	[REDACTED]	no
2	[REDACTED]	It should be secure and safe to use.
3	[REDACTED]	Na
4	anonymous	No
5	anonymous	I think the security aspects of the app should meet the highest standards due to the sensitive nature of the data
6	anonymous	[REDACTED]
7	anonymous	No
8	anonymous	The assurance that the Garda would really do something about it before retaliation.
9	anonymous	When reporting a crime, how would the application make sure it's not a prank report?
10	anonymous	Take care you our selves and others
11	anonymous	No.

2.3 Requirements modelling

2.3.1 Personas

The results of the survey can be used to define the personas of the application which are the target users. Personas are fictional characters that are used to understand the user's needs and expectations. Each persona represents a significant portion of people in the real world and allows the developer to focus on a cast of users rather than focusing on a multitude. In this case, if your survey has over 20 participants, you can design 3 personas each representing a specific type of user within their age, occupation, gender, specific goals, and possible scenarios of using the application.

2.3.2 Functional requirements

Create a numbered list of what the application should be able to do. Start with the most important feature.

2.3.3 Non-functional requirements

These are the requirements which if not met, do not prevent the application from working. They are based on:

- Usability
- Performance
- Security

Examples:

- *The website should take less than the 10-second threshold to load*
- *The application should be portable and have no issues moving from one OS to another*

2.3.4 Use Case Diagrams

Consists of actors and use cases. You should document each individual use case.

2.4 Feasibility

Describe the technologies which you plan to use in the development of the application. Define any issues that may arise in the technical feasibility of the project, for example, if there are two different types of software in the application that may have compatibility issues.

2.5 Conclusion

Write a couple of paragraphs summing up the chapter. Explain what area your project is about. Describe what the chapter has discussed.

3. Design

3.1 Introduction

This is a crime reporting application and is designed to make it easy for people to report crimes or suspicious activity to law enforcement officials. The application is designed with a user-centered approach, prioritizing simplicity and ease of use to encourage more people to report incidents that they witness or experience.

This application is built for Android devices and will be available for free on the Google Play Store in future. This application has a modern and intuitive design, making it easy for users to navigate and use. The user interface will be optimized for a range of devices, including smartphones and tablets.

This chapter is used to discuss the design of the application. The purpose of the design phase of the project is to allow the myself as a developer to consider the application's design to meet the requirements outlined in the Requirements chapter.

This application's design is usually divided into:

1. Program Design

1. **Permission Settings:** Location permission & Camera Permission are mandatory for this application to work otherwise this app will not work as expected. It can be done from Settings > Permission and turn Camera & Location on.
2. **Registration and Authentication:** This Application require users to register and authenticate their accounts before they can submit a report. The registration process is simple and straightforward, and the application should use firebase authentication system to protect user data and prevent unauthorized access.
3. **Incident Reporting:** This application allows users to report incidents quickly and easily. It has a simple and intuitive interface that guides users through the reporting process, providing clear instructions on what information is needed. This application also allows users to upload photos and videos of incidents to provide additional context.
4. **GPS Location Tracking:** This application use GPS location tracking to identify the user's current location and incident location provided by user when they report an incident. This information is used to alert law enforcement officials of the incident and to provide additional context about the location of the incident.
5. **Reporting:** This application provides reporting features that enable law enforcement officials to track and analyze incident reports. This information can be used to identify patterns and trends in criminal activity, and to inform crime prevention strategies.

6. **Privacy and Security:** This application prioritize user privacy and security by implementing robust security measures, including encryption and data protection.

2. User Interface Design.

The user interface design of the crime reporting application allows modern, intuitive, and easy to use. It features clear and concise instructions and guidance to help users navigate the application and report incidents efficiently. The design optimizes for a range of devices, including smartphones and tablets.

1. **Navigation:** The navigation of the application is intuitive and easy to use. The application has a clear and concise navigation menu that allows users to access all the key features of the application. The navigation menu is prominently displayed on the home screen of the application.
2. **Home Screen:** The home screen of the application is clean and simple. It displays the key features of the application, such as incident reporting, crime data, and notifications. The home screen also provides a clear call to action to encourage users to report incidents.
3. **Incident Reporting:** The incident reporting feature have a simple and intuitive interface that guides users through the reporting process. The interface include clear instructions on what information is required, such as the type of incident, the location, and the time of the incident. The interface also allows users to upload photos and videos of the incident to provide additional context.

3.2 Program Design

A well-designed program for crime reporting application can provide a scalable and secure platform for users to report incidents, access crime data, and communicate with law enforcement agencies in real-time. By incorporating key technologies such as API integration, authentication and authorization, real-time communication, mapping and geolocation, and rigorous testing, the application can deliver a seamless and effective user experience.

1. **Architecture:** This application is designed using a scalable architecture that can handle a large volume of users and data. A micro services-based architecture, for example, would allow for easy scaling of individual components of the application.
2. **Programming Languages:** The application is developed using programming language Kotlin, which is commonly used for Android application development.

3. **Data Storage:** The application store data such as incident reports, crime data, and user information in a secure and scalable database. A google service called Firestore is being used to store the data.
4. **API:** The application has a well-documented API that allows for seamless integration with other applications and systems. The API adhere to industry standards and follow best practices for security and data protection.
5. **Authentication and Authorization:** The application have a robust authentication and authorization system to ensure that only authorized users can access sensitive data and perform critical actions within the application. This can be achieved using technologies such as Firebase.
6. **Testing:** This application undergoes rigorous testing to ensure that it meets the functional and performance requirements. Automated testing tools are being used to test the application across various devices and platforms.

3.2.1 Technologies

The technologies being used to create this application are:

- **Android Studio:** Android Studio is the official integrated development environment (IDE) for Android application development. It provides tools for designing, developing, and testing Android applications.
- **Kotlin:** Kotlin is the primary programming languages used for developing this Android application. Kotlin is object-oriented and offer strong support for developing scalable and robust applications.
- **Firebase:** Firebase is a mobile and web application development platform that provides a suite of tools and services for developing mobile applications. It includes services such as authentication, database, storage, messaging, and analytics.
- **Google Maps API:** Google Maps API allows developers to add mapping and geolocation functionality to their Android applications. It provides features such as real-time traffic updates, directions, and location search.
- **JUnit:** JUnit is a unit testing framework for Java applications. It provides a simple and easy-to-use interface for writing and running tests to ensure that the application works as expected.
- **Git:** Git is a version control system used for managing and tracking changes to source code. It allows developers to collaborate on code and manage changes to the application over time.

Apart from the technologies mentioned earlier, there are several other possible technologies that could be used for developing an Android-based crime reporting application. Some of them are:

React Native, Flutter, Amazon Web Services (AWS), Apache Kafka, Google Cloud Platform (GCP), Node.js, MongoDB etc.

Overall, the choice of technology for developing an application depends on various factors such as the developer's skills and expertise, the application's functionality, scalability, and performance requirements.

3.2.2 Structure of Android.

The structure of this Android application is based on the Model-View-Controller (MVC) architecture pattern. The components of this application are organized into four main layers:

1. **Presentation Layer:** This layer is responsible for presenting the user interface (UI) of the application to the user. It includes components such as activities, fragments, and views.
2. **Application Layer:** This layer is responsible for managing the logic of the application. It includes components such as services etc.
3. **Framework Layer:** This layer provides the underlying framework for the Android application. It includes components such as the Android runtime, libraries, and system services.
4. **Kernel Layer:** This layer is the lowest level of the Android operating system and provides the hardware abstraction layer for the device. It includes components such as device drivers, memory management, and process management.

Each layer in the Android architecture has its own set of responsibilities, and communication between layers is done through well-defined interfaces. This helps to maintain a modular and extensible application structure, making it easier to modify and add new features to the application.

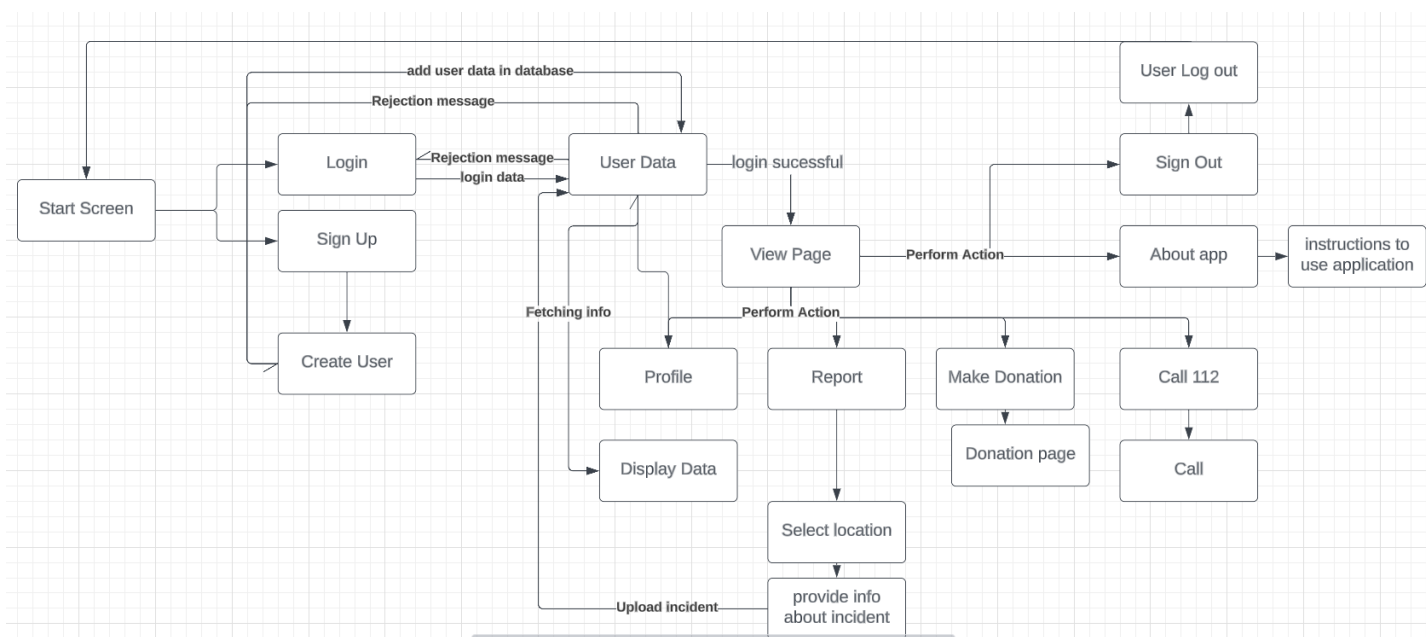
3.2.3 Design Patterns

In this application development, several design patterns are used to improve the quality, maintainability, and scalability of the code. Some of the popular design patterns used in Android development are:

1. **Model-View-Controller (MVC):** It is a widely used architectural pattern that separates the application into three interconnected components: Model (data), View (user interface), and Controller (business logic). This pattern promotes code separation and modularity, making it easier to test, maintain, and evolve the application.
2. **Builder:** It is a creational design pattern that separates the construction of a complex object from its representation, allowing the same construction process to create different representations. This pattern is useful for creating complex data models, such as form input or database records.
3. **Adapter:** It is a structural design pattern that allows incompatible interfaces to work together. This pattern is useful for adapting existing classes or libraries to work with the Android application.

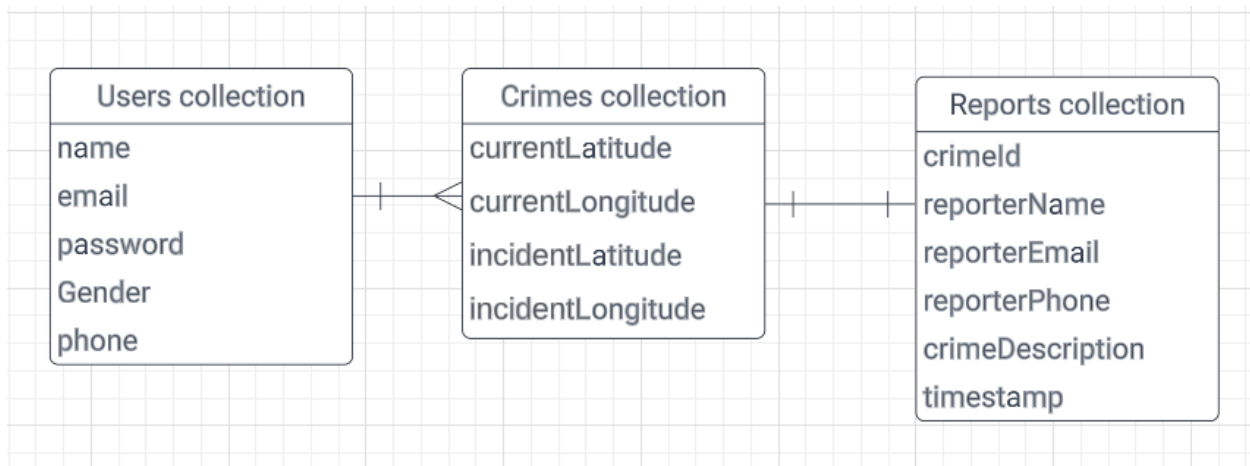
By using these design patterns, I was able to create well-structured, modular, and maintainable code, which can be easily tested and extended as the application evolves over time.

3.2.4 Application architecture



3.2.5 Database design

I'm using Firestore database for this Android application, the database design is different from a traditional relational database. Firestore is a cloud-based database service that provides a flexible and scalable solution for mobile applications. Here are collections and documents that are used in the database.

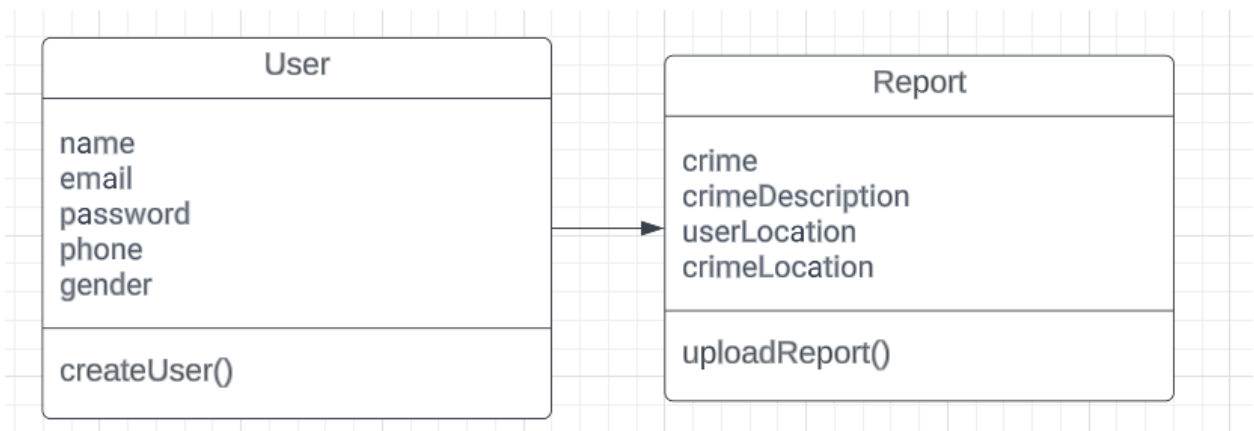


Firestore database design is structured according to the application requirements, and it is optimized for the queries and operations that the application needs to perform.

3.2.6 Process design

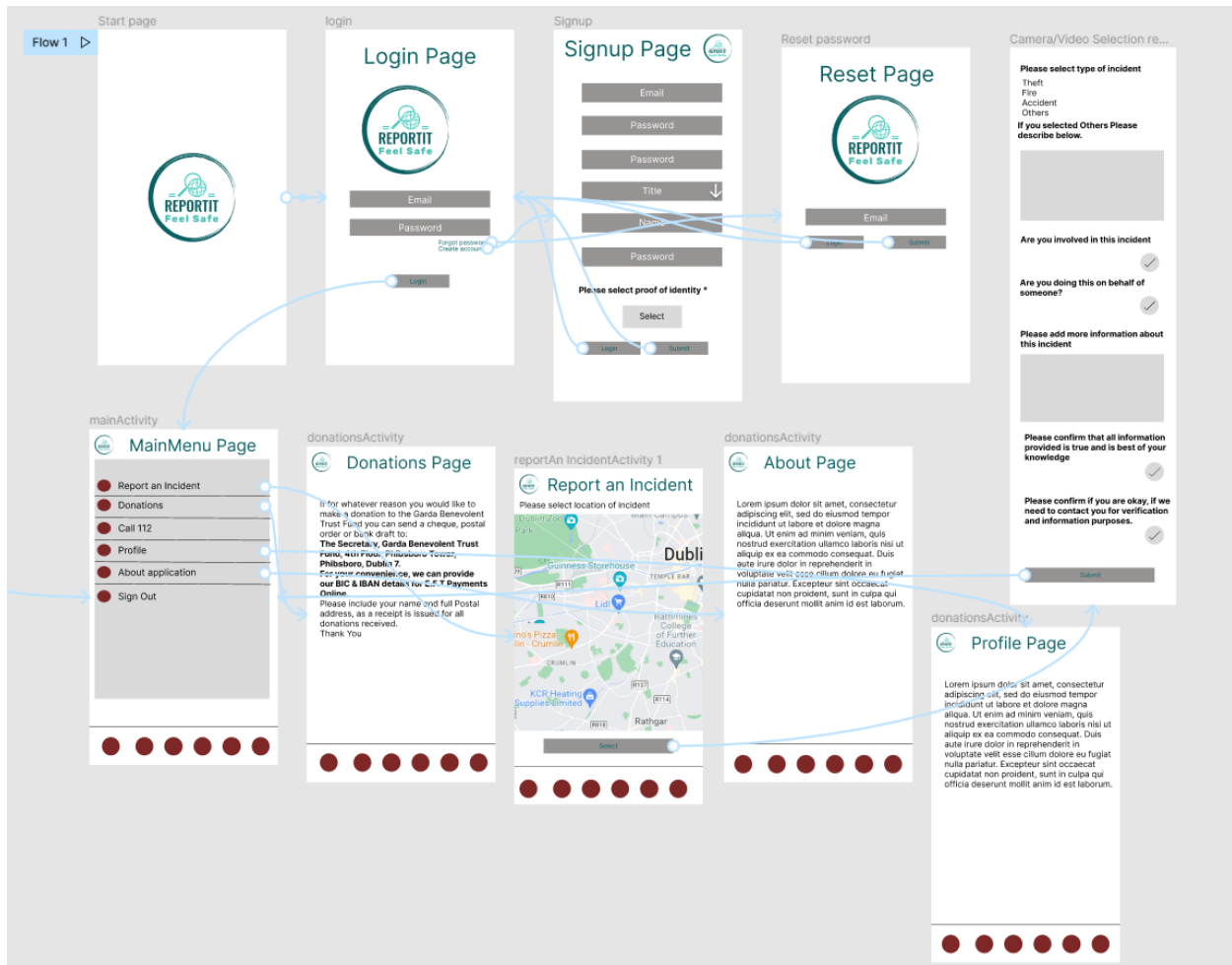
This process design provides a clear overview of the crime reporting workflow and logic, from user input to report submission. By using a class diagrams, it ensures that all aspects of the application are well-defined and accounted for in the development process.

- Class diagrams



3.3 User Interface Design

3.3.1 Wireframe^{vi}



3.3.2 User Flow Diagram



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3.3.3 Style guide

The color scheme used in this layout includes a gradient background, which is defined in the **android:background** attribute of the ConstraintLayout. The toolbar has a solid color background of **#0F7D6E**, which is a dark shade of green. The text color of the toolbar title is set to white using **app:titleTextColor="@color/white"**.

The SearchView has a custom background defined in **android:background="@drawable/search_bkg"**. It also has a search icon defined in **app:searchIcon="@drawable/ic_search"** and a close icon defined in **app:closeIcon="@drawable/ic_clear"**.

3.4 Conclusion

To conclude the program design for an Android-based crime reporting application should prioritize user experience, ease of use, and security. By incorporating features such as registration and authentication, incident reporting, GPS location tracking, notification and alert systems, analytics and reporting, and privacy and security measures, the application can be an effective tool for preventing and solving crimes in communities across the world.

By using the right technologies, an Android-based crime reporting application can provide a seamless and secure user experience while delivering critical functionality such as real-time communication, mapping and geolocation, and authentication and authorization. From Android Studio Kotlin to Firebase, Google Maps API, and OAuth 2.0, there are many technologies available to develop applications that can help build robust and effective crime reporting applications.

Each layer in the Android architecture has its own set of responsibilities, and communication between layers is done through well-defined interfaces. This helps to maintain a modular and extensible application structure, making it easier to modify and add new features to the application.

4. Implementation

4.1 Introduction

The implementation of this application aims to provide a simple and effective way for citizens to report crimes in their community. With the widespread use of smartphones, this application can help users quickly report crimes and provide vital information to law enforcement agencies. The implementation of this application involves the use of various technologies, such as Kotlin programming language, Android Studio, Firebase Firestore database, and Google Maps API, among others. The successful implementation of this application can have a significant impact on reducing crime rates by increasing citizen participation and helping law enforcement agencies respond to crimes more efficiently.

4.2 Implementation

The implementation process involves several phases, including planning, design, development, testing, and deployment. In the planning phase, the requirements of the application were identified, defined the scope of this project, and established a timeline for completion. In the design phase, a detailed system architecture, user interface design, and database schema was created. In the development phase, coding was done for achieving the application and integrating various technologies to create a functioning system was done as well. In the testing phase, I conducted various tests, including unit testing, integration testing, and user acceptance testing, to ensure that the application meets the requirements of the users and is free of errors. Finally, in the deployment phase, where final release of the application happened.

4.3 Scrum Methodology

Scrum is a popular agile methodology used in software development projects. It emphasizes teamwork, collaboration, and iterative progress toward a well-defined goal. The Scrum process typically involves roles, artifacts, and ceremonies, the type of Scrum methodology that I used was a self-organizing individual responsible for delivering a potentially shippable product increment at the end of each sprint which was myself of course as this was not a group project.

4.4 Development environment

The development environment for this application includes the following tools and technologies which are discussed below,

1. Integrated Development Environment (IDE): Android Studio is the most commonly used IDE for developing Android applications. It provides with tools for designing user interfaces, coding, testing, and debugging applications.
2. Programming languages: The two main programming languages used for Android app development are Java and Kotlin. Both languages are supported by Android Studio and can be used to develop high-quality Android applications. But in this application Kotlin Programming language was used throughout the process of development.
3. Android Software Development Kit (SDK): The Android SDK provides with a range of tools and libraries to develop, test, and debug Android applications. The SDK includes the Android Emulator, which allows us to test our applications on a virtual device.
4. Application Programming Interfaces (APIs): Android provides comes with a range of APIs that allows us to access various features of the operating system, such as the camera, location services, and contacts.
5. Version Control System (VCS): A version control system is essential for managing the source code of the application. Git is a popular VCS that can be used to manage the codebase and collaborate with other developers.
6. Database management system: A database management system was required to store and manage data related to crime reports. Firebase, a cloud-based database management system, is a popular choice for Android applications, as it provides real-time synchronization and offline data support, so due to this popularity I used Firebase.
7. Design tools: Figma as a design tool was used to create the user interface design for the application. This tools helps with the designing to create high-fidelity designs that can be shared with the other development team members.

4.5 Conclusion

In conclusion, the development of an Android-based reporting application is a significant step towards improving public safety and reducing crime rates. By allowing citizens to report crimes quickly and easily, law enforcement agencies can respond more effectively and take appropriate actions to address the situation. The application can also provide a sense of security to the general public, knowing that they have a convenient tool to report crimes and help keep their communities safe.

To develop this application, various steps was followed, including conducting research, defining requirements, selecting appropriate technologies, and designing the application's architecture and interface. It is also essential to ensure that the application is user-friendly, reliable, and secure.

Overall, the development of a crime reporting application can have a positive impact on society, and with continuous improvements and updates, it can become an effective tool for preventing and addressing criminal activities. Also, the implementation of this application requires a significant amount

of planning, coordination, and technical expertise. However, with the right approach, the implementation can result in a valuable tool for citizens and law enforcement agencies alike.

5. Testing

5.1 Introduction

Testing is a crucial part of the software development process, and the development of an Android-based application is no exception. Proper testing ensures that the application is functional, user-friendly, and secure, and that it meets the requirements and expectations of the users.

Testing such application involves various methods, such as functional testing, usability testing, performance testing, and security testing. Functional testing checks if the application performs as expected and meets the requirements, while usability testing focuses on ensuring that the application is user-friendly and easy to navigate. Performance testing evaluates the application's responsiveness and efficiency, while security testing ensures that the application is protected from potential security threats.

This chapter describes the testing that has been undertaken for the application. This chapter is presented in two sections:

Functional Testing

Some functional testing for this application are as follows:

1. User registration: I tested the registration process to ensure that users can create an account successfully and their information is stored securely.
2. Incident reporting: I tested the process of submitting an incident report to ensure that all required fields are included, and the report is saved correctly.
3. Location tracking: I test the location tracking feature to ensure that user's locations are accurately recorded and displayed in incident reports.
4. User feedback: Test the feedback feature to ensure that users can provide feedback on the application's usability and functionality.

User Testing

Some user tests for this application are as follows:

1. Usability testing: Tested the ease of use of the application to ensure that users can navigate through the application without difficulty.
2. Performance testing: I tested the application's performance to ensure that it can handle a large number of users and incidents without slowing down or crashing.
3. Accessibility testing: I tested the application's accessibility features, such as font size, contrast, and screen reader compatibility, to ensure that it is accessible to all users.

4. Security testing: I tested the application's security features, such as user authentication and data encryption, to ensure that user data is protected from unauthorized access.
5. User acceptance testing: I tested the application with a group of representative users to ensure that it meets their needs and expectations.

5.2 Functional Testing

1. Registration and login testing:

- Verified that a user can create an account using valid email and password.
- Verified that the user is redirected to the login page after successful registration.
- Verified that a user can log in using the credentials provided during registration.
- Verified that the app displays an error message if the user enters an incorrect email or password.

2. Reporting a crime testing:

- Verified that a user can report a crime by filling in all the required fields.
- Verified that the app displays an error message if a user tries to submit a report without filling in all the required fields.
- Verified that the app saves the report and displays it on the map if the report is valid.
- Verified that the app displays a success message after a successful report submission.

3. Viewing crime reports testing:

- Verified that the app displays markers about current and incident locations on the map.
- Verified that the app allows users to fill the crime reports and only can be reported within 1km radius.
- Verified that the app displays the location when user taps on it.
- Verified that the app only allow user to drop only 1 marker within specified range.

5.2.1 Navigation

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	Bottom Navigation Menu	Item 3	Open donation activity	Opened donation activity	working
2	signout	Item 6	Signout the user	Signed-out the user	working

3	Search item	Top search bar	Search as user is typing	Searched as user is typing	working
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5.2.2 Calculation

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	User current location marker	default	Should not move	Didn't not move	working
2	Incident location marker	Long click on map	Create a marker	Created multiple markers	Not working
3	Incident location marker	Long click on map	Create a marker	Created single markers	working

5.2.3 CRUD

Test No	Description of test case	Input	Expected Output	Actual Output	Comment
1	Register new user	Register fields	Save in firestore	Didn't Saved data in firestore	Not working

2	Register new user	Register fields	Save in firestore	Saved data in firestore	working
3	Retrieving user data	Profile activity	Retrieve data from google firestore and dhow them in android aoo	Data Retrieved	working

5.2.4 Discussion of Functional Testing Results

The functional testing of the crime reporting application ensures that all the features and functionalities of the application are working as expected. Some of the functional testing results are:

1. **Successful reporting of crimes:** This functional testing ensured that the application can successfully report crimes. This includes verifying that the user can input all necessary details about the crime, such as the type of crime, location, etc.
2. **Accurate crime location tracking:** The application was able to track the exact location of the crime, using the device's GPS functionality. This functional testing ensured that the location tracking is accurate, and that the location of dropped marker was displayed on the map correctly.
3. **Efficient emergency response:** This functional testing also verifies that the emergency response to reported crimes is efficient. This included testing the response time of law enforcement agencies to the reported crimes and verifying that the emergency services arrive at the crime scene in a timely manner.
4. **Compatibility with different devices and platforms:** The application should be compatible with different devices and platforms, including different versions of Android operating system. This functional testing verified that the application works smoothly on different devices and platforms.
5. **Secure data storage:** This functional testing ensured that the application stores all data securely, including user information and details about the reported crimes. The testing also verified that the data is encrypted and that the application has appropriate security measures in place to prevent unauthorized access.

5.3 User Testing

Some user testing methods that was undertaken for this application are as follows:

1. **Usability testing:** This method involved testing the application with actual users to ensure that it is easy to use, intuitive, and efficient. This was done by observing how users interact with the application, noting where they encounter difficulties, and gathering feedback on ways to improve the user experience.
2. **User acceptance testing:** This involved testing the application with a group of representative users to ensure that it meets their needs and expectations. This was done by having user's complete specific tasks within the application and providing feedback on their experience.

3. Beta testing: This method involves releasing the application to a limited group of users before its submission to gather feedback and identify any issues that need to be addressed. This was done through a public beta program by inviting a select group of users to participate.

4. Performance testing: This method involves testing the application under different load conditions to ensure that it can handle a large number of users and requests without crashing or slowing down. This can be done by simulating heavy traffic on the application and measuring its response time and performance metrics.

5. Security testing: This method involves testing the application's security features to ensure that user data is protected and secure. This was done by performing penetration testing, vulnerability assessments, and other security tests to identify potential weaknesses and vulnerabilities in the application's security design.

Overall, user testing is an important part of any application development process as it helps to identify issues and areas for improvement that can enhance the user experience and ensure that the application meets the needs and expectations of its intended audience.

5.4 Conclusion

In conclusion, the development of an Android-based Application can greatly enhance the efficiency and effectiveness of crime reporting and management systems. The application can provide a secure and convenient platform for citizens to report crimes and for law enforcement agencies to receive and respond to such reports.

The successful implementation of the application required a well-designed program and user interface, appropriate technologies and database designs, as well as thorough testing to ensure its functionality and user-friendliness.

As we know that functional testing and user testing are both critical components of the testing phase of the development process, and can help to identify and address any issues or concerns with the application before it is released to the public. Moreover, the development of application has the potential to significantly improve public safety and strengthen the relationship between law enforcement agencies and the community they serve.

Overall, the testing process plays a crucial role in ensuring the quality and reliability of the crime reporting application, and it is essential to conduct testing at various stages of the development process to identify and address any issues and ensure a successful launch.

6. Project Management

6.1 Introduction

Managing a project to develop an android based incident reporting app requires careful planning, organization, and coordination of various tasks and resources. The goal of the project is to create a reliable, user-friendly app that allows users to report incidents quickly and easily, and for the reports to be processed and acted upon by appropriate authorities. To achieve this, one must oversee the project's life cycle, from the initiation stage to completion, to ensure that the app meets the user's requirements, is delivered within budget and on time, and meets the highest quality standards.

Effective project management^{viii} is critical to the success of the project and requires a systematic approach that involves planning, executing, monitoring, and controlling the project. This involves coordinating the efforts of developers, designers, testers, stakeholders, and other team members to ensure that the project is completed efficiently and effectively. In this context, a range of project management methodologies and tools can be applied to manage and deliver the project, from traditional project management approaches like the Waterfall model to more agile methodologies like Scrum and Kanban. A comprehensive project management plan and process can help to ensure that the project is delivered on time, on budget, and to the satisfaction of all stakeholders.

6.2 Reflection

Reflecting on the project management of this application, it was evident that having a clear project plan and following project management principles was crucial for the successful completion of the project. The project plan ensured that the project was well-organized, with defined timelines, tasks, and responsibilities. This helped me to focus on the project goals and objectives, which ultimately led to the delivery of a high-quality app.

Overall, the project management process was effective, resulting in the successful completion of the incident reporting app. However, project's success highlighted the importance of project management in software development projects and the need for effective communication, collaboration, and project planning.

6.3 Conclusion

In conclusion, managing the development of this application requires a systematic approach and a set of processes that are designed to ensure that the project is delivered on time, and meets the needs of the end-users. This involves defining the project scope, developing a project plan, setting milestones,

identifying and managing risks, tracking progress. Effective project management can ensure that the project is completed successfully and that the end-users are satisfied with the final product. Also, it is important to stay organized and ensure that time keeping is maintained. This can involve creating a detailed project plan with clear objectives and milestones, establishing effective communication channels, and monitoring progress throughout the development process.

It is also important to anticipate and address potential challenges, such as delays or technical issues, as soon as they arise. This involves revising the project plan or adjusting team roles and responsibilities to ensure that deadlines are met.

Ultimately, successful project management involves effective leadership, clear communication, and a commitment to continuous improvement throughout the development process. By prioritizing these factors, it is possible to ensure the successful completion of a proper incident reporting application is achieved.

7. Conclusion

7.1 Introduction

Throughout this project, we have explored the development of an Android-based incident reporting application, which aims to provide an efficient and convenient way for citizens to report crimes and incidents to the authorities. I have discussed various aspects of the application, including its requirements, design, implementation, testing, and project management.

7.2 Project Summary

This incident reporting application is designed to provide a convenient and reliable way for users to report incidents to the relevant authorities. The app allows users to report incidents in real-time, attach photos and videos, and provide additional details such as location and time of the incident. The app is developed using Kotlin and Android Studio and utilizes various technologies such as Google Maps API, Firebase Authentication, and Firestore Database.

During the project development, various design patterns and architectures were considered and implemented, including the Model-View-ViewModel (MVVM) architecture, Repository pattern, and Dependency Injection. The app was also tested through functional and user testing to ensure its reliability and user-friendliness.

The project provided opportunities for me to enhance my skills in mobile app development, database management, API integration, and project management. It also offered insights into the importance of user-centered design and the need for regular testing to ensure app reliability.

Future developments for the app could include features such as chatbot support, real-time notifications, and integration with third-party apps. Overall, the Android-based incident reporting app serves as an innovative solution to enhance the reporting of incidents, promoting public safety, and the need for a reliable and efficient system.

7.3 Project Strengths and Weakness

Strengths:

- This project fulfills an important need for citizens to easily and quickly report incidents to authorities.
- Utilizes modern mobile technology to create a user-friendly and accessible interface.

- Provides a platform for authorities to efficiently receive and process incident reports.
- Allows for real-time tracking of reported incidents, potentially improving emergency response times and public safety.
- Provides a database of reported incidents, which could be used for statistical analysis and identifying patterns in criminal activity.

Weaknesses:

- Development require significant time, resources, and expertise in mobile app development.
- The accuracy and legitimacy of incident reports may be difficult to verify, potentially leading to false reports or unnecessary emergency response.
- The app may be vulnerable to security breaches or hacking, compromising the privacy and safety of both users and authorities.
- There may be issues with user adoption and engagement, leading to low usage rates and limited effectiveness.
- There may be legal and regulatory barriers to implementing such an app, such as data privacy and sharing agreements with local authorities.

7.4 Learning Outcomes

Learning outcomes that are gained through the development of this application are as follows:

1. **Technical skills:** The development of app requires technical skills such as programming, database design, user interface design, and testing. This project helped me as a developer to gain practical experience in such area and enhance my technical skills.
2. **Project management skills:** The development of this application played a vital role in project management activities such as planning, resource allocation, risk management, and communication. This project helped me to improve my project management skills and learn how to manage a project from start to finish.
3. **User-centered design:** A critical aspect of the development of an Android-based incident reporting app is the user interface design. Developers need to understand the needs and preferences of the app's users to create a user-friendly and intuitive interface. So, this project helped me gain experience in user-centered design and usability testing.
4. **Problem-solving skills:** The development of this app requires creative problem-solving skills to address technical and user interface design challenges. This project helped me to enhance my problem-solving skills and learn how to apply these skills in a real-world context.

Overall, the development of an app can provide developers with a range of valuable learning outcomes that can help them in their future careers.

7.5 Further Development

Some possible areas for further development of this app are discussed below:

1. Integration with other emergency services: The app could be integrated with other emergency services like fire department, and ambulance services to provide comprehensive emergency assistance.
2. Real-time tracking and location sharing: The app could be enhanced to provide real-time tracking of the incident location and share the user's location with the emergency services for faster response time.
3. Improved user interface and user experience: The app's user interface and user experience could be further improved to make it more user-friendly and intuitive.
4. Multilingual support: The app could be made available in multiple languages to cater to a wider user base.
5. Integration with wearables: The app could be integrated with wearable devices like smartwatches to provide emergency assistance even when the user's phone is not readily accessible.

These are just a few examples of potential areas for further development. The possibilities for improvement and expansion are endless, and it is important to continually gather user feedback and make iterative improvements to ensure the app remains relevant and effective in addressing community safety concerns.

8. References

Link for apk file:

https://github.com/flast8021/reportit_apk

Link for application code:

https://github.com/flast8021/report_it

Other References:

¹ www.gradient.io

¹ https://www.google.com/url?sa=i&url=https%3A%2F%2Ftechcrunch.com%2F2023%2F01%2F12%2Fcrime-reporting-app-citizen-lays-off-33-employees%2F&psig=AOvVaw3bW4mneH6wipWclOVrrKBM&ust=1683133915553000&source=images&cd=vfe&ved=OCBEQjRxqFwoTCMikxsuQ1_4CFQAAAAAdAAAAABAE

¹ https://www.google.com/imgres?imgurl=https%3A%2F%2Ftechcrunch.com%2Fwp-content%2Fuploads%2F2017%2F03%2F1-yq6puysethsmj0ajm99eoa.png&tbnid=CN-ul41cQkFoVM&vet=12ahUKEwiPwM-Pk9f-AhWMSEEAHUCTBAkQMygDegUIARC8AQ..i&imgrefurl=https%3A%2F%2Ftechcrunch.com%2F2017%2F03%2F10%2Fbanned-crime-reporting-app-vigilante-returns-as-citizen-says-its-report-incident-feature-will-be-pulled%2F&docid=Z_7lyP0RZvw12M&w=2000&h=1174&q=CrimeReports%20crime%20reporting%20app&ved=2ahUKEwiPwM-Pk9f-AhWMSEEAHUCTBAkQMygDegUIARC8AQ

¹ https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.victimsupport.org.uk%2Fsussex-pcc-launch-new-hate-crime-reporting-app-victim-support%2F&psig=AOvVaw1-cxUuL4RLZ_PwFt9OxLoD&ust=1683134915067000&source=images&cd=vfe&ved=0CBEQjRxqFwoTCNjA9aeU1_4CFQAAAAAdAAAAABAS

¹ <https://forms.office.com/e/L9TWqZNNG8>

¹ <https://www.figma.com/file/5eDA6haQPjiH9k3voStM8x/Untitled?type=design&node-id=0%3A1&t=shn9EMBx5HxmU8B5-1>

¹ <https://lucid.app/>

¹ <https://asana.com/resources/project-management-skills>

Appendix C - Consent Form



Dorset College Dublin

Research Informed Consent Form 2020

(to be filled by researcher)

TITLE OF STUDY

Android Based Crime Reporting Application

PRIMARY RESEARCHER

Name: Usman Zia
Department: Computer Science
Address: 28 Hardwick street Dublin 01
Phone: 0894835085
Email: flast8021@gmail.com

PURPOSE OF STUDY

The purpose of this study is to explore and develop an android-based incident reporting application. The main aim is to provide a user-friendly and efficient platform for reporting and monitoring criminal activities. This study covers the various aspects of the application development process, including requirements gathering, design, implementation, testing, and project management. The study also aims to identify the strengths and weaknesses of the application and provide recommendations for future development. Ultimately, the purpose of this study is to contribute to the field of mobile application development and improve the effectiveness of crime reporting systems

PROCEDURES

The procedures for this study depends on the specific research question being investigated. However, some general procedures that are followed includes:

1. Defining the research question and objectives.
2. Developing the research design.
3. Data collection.
4. Data analysis.
5. Drawing conclusions.
6. Reporting findings.

RISKS

Risks involved are as follows:

1. Data security: Since the project involves the development of an android-based incident reporting application, ensuring the security of the data collected from users is crucial. If the data is leaked or compromised, it could lead to serious legal consequences.
2. Technical challenges: Developing an android-based application involves various technical challenges such as compatibility issues, debugging, and maintaining code quality. Failure to address these issues on time could result in delayed project completion.

3. Time management: Managing time and meeting project deadlines is a significant risk factor. Any delays or missed deadlines can cause significant setbacks in project completion and negatively impact the project's success.

It is essential to identify and mitigate these risks to ensure the successful completion of the study.

BENEFITS

The benefits involved in the study of developing an android-based incident reporting application are numerous.

Firstly, such an application can help in making crime/incident reporting easier and more efficient. With the help of this application, users can quickly report a crime to the relevant authorities, providing detailed information about the incident, including location, time, and type of crime. This can help in reducing the response time of law enforcement agencies, thereby enhancing the overall safety and security of society.

Secondly, the application can help in enhancing the transparency and accountability of law enforcement agencies. By allowing users to report incidents, the application can help in building trust between law enforcement agencies and the public, which can lead to a more collaborative approach towards crime prevention.

CONFIDENTIALITY

Please do not write any identifying information.

Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents
- Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

CONTACT INFORMATION

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Researcher directly by telephone at 0894835085 or at the following email address flast8021@gmail.com.

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. If you decide to take part in this study, you will be asked to sign this consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's Signature _____ Date _____

Researcher's Signature Usman Zia

Date 02/05/2023

Appendix D - Ethics Form



Ethics Approval Form

Dorset College

Dorset College requires all research activities to be subjected to ethical scrutiny. The purpose of this Ethics Form is to inspire and assist researchers to design and undertake their research in the most ethically appropriate way.

Section 1

1. Application Details

Name	Usman Zia
Student Number	24087
Programme	Bsc. In Computing
Year of study	Year 3
Supervisor	Kartikya Rana

Research Project title	Android based Incident Reporting Application
Start Date	12/09/2022
End Date	03/05/2023
Funder (if applicable)	-
Date of Submission	03/05/2023

Section 2

Research Project Details

2.1 Research Objective/Brief (300 words):

The objective of this research was to get User's Identify the key features and functionalities required
in an incident reporting application, based on a review of existing literature and user needs
Assessments, So I Developed an Android application that meets the identified requirements and
incorporates best practices in user interface design and software development. Evaluated the usability
and effectiveness of the developed application in improving incident reporting processes,
such as timeliness, accuracy, and completeness of incident reports. Assessed user satisfaction with the
application and identify areas for improvement based on user feedback. Provide recommendations for
further development and implementation of the incident reporting application, including potential
integration with other systems and processes. Also To design, develop, and evaluate an Android
application for incident reporting that is user-friendly, efficient, and effective in improving
incident reporting processes and outcomes. So by achieving these objectives, the research

contributed into the development of an effective and user-friendly incident reporting

application that could help organizations improve their incident reporting and management

processes, leading to better outcomes for all stakeholders involved.

2.2 Research Methods to be employed:

(a) Where will the research be carried out?

The research is to be carried out in an academic setting. This setting would allow for a more theoretical and analytical approach to the development of the application, and the research focused on evaluating the effectiveness of different design and development strategies.

(b) What research methods would you employ in the course of your research (*interviews, surveys, focus groups, etc*):

Interview

Survey(results attatched above)

Focused group to test application

2.3 Proposed Participants

(a) How many participants do you plan to include:

11

(b) Will the research use any of the following participants:

- | | | |
|--|---|--|
| i. Minors | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| ii. People with learning disabilities | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| iii. People with medical issues/patients | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| iv. Any other kind of vulnerability | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

If yes, please describe the nature of the vulnerability and discuss special provisions/safeguards to be made for working with these persons.

(Depending on the nature of the vulnerability, sessions may need to be supervised or the researcher may need to undergo Garda vetting)

N/A

(c) How will you select and recruit the participants:

(it is mandatory to provide a 'Participant Information Sheet' to everyone participating)

(Appendix I- Template for Participant Information Sheet)

One way is to target individuals who have experienced or witnessed a crime in the past, as they may

have a vested interest in such an application and may provide valuable insights into its development.

Another way is to target law enforcement officials who deal with crime reporting and investigation, as they can provide a unique perspective on the functionalities and features required for an effective crime reporting application.

Section 3

Ethical implications and data management in the course of research

3.1. Please specify how the confidentiality of the participants would be maintained:

At the start of the study, participants should be provided with clear and detailed information about the research project, including the purpose of the study, the methods that will be used, and how their data will be collected and stored.

3.2 Will any personally identifiable information about the participants be recorded?

☐ Yes ☒ No

If yes, please justify why it is required and how will you protect this information

3.2 How will the consent of participants be received and stored? (Appendix II: Template of Consent form). If minors or vulnerable persons are involved, please explain the procedure for obtaining their consent.

Consent of the participants can be received through a written or online consent form.

To ensure the confidentiality of the participants, the consent forms will be stored securely,

in a password-protected electronic file, till the details are required.

3.3 Please indicate how the data would be stored and till when:

To ensure the confidentiality of the participants, the consent forms will be stored securely,

 in a password-protected electronic file, till the details are required.

Declaration by the Applicant:

I declare that the details provided above reflect truly the research proposal. I also undertake to take the necessary approvals if any changes are required after this submission.

Usman Zia

03/05/2023

Applicant's signature

Date

Declaration by the Supervisor:

I have read this application, discussed it with the applicant and I am satisfied with it. This application follows the criteria set by the Dorset College Ethics Committee.

 Supervisor's signature

 Date

(Supervisor to retain a copy of this form)

Final Approval by the Ethics Committee:

Comments:

Signature

Ethics approval granted on: _____

Appendix I

TEMPLATE FOR PARTICIPANT INFORMATION SHEET

1. Researcher Name: Usman Zia

Contact Number: 01 574 6850

(Provide contact details of Dorset College only as no personal details are to be provided)

2. Supervisor Name: Kartikya Rana

Contact Number: 01 574 6850

(Provide contact details of Dorset College only as no personal details are to be provided)

3. Purpose of the Research Study:

The purpose of this research study for an incident reporting application could be to evaluate

the effectiveness and usability of the application in real-world settings.

4. What will happens after the participant agree to be a part of the study:

Their contributions will be appreciated and their ideas will be considered.

5. How often and in what mode would be the participants contacted by the researcher:

By their preference.

6. Steps to be taken to ensure data protection and duration of data storage:

GDPR rules and regulations will be deployed.

Appendix II

TEMPLATE FOR CONSENT FORM

(Applicants are advised to modify and make additions to this template according to the nature of their research. The Supervisors should be consulted before finalising the final consent form. However, the following information must be included in all forms.)

Section 1

(To be filled by the researcher)

1. Researcher Name: Usman Zia

Contact Number: 01 574 6850

(Provide contact details of Dorset College only as no personal details are to be provided)

2. Purpose of the Research Study:

The purpose of this research study for an incident reporting application could be to evaluate

the effectiveness and usability of the application in real-world settings.

Section 2

(To be filled by the participant)

The purpose and the nature of the research have been explained to me and I have received the Participant Information Sheet. I have been given the opportunity to ask questions and all my questions have been satisfactorily answered. I have been informed about the timeline and process of storage and the use of my data. I, hereby, agree to participate in this study and I also consent to the appropriate use of the data I provided. I have been advised of my entitlement to remove myself and my data from this study.

Participant's name

Participant's signature with date

(If during your participation in this study you feel the information and guidelines you were given have been neglected or disregarded in any way, please contact Dorset College. Please be assured that your concerns will be dealt with in a sensitive manner.)

i www.gradient.io

ii https://www.google.com/url?sa=i&url=https%3A%2F%2Ftechcrunch.com%2F2023%2F01%2F12%2Fcrime-reporting-app-citizen-lays-off-33-employees%2F&psig=AOvVaw3bW4mneH6wipWcIOVrrKBM&ust=1683133915553000&source=images&cd=vfe&ved=0CBEQjRxqFwoTCMikxsuQ1_4CFQAAAAAdAAAAABAE

iii https://www.google.com/imgres?imgurl=https%3A%2F%2Ftechcrunch.com%2Fwp-content%2Fuploads%2F2017%2F03%2F1-yq6puysethsmj0ajm99eoa.png&tbnid=CN-ul41cQkFoVM&vet=12ahUKEwiPwM-Pk9f-AhWMSEEAHUCTBAkQMygDegUIARC8AQ..i&imgrefurl=https%3A%2F%2Ftechcrunch.com%2F2017%2F03%2F10%2Fbanned-crime-reporting-app-vigilante-returns-as-citizen-says-its-report-incident-feature-will-be-pulled%2F&docid=Z_7IyP0RZvw12M&w=2000&h=1174&q=CrimeReports%20crime%20reporting%20app&ved=2ahUKEwiPwM-Pk9f-AhWMSEEAHUCTBAkQMygDegUIARC8AQ

iv https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.victimsupport.org.uk%2Fsussex-pcc-launch-new-hate-crime-reporting-app-victim-support%2F&psig=AOvVaw1-cxUuL4RLZ_PwFt9OxLoD&ust=1683134915067000&source=images&cd=vfe&ved=0CBEQjRxqFwoTCNjA9aeU1_4CFQAAAAAdAAAAABAS

v <https://forms.office.com/e/L9TWqZNNG8>

vi <https://www.figma.com/file/5eDA6haQPjiH9k3voStM8x/Untitled?type=design&node-id=0%3A1&t=shn9EMBx5HxmU8B5-1>

vii <https://lucid.app/>

viii <https://asana.com/resources/project-management-skills>