

**DEVELOPING A KID TRACKING MOBILE APPLICATION FOR PARENTS AND
GUARDIANS**

BY
LING MEI SIM

A REPORT
SUBMITTED TO
Universiti Tunku Abdul Rahman
in partial fulfillment of the requirements
for the degree of
BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) COMMUNICATIONS
AND NETWORKING
Faculty of Information and Communication Technology
(Kampar Campus)

JUN 2024

REPORT STATUS DECLARATION FORM

Title: Kids Tracking Mobile Application _____

Academic Session: Y4T1 _____

I LING MEI SIM _____
(CAPITAL LETTER)

declare that I allow this Final Year Project Report to be kept in
Universiti Tunku Abdul Rahman Library subject to the regulations as follows:

1. The dissertation is a property of the Library.
2. The Library is allowed to make copies of this dissertation for academic purposes.

Verified by,

Ling Mei Sim . _____
(Author's signature)

(Supervisor's signature)

Address:

No.166 Taman Bintang _____

34900 Pantai Remis _____

Perak _____

Puan Nor' Afifah Binti Sabri _____
Supervisor's name

Date: 12/9/2024 _____

Date: 12/9/2024 _____

Universiti Tunku Abdul Rahman			
Form Title : Sample of Submission Sheet for FYP/Dissertation/Thesis			
Form Number: FM-IAD-004	Rev No.: 0	Effective Date: 21 JUNE 2011	Page No.: 1 of 1

**FACULTY/INSTITUTE* OF INFORMATION
AND COMMUNICATION TECHNOLOGY**

UNIVERSITI TUNKU ABDUL RAHMAN

Date: 11/9/2024

SUBMISSION OF FINAL YEAR PROJECT /DISSERTATION/THESIS

It is hereby certified that Ling Mei Sim (ID No: 20ACB01775) has completed this final year project/ dissertation/ thesis* entitled "Kids Tracking Mobile Application" under the supervision of Puan Nor' Afifah Binti Sabri (Supervisor) from the Department of Computer and Communication Technology, Faculty/Institute* of Information and Communication Technology, and Dr. Png Wen Hao (Co-Supervisor)* from the Department of Electrical and Electronic Engineering, Faculty/Institute* of Information and Communication Technology.

I understand that University will upload softcopy of my final year project / dissertation/ thesis* in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

Ling Mei Sim

(Ling Mei Sim)

DECLARATION OF ORIGINALITY

I declare that this report entitled “**Kid Tracking Mobile Application**” is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature : Ling Mei Sim

Name : LING MEI SIM

Date : 11/9/2024

ACKNOWLEDGEMENTS

I am sincerely grateful to my supervisor, Puan Nor' Afifah Binti Sabri, who support and guidance throughout the development of my “kids tracking mobile application” project. Her mentorship has been invaluable, and I deeply appreciate the opportunity they have provided me to explore and innovate in the field of mobile app.

I would also like to extend my heartfelt thanks to my friend Tan Ke Ying, whose provided me the inspiration and invaluable tips on this project. His insights and encouragement have been instruments in shaping my approach and success in developing the “kids tracking mobile application”.

ABSTRACT

A Kids Tracking Mobile Application. This mobile application is designed for parents and provides real-time insights into kids' activities specifically for kids who at the education stage and rebellious years. The features provided by this mobile application are a real-time location display service, and historical tracking capabilities. The real-time location service enable parents and guardians can track and view their kids' location to ensure their safety and whereabouts. In addition, the historical tracking feature offers parents a thorough overview of past locations, enabling a deeper understanding of the routines and activities of their kids. Moreover, it can prevent kids from getting lost, protect parents and kids from scammers, and take appropriate actions in time when an emergency occurs. Application stands as a powerful tool with data privacy protections and user-friendly features. Hence, parents can operate the application easily. The objectives of this project are to provide a platform for parents to track the real-time location of kids and view the history location of their kids.

TABLE OF CONTENTS

TITLE PAGE	i
REPORT STATUS DECLARATION FORM	ii
FYP THESIS SUBMISSION FORM	iii
DECLARATION OF ORIGINALITY	iv
ACKNOWLEDGEMENTS	v
ABSTRACT	vi
TABLE OF CONTENTS	vii
LIST OF FIGURES	x
LIST OF TABLES	xi
LIST OF ABBREVIATIONS	xii
CHAPTER 1 INTRODUCTION	1
1.1 Problem Background	1
1.2 Problem Statement and Motivation	1
1.2.1 Parents are unable to ensure kid’s safety	1
1.2.2 Prevent the scammers	2
1.3 Objectives	2
1.4 Project Scope	3
1.5 Contribution	4
1.6 Report Organization	4
CHAPTER 2 LITERATURE REVIEW	6
2.1 Child Tracking	6
2.2 The deceit of scammer	6
2.3 GPS tracking for children: balancing privacy and peace of minds	6
2.4 Safety vs Snooping: Perspectives from Parents and Children	7
2.5 Location tracking	7
2.5.1 GPS	8
2.5.2 WiFi positioning	8
2.5.3 Cellular location positioning	8

2.5.4	Comparison accuracy data between GPS and WPS	8
2.6	Existing system	9
2.6.1	Kaspersky Safe Kids	9
2.6.2	Qustodio	10
2.6.3	Norton Family	10
2.6.4	OurPact	10
2.6.5	Net Nanny	11
2.6.6	Comparison between the existing systems	11
 CHAPTER 3 SYSTEM METHODOLOGY/APPROACH (FOR DEVELOPMENT-BASED PROJECT)		13
3.1	System Requirement	13
3.1.1	Hardware	13
3.1.2	Software	14
3.2	System methodology	14
3.2.1	Waterfall Model	14
3.2.2	Agile Model	15
3.2.3	Comparison of waterfall model and agile model	16
 CHAPTER 4 SYSTEM DESIGN		18
4.1	System Architecture Design	18
4.2	Use Case Diagram	19
4.3	System Flow Diagram	20
4.3.1	Login Activity (Parent App)	20
4.3.2	Register Activity	21
4.3.3	selectServices Activity	22
4.3.4	AddKid Activity	23
4.3.5	ConnectedKid Activity	24
4.3.6	KidLocation History Activity	25
4.3.7	TrackKidLocation Activity	26
4.3.8	Login Activity (Kid App)	27

CHAPTER 5 SYSTEM IMPLEMENTATION (FOR DEVELOPMENT- BASED PROJECT)	28
5.1 Software Setup and Configuration	28
5.2 System Operation	30
5.2.1 Login (Parent App)	33
5.2.2 Register (Parent App)	34
5.2.3 Add Kid (Parent App)	35
5.2.4 History Location (Parent App)	37
5.2.5 Real-time location tracking (Parent App)	40
CHAPTER 6 SYSTEM EVALUATION AND DISCUSSION	41
6.1 System Evaluation and Discussion	41
6.1.1 System Testing Setup	41
6.1.2 Testing Result	43
6.2 Objectives Evaluation	44
CHAPTER 7 CONCLUSION AND RECOMMENDATION	46
7.1 Conclusion	46
7.2 Recommendation	46
REFERENCES	47
WEEKLY LOG	50
POSTER	51
PLAGIARISM CHECK RESULT	52
FYP2 CHECKLIST	54

LIST OF FIGURES

Figure Number	Title	Page
Figure 2.1	The data of GPS vs WPS	9
Figure 3.2.1	Waterfall Model	14
Figure 3.2.2	Agile Model	15
Figure 3.2.3	Gantt Chart	15
Figure 4.1	System Architecture Diagram	18
Figure 4.2	Use Case Diagram	19
Figure 4.3.1	Login Activity (Parent App)	20
Figure 4.3.2	Register Activity	21
Figure 4.3.3	selectServices Activity	22
Figure 4.3.4	AddKid Activity	23
Figure 4.3.5	ConnectedKid Activity	24
Figure 4.3.6	KidLocationHistory Activity	25
Figure 4.3.7	TrackKidLocation Activity	26
Figure 4.3.8	Login Activity (Kid App)	27
Figure 5.1 (a)	Android Studio connect to Firebase Authentication	28
Figure 5.1 (b)	Android Studio connect to Realtime Database	29
Figure 5.1 (c)	Users of Authentication	30
Figure 5.1 (d)	Data of Realtime Database	30
Figure 5.1 (e)	Rules of Realtime Database	31
Figure 5.2.1 (a)	Login with Parent account	33
Figure 5.2.1 (b)	Login with Kid account	33
Figure 5.2.2 (a)	Register Parent account	34
Figure 5.2.2 (b)	Register Kid account	34
Figure 5.2.3 (a)	Invalid username (a)	35
Figure 5.2.3 (b)	Invalid username (b)	35
Figure 5.2.3 (c)	Valid username	36
Figure 5.2.3 (d)	Success added kid	36
Figure 5.2.4 (a)	Selection of period	37

Figure 5.2.4 (b)	Last week history location	37
Figure 5.2.4 (c)	Select start date	38
Figure 5.2.4 (d)	Select end date	38
Figure 5.2.4 (e)	Custom period history location	38
Figure 5.2.4 (f)	Click one data on the list	39
Figure 5.2.4 (g)	Display history location on map	39
Figure 5.2.5 (a)	Current location (Kid App)	40
Figure 5.2.5 (b)	Location of kid02 (Parent App)	40
Figure 6.1.1 (a)	Extended Controls	41
Figure 6.1.1 (b)	Pair devices over Wi-Fi	42

LIST OF TABLES

Table Number	Title	Page
Table 2.6	Comparison between the existing system	11
Table 3.1.1 (a)	Specifications of laptop	13
Table 3.1.1 (b)	Specifications of mobile phone	13
Table 3.1.2	Specifications of Android Studio	14
Table 3.2.3	Comparison of the waterfall model and agile model	16
Table 6.1.2 (a)	Test for the accuracy of real-time location	43
Table 6.1.2 (b)	Test for the accuracy of history location	44

LIST OF ABBREVIATIONS

<i>GPS</i>	Global Positioning System
<i>API</i>	Application Programming Interface

Chapter 1

Introduction

In this chapter, I present the background of my project such as the problem statement, project scope, objectives, contribution and report organization.

1.1 Project Background

The project focuses on developing a kids tracking mobile application that provides a platform for parents and guardians to keep their kids safe, not disturb them, and not make them feel like their privacy is being violated. Many parents choose to work outside the home to improve their family's living standard. As a result, they have no extra time to get to know their kids and no way to confirm their safety when the kids are not in their custody. In addition, incidents of fraud by scammers have increased recently. To prevent these problems, parents can use this mobile app to ensure the safety of their kids. This mobile application allows parents to monitor the real-time location of kids and the historical location data of kids. With these services, parents can focus on their work and learn where their kids are spending more time by reviewing the historical location feature. Besides that, this application is applicable to all individuals. It is highly user-friendly and effortless to use. In summary, this project aims to provide a user-friendly mobile application that effectively addresses the concerns of parents and guardians.

1.2 Problem Statement and Motivation

1.2.1 Parents are unable to ensure kid's safety

Kid's well-being and security are always parents' primary concerns. In this fast-paced world, most parents choose to work outside the home for their family and kids. This situation often leaves them unable to personally supervise their kid's safety and whereabouts throughout the day. Hence, the responsibility of taking care of the kid falls on other guardians automatically, such as grandparents or childcare facilities, which may lead to concern about the kid's safety, especially when unpredictable situations arise. There are various unpredictable situations, like children running away from home during family conflicts, or they may simply have a natural inclination towards exploration, or kids may get lost in an unfamiliar environment, these are

Chapter 1

just a few examples. These unpredictable situations might place kids in potentially dangerous situations. This mobile application addresses these concerns by providing a platform that enables parents to track their kids' safety and location remotely.

1.2.2 Prevent the scammers

Recent news reports have highlighted cases where scammers pretend to be the kids of their parents to deceive them and steal their money. Moreover, these reports also mentioned scenarios involving fraudulent phone calls, with scammers falsely claiming a kid kidnapping and demanding ransom payments. Based on the news [2], the scammer will send a shocking text to the kid's parents, duping them out of thousands of dollars. Besides that, according to the information from WA Scam Net at Consumer Protection, they received 47 reports, with 25 people losing almost \$120,000. In addition, [4] highlights that 77% of 1,000 surveyed parents do not supervise their kids when they play video games, and 25% do not implement any security measures to prevent internet scams. In response to the growing threat of scams targeting parents, a platform for kid tracking systems can play a crucial role in preventing such a situation.

1.3 Objectives

- **Provide a user-friendly platform for users of all technological backgrounds.**
- **Provide a platform for guardians or parents to review the history location of kids.**
- **Provide a platform for parents to track the real-time location of kids.**

The primary objective of the Kids Tracking Mobile Application, provide a user-friendly and mobile friendly platform for grandparents who lack of technology knowledge, parents who are busy on their work also can ensure the safety of their kid and provide a platform for guardians who taking care of kid to ensure the location of kid.

Firstly, the design of kids tracking mobile application will focus on simplicity and ease of use, ensuring that even those with limited tech knowledge, such as grandparents, can navigate the app without difficulty. The platform will be optimized for mobile devices, allowing users to

Chapter 1

access the app seamlessly on smartphones and tablets. This ensures that parents and guardians can use the app whenever and wherever they need it, enhancing its practicality.

Furthermore, this mobile application as a powerful platform for parents to track the real-time location of kids. Parents can monitor their kids' movement at any given moment, giving them peace of mind when they are not physically present. This feature very important in unpredictable situation such as id the kid gets lost or encounters danger. Parents can endure their kids' safety without causing disruptions through real-time location tracking. For example, if parents are unable to contact their kids, they can simply check the app's map feature and confirm that their kids are at their kids are at their tuition center or focusing on their studies. This allows parents to stay informed without interrupting their kids' personal activities.

In addition to real-time tracking, the app will offer a feature that allows parents to review the history of their kids' locations. This historical tracking capability provides valuable insights into the kid's daily routines and movements. Parents can use this information to identify patterns, such as frequently visited locations, and ensure that their kids are staying within safe areas. This feature also serves as a useful tool for discussions between parents and kids about their activities and whereabouts.

1.4 Project Scope and Direction

The “Kids Tracking Mobile Application” is designed to help parents monitor and ensure the safety of their kids, especially during their education years and potentially rebellious phases. The project consists of two separate apps, one for parents and one for kids.

Parents can create an account for their kid through the parent app, which is used to manage and track their kid's location. The kid app, acting like a kid tracker, is responsible for sharing the kid's real-time location. Once the kid's app updated the new location data, parents can receive and view the location on a map through their app. Additionally, the parent app allows them to select a specific time period to view the history of their kid's movements and past locations, giving them peace of mind about their kid's safety.

Both apps are developed and tested using Android Studio, with an emulator simulating how they would function on real mobile devices.

1.5 Contributions

The contribution of this project is to assist parents or guardians enhance their ability to ensure the safety and well-being of their children. This user-friendly mobile application introduces a lot of features designed to empower parents and provide them with a kid tracking mobile application for tracking and safeguarding their loved ones.

Firstly, parents can use the parent app to track their child's location in real-time with the kids tracking application. Parents may directly use the app to locate and find out where their kid has been even if they are busy at work. Working parents will find this option especially useful as they might not always have the time to contact or call their kids during the day.

Moreover, parents who want to see their child's location history can simply select a period such as last three days, last week, last month and custom period. With the use of this feature, parents may identify trends in their kid's movements, assisting them in understanding their routines and ensuring their safety.

Lastly, this application is designed with a focus on simplicity. The user-friendly interface ensures that users of any technological background can easily use the features. While the main objective of this app is to ensure the safety of kids, it also ensures that kids do not feel like their privacy is being violated. This is achieved through open communication between parents and kids, where kids understand that the tracking is a platform to ensure their safety, not to control or intrude on their personal activities.

1.6 Report Organization

Nowadays, parents are becoming more concerned about the safety of their kids. With the rise of digital technologies, parents seek innovative solutions to ensure the safety of their kids. A mobile application serves as a platform that can be offered online, and a tracking system is used to monitor the real-time location of a target. The field of kids' tracking systems encompasses the interaction of technology, kid safety, and parental monitoring. In this project, I propose developing a kid tracking mobile application for parents to track their kids instead of relying on traditional methods of keeping track of them. The functions included in this mobile

Chapter 1

application are advanced GPS tracking, a user-friendly platform, real-time location display, and historical tracking capabilities.

Traditional methods used to keep track of kids are unsafe and ineffective, such as calling, texting, or relying on physical presence. According to references [2] and [3], impersonation fraud is the most prevalent type, accounting for 51% of reported incidents. Scammers exploit these methods to extract money from parents by deceptively posing as their kids.

To address these problems, this kid tracking mobile application offers a range of robust features tailored to parents' needs. With advanced GPS tracking, real-time location services, and historical tracking capabilities, parents and guardians can monitor the locations and activities of their kids.

This project also seeks to bridge the technological gap, catering to parents who may have limited tech expertise through user-friendly interfaces. The kids tracking mobile application is strategically designed to respond to these emerging concerns, offering parents a reliable tool to ensure their kids' safety while effectively countering potential threat

Chapter 2

Literature Review

2.1 Child tracking

Child tracking is an activity that involves using technology to monitor kids. Parents can use the monitoring system or other gadgets nearby to know where their kids are at all time. [12] As technology advances, this behavior becomes more complex, providing parents with more choice and options [12] to not only track their children's location but also monitor other aspects of their lives. For example, GPS-enabled devices, smartphone apps, and wearable trackers. While using these technologies can keep kids safer, they can also cause issues like diminished trust and lack of independence. [13]

2.2 The deceit of scammer

According to the news [6], scammers in India are exploiting AI technology to perpetrate elaborate fraud schemes targeting parents. By creating convincing fake voice recordings of children using AI technology, scammers deceive parents into believing their children are in trouble. Recent cases in New Delhi show how clever these scams can be, with scammers going as far as pretending to be children to extort money from parents. It's important for parents to be aware of these deceptive tactics and take steps to protect themselves and their children. Scammers may now imitate voices and create conversations that seem to be coming from the purported captives, thanks to the development of low-cost and user-friendly AI programmes. In virtual kidnapping scams, criminals pretend to be someone's loved one by faking their voice on the phone. They exploit the emotional vulnerability of victims' loved ones by creating the illusion of immediate danger and demand money. According to the news [8], a victim receive a call from someone pretending to be their daughter, saying she's in trouble. Even though no one is actually kidnapped, these scams cause in emotional distress and finance loss.

2.3 GPS tracking for children:balancing privacy and peace of mind

Use of GPS tracking devices for children can indeed offer both privacy and peace of mind to parents. By tracking their child's location, parents can ensure their safety without intrusive

Bachelor of Information Technology (Honours) Communications and Networking
Faculty of Information and Communication Technology (Kampar Campus), UTAR

Chapter 2

phone calls or interruptions. The article [7] mentions that the author's daughter needed to go to another town for practice using public transport. To ensure her daughter's safety, the author used a GPS tracking device to check that daughter had caught the transport and safely reached her destination. It allows children to have more independence while still providing a sense of security for parents, especially in situation like travelling to unfamiliar locations. Besides that, communicating openly with children about the use of tracking device can prevent the misunderstandings and foster trust in the parents-child relationship. Overall, while GPS tracking can offer valuable peace of mind, it's essential for parents to balance its benefits with respecting their child's privacy and autonomy.

2.4 Safety vs Snooping: Perspectives from Parents and Children

Parents often use geolocative technologies to protect their kids from damage, such accidents or kidnappings. To keep their kids safe without invading their privacy, parents frequently see these tools as necessary for carrying out their protective tasks. To reduce anxieties about overreach and control, they might refer to their activities as "checking in" as compared to "surveillance". Different parents may have different opinions about this kind of surveillance, and some may disagree about whether using these technologies amounts to spying or is still within the appropriate bounds of care. [19]

However, children can view continuous tracking as an invasion of their privacy, which could result in emotions of distrust or limited independence. While some could see the monitoring as necessary for safety, others might find it intrusive, which could undermine their feeling of autonomy and accountability. Therefore, the difficulty is striking a balance between the advantages of geolocation technology for safety and the requirement to protect children's privacy and encourage their independence. [19]

2.5 Location tracking

Location tracking is using tracking technologies to monitor and track the physical location of a target. [14]. Location tracking technologies like GPS, Wi-Fi positioning (WPS) and so on.

2.5.1 GPS

GPS tracking is one of the most popular types of tracking technology. It uses the GPS to track and monitor the location of a target remotely. This tracking technology can determine latitude, longitude, speed, and direction with an accuracy of 10 to 100 meters. It is reliant on a network of 24 satellites orbiting the Earth regularly. [15]

2.5.2 Wi-Fi positioning

Wi-Fi Positioning System (WPS) are used to precisely locate the objects and people indoors, where GPS might not work effectively. It uses signals such as the Received Signal Strength Indicator (RSSI) and MAC addresses from the access point to identify position. WPS accuracy ranges from 2 to 3 meters depending on the number of access points and the overall layout of the structure. Modern smartphones may achieve this level of precision. Besides that, it expanded using the current Wi-Fi access point without requiring any new equipment or infrastructure maintenance. [17]

2.5.2 Cellular location positioning

Cellular location positioning refers to the technology that determines the location of a device using cell tower and network data. This method works well in densely populated areas, such as cities and buildings, where GPS may be less effective. Cellular positioning thrives by utilizing crowdsourced Wi-Fi data and can pinpoint a user's location with high accuracy, often within a few feet. [18]

2.5.3 Comparison accuracy data between GPS and WPS

The comparison of GPS and Wi-Fi Positioning System (WPS) accuracy reveals distinct strengths and weaknesses for each technology. According to Figure 2.1, GPS provides high accuracy with minimal noise in outdoor environments, achieving precise location

Chapter 2

tracking. In contrast, WPS is more suited for indoor settings but can exhibit more noise and outliers in the data. For instance, data shows that GPS tracking data has fewer inaccuracies and better-defined trajectories compared to WPS, especially at a 30-second sampling rate. Despite WPS's ability to track locations indoors, it is more prone to errors and less precise compared to GPS. Therefore, for a kid tracking mobile application primarily used outdoors, GPS is the preferred choice due to its superior accuracy and reliability. [20]

In my project, I will use the tracking technologies to track the real-time location, which are GPS and cellular network positioning.

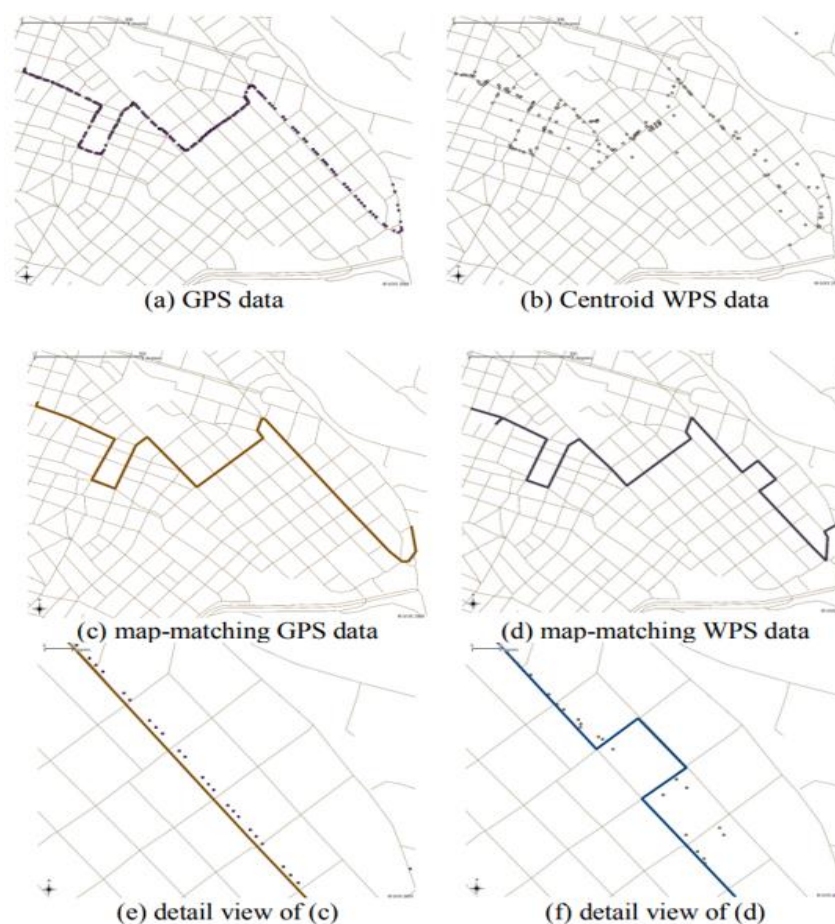


Figure 2.1

2.6 Existing system

2.6.1 Kaspersky Safe Kids

Chapter 2

Kaspersky Safe Kids is a economical parental control app that provides a substantial range of features at a low price. It supports monitoring and controlling activities on PCs, Macs, and smartphones, making it a versatile options for families with multiple types of devices. The free tier allows for basic controls like setting screen-time limits and filtering websites, while the paid tier, priced at just \$15 per year, adds features like social media monitoring, location tracking, and geofencing. Despite its affordability, the app has some drawbacks, including a slow web portal and poorly designed mobile apps. However, for families on a budget, Kaspersky Safe Kids provides great value.

2.6.2 Qustodio

Qustodio is a feature-packed parental control app that supports a wide range of platforms, including iOS, Android, Amazon Fire tablets, Macs, PCs, and Chromebooks. It offers advanced features like call and text monitoring on Android, making it one of the few apps that can still track these activities. Additionally, Qustodio's location tracking, geofencing, and Family Locator features work on both iOS and Android, and it allows for detailed app management. However, these capabilities come at a price, with the service costing up to \$138 per year for 15 devices. Despite its robust feature set, the web filtering is somewhat unreliable, which may be a concern for some users.

2.6.3 Norton Family

Norton Family is a powerful parental control app that excels in households using Android and Windows devices. It offers a comprehensive set of features, including strong web filters, time scheduling, and location tracking, making it a great choice for families with multiple children. The app allows for an unlimited number of children and devices, which is a big plus for larger families. Additionally, Norton Family recently added geofencing to its feature set. However, it has some limitations, such as a lack of support for Macs and weaker mobile apps. It's especially appealing when bundled with Norton's antivirus products, providing excellent value for Android and Windows users.

2.6.4 OurPact

OurPact is a well-designed parental control app that shines on iOS devices, offering a smooth and intuitive user experience. It allows parents to manage or block any app on both iOS and

Chapter 2

Android, making it a versatile choice for controlling screen time and app usage. The app also involves children in managing their screen time, helping them learn to balance their device use. However, while it offers location tracking and geofencing, it lacks more advanced features like location history tracking. Its limited web filtering and potential for high costs may be drawbacks, but for families with iOS-heavy households, OurPact's user-friendly design makes it a top contender.

2.6.5 Net Nanny

Net Nanny is widely regarded as one of the best parental control apps due to its modern, intuitive design and exceptional web-filtering technology. It works across both iOS and Android platforms, offering consistent features such as location tracking, location history, and time management. The app's content screening goes beyond basic filters by analyzing web pages and monitoring social media activity on platforms like Instagram, TikTok, and YouTube. While Net Nanny is somewhat expensive and lacks call or text monitoring, it stands out for its reliable geolocation, advanced web filters, and easy-to-use interface. For families looking for comprehensive control over their children's online activities, Net Nanny is a strong choice.

2.6.6 Comparison between the existing systems

Table 2.6 Comparison between the existing system

Existing Application	Plafoms Supported	Tracking Features	Drawbacks	Price
Kaspersky Safe Kids	Android, iOS, Windows, Mac	Location tracking, social media monitoring and geofencing.	Slow web portal and poorly UI designed.	\$15 per year
Qustodio	Android, iOS, Kindle Fire, Windows, Mac, Chrome OS	Location tracking, location history, call and text monitoring, social media monitoring, Youtube monitoring and geofencing.	Expensive and unreliable web filtering.	\$54.95 to \$138 per year

Chapter 2

Norton Family	Android, iOS, Windows	Location tracking, location history, Youtube monitoring, and geofencing.	Does not work on Macs, mobile apps lacking.	\$49.99 per year
OurPact	Android, iOS	Location tracking, and geofencing.	Expensive and limited web filtering.	Free \$100 per year
Net Nanny	Android, iOS, Kindle Fire, Windows	Location tracking, location history, social media monitoring, Youtube monitoring and geofencing.	Expensive and lack some iOS features	\$59.99 per year

Chapter 3

System Methodology/Approach OR System Model

In this chapter, it will determine the necessary software and hardware required for my project and explain their purposes. Additionally, it will outline the steps involved in the development of the kids tracking mobile application and provide an overview of the system architecture.

3.1 System Requirement

3.1.1 Hardware

The hardware involved in this project is a laptop and Android mobile. The laptop will be used for developing the mobile application. To test the features of the application, it needs the cooperation of a laptop and mobile phone.

Table 3.1.1 (a) Specifications of laptop

Description	Specifications
Model	HP Pavilion x360 Convertible Model14-dh1057TX
Processor	Intel Core i7- 10510U
Operating System	Windows 11
Graphic	Intel Integrated HD Graphics 520
Memory	12 DDR4-2666 SDRAM
Storage	512 GB PCIe® NV Me™ M.2 SSD

Table 3.1.1 (b) Specifications of mobile phone

Description	Specifications
Model	Vivo Y76 5G
Processor	Octa-core (2x2.2 GHz Cortex-A76 & 6x2.0 GHz Cortex-A55)
Operating System	Android 13, Fun touch 12
Graphic	Intel Integrated HD Graphics 520
Memory	12 GB RAM
Storage	128GB

3.1.2 Software

I will be using Android Studio to develop the application and test the features of the application. Additionally, I integrate the Google Maps API to display the maps view when user need to view the real-time location and history location. Furthermore, I will use Firebase for user authentication services and the real-time database to store the data received from users.

Table 3.1.2 Specifications of Android Studio

Description	Specifications
Android Studio	Used to test the program as if it were running on an actual Android mobile phone in laptop.

3.2 System methodology

3.2.1 Waterfall Model

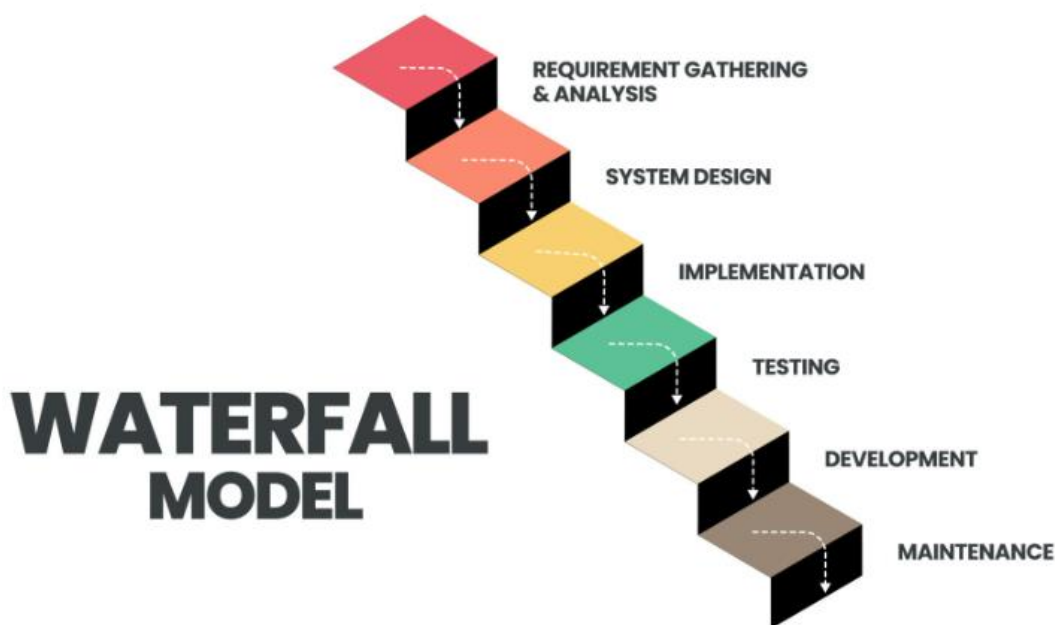


Figure 3.2.1

Waterfall model, one of the software development methodology, the process flows sequentially through defined phases such as requirements gathering & analysis, system design, implementation, system testing, system development and system maintenance. In requirements gathering and analysis phase, I will focus more on gather the information and documentation

about the requirements of my mobile application according to the problem statements. This involves identifying the needs of target clients, such as parents and guardians. By defining the essential functionality and features of the kids tracking mobile application, ensure the system meets the needs of users effectively. After gathering the requirements and conducting the analysis, I will proceed to design the system architecture. This include determining the database structure to store the data, designing user interfaces for user interaction, and defining the interaction between the components. During implementation phase, I will start developing the mobile application by building user interfaces, implementing the necessary components and resources, and setting up the database to store and manage the data. Testing is a crucial phase where I will conduct carious test cases to identify vulnerabilities and bugs in the system. Once bugs are identified, I will debug and fix the to ensure the security and reliability of system. Following bug fixes, I will focus on further improving the system based on testing feedback. This stage allows for enhancements to the reliability and quality of the system, ensuring it meets the requirements of users. In this maintenance stage, I may encounter new problems or receive feedback for new features based on changing requirements. I will address these problems and implement new features to optimize the performance and user experience of the mobile application, ensuring its effectiveness and meeting user requirements over time [10].

3.2.2 Agile model



Figure 3.2.2

Chapter 3

In the plan phase, I will outline the objective and scope of my project, including the features and functionalities that mobile app will provide, such as real-time location tracking, historical tracking and so on. During the design phase, define the overall architecture of the system, such as database structure and back-end service. The design should support the intended functionalities of the system and be in line with the requirements acquired during the planning phase. I will start writing code and implementing the system's features and functionalities during the development phase. A testing phase conducted throughout the development process to ensure the quality and reliability of kids tracking mobile application. This include unit testing, integration testing, and user acceptance testing. The requirements and user stories established during the planning stage provide the basis for the creation of test cases. Any bugs or vulnerabilities discovered during testing are addressed promptly. Once development and testing are complete, the system is deployed to a production environment where users can access it. Deployment involves configuring servers, creating databases, and distributing application code. After deployment, I will be conducting a review to evaluate the success of the project and gather feedback from target users. This phase includes assessing whether the kid tracking mobile application satisfies the initial requirements and objectives, as well as identifying areas for improvements. Future system iterations are informed by user feedback, which also helps to prioritize enhancements [9].

3.2.3 Comparison of the waterfall model and agile model

Table 3.2.3

	Waterfall Model	Agile Model
Sequential and Iterative Approach	It takes a step-by-step approach , where each phase of the development process like requirements and analysis, design, implementation and other phases is finished before moving on to the next phase.	Agile follows an iterative approach where development is divided into small, incremental cycles called sprints. Every sprint includes planning, development, testing, and review and usually lasts 1 to 4 weeks.
Flexibility and Adaptability	It is less flexible and doesn't accommodate changes well	It is highly flexible and adaptable to changing

	once a phase is completed. The implementation of changes made later in the development process can be expensive and time-consuming to implement.	requirements, priorities, and customer feedback. Throughout the development process, it allows constant improvement and modification, which makes it simpler to adapt to changes and satisfy user expectations.
Customer Involvement	Customer involvement is restricted to the initial requirements gathering phase, and there are few opportunities for cooperation and comments while the product is being developed.	Agile encourages consistent customer involvement and collaboration throughout the development process. Customer provide feedback during each sprint, ensuring that their needs and expectations are met in the finished product.
Risk Management	This model carries higher risk . Because any bugs and problems might not be discovered until much later in the development process. Delays and expensive rework may result from this.	It minimizes risk by identifying and addressing issues early in the development process through frequent testing, feedback and iteration. This reduces the possibility of significant problems down the road and enables early course adjustment.

Once the analysis of the waterfall model and agile model was finished. I am going to go with the **agile methodology** for my kids tracking mobile application. Agile models include lower risk management, regular customer participation, and more flexibility and adaptability. It makes it possible for high-quality software to be delivered effectively, better meeting user expectations, and adapting to changing the market conditions and requirements.

Chapter 4

System Design

4.1 System Architecture Diagram

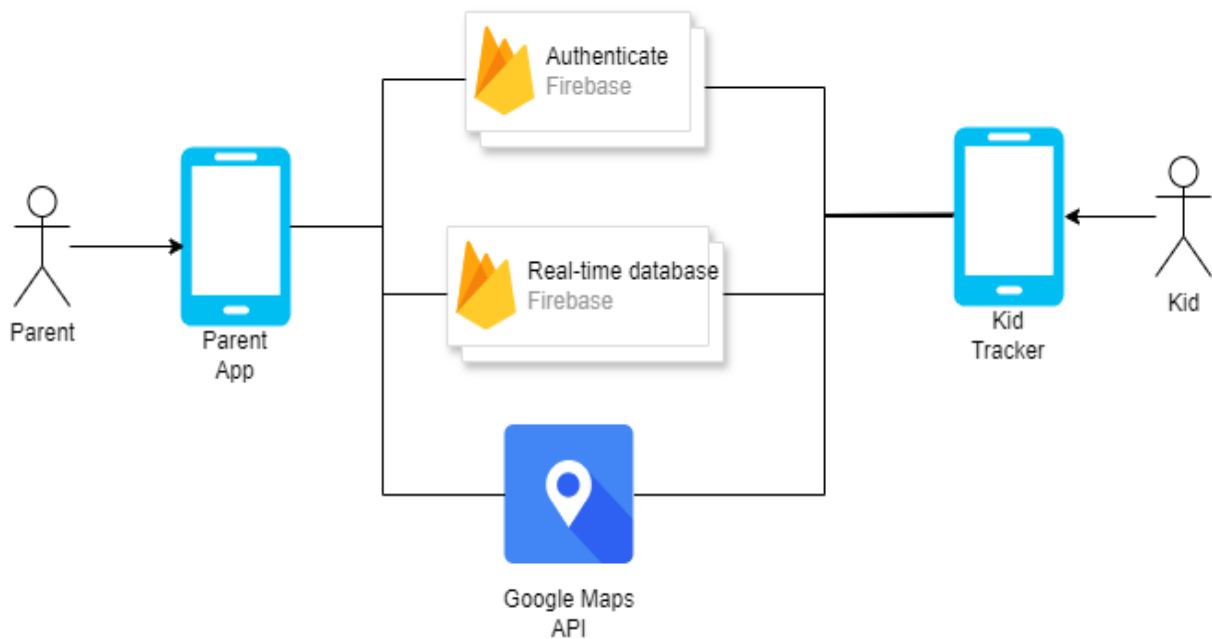


Figure 4.1

Parent app and kid app use Firebase Authentication to allow users login to the system securely and create an account to use the app. Firebase real-time database will store the data received by the parent app and kid app such as user credentials, location data (latitude and longitude) and historical location information. The parent app retrieves this data from Firebase and uses the Google Maps API to display the kid's real-time location on the map and the historical location of kid. Meanwhile, the kid app uses Google Location Services to obtain the current location and send to real-time database as well as display the real-time location on the map.

4.2 Use Case Diagram

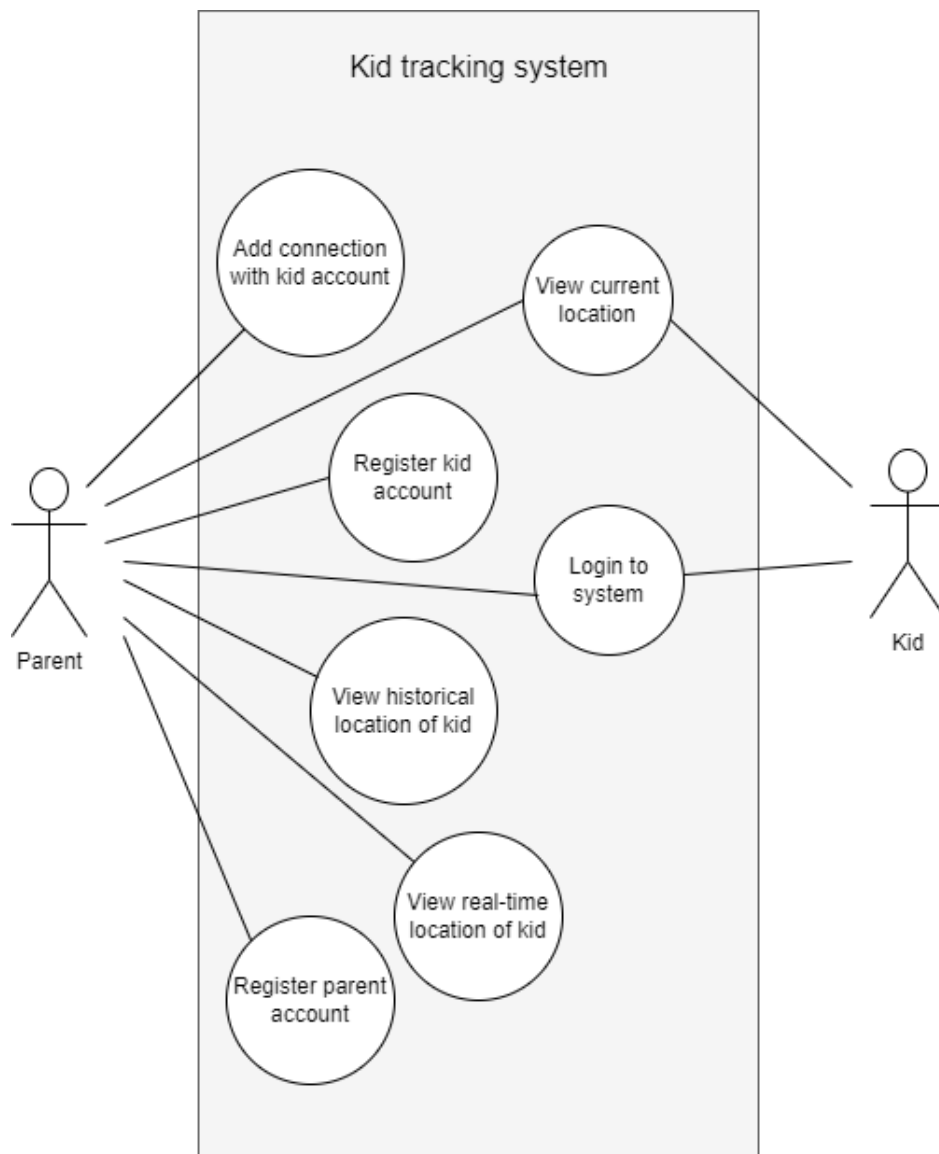


Figure 4.2

4.3 System Flow Diagram

4.3.1 Login Activity (Parent App)

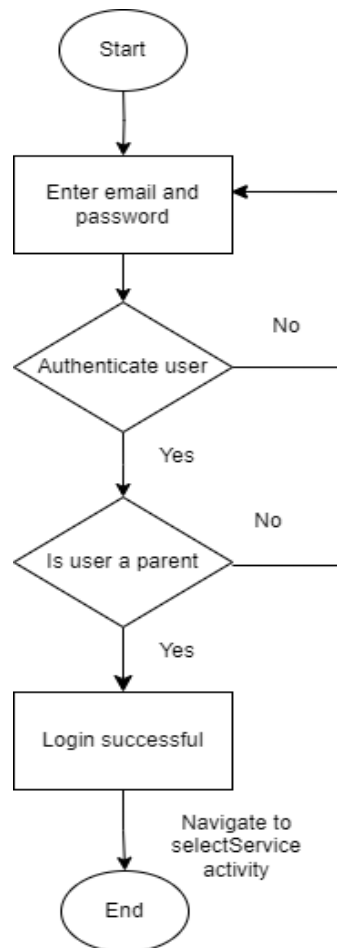


Figure 4.3.1

The figure above shows that users are able to enter their email and password for logging into the parent app. The system will authenticate the users with Firebase to ensure the user is already registered with an account and verify their roles. If the user logs in using the parent account, the user will log in to the system and navigate to the “selectService” activity. If not, the login will fail, a message will be displayed and the user stays on the login page to re-enter the email and password.

4.3.2 Register Activity (Parent App)

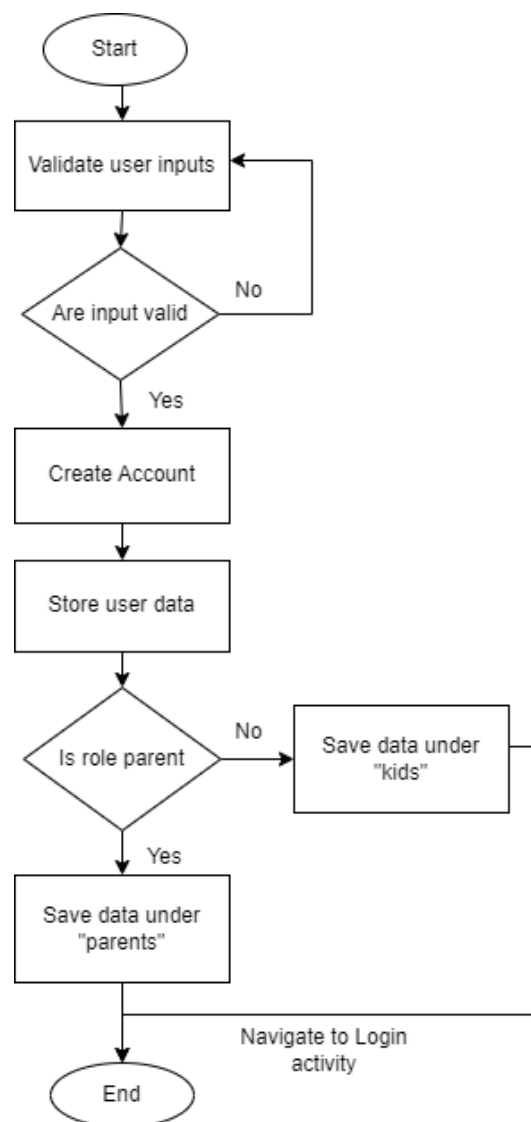


Figure 4.3.2

This figure shows that the system will validate the inputs from users, which are the username, email, and password, as well as select the role they want to register. If the inputs are valid, create an account using Firebase Authentication and store user data in Firebase's real-time database. Store the data provided by the user in the database under the correct node. For example, if the user is registering as a parent, the data will be saved under the "parents" node. Once the user registers their account, they will navigate to the login page.

4.3.3 selectServices Activity (Parent App)

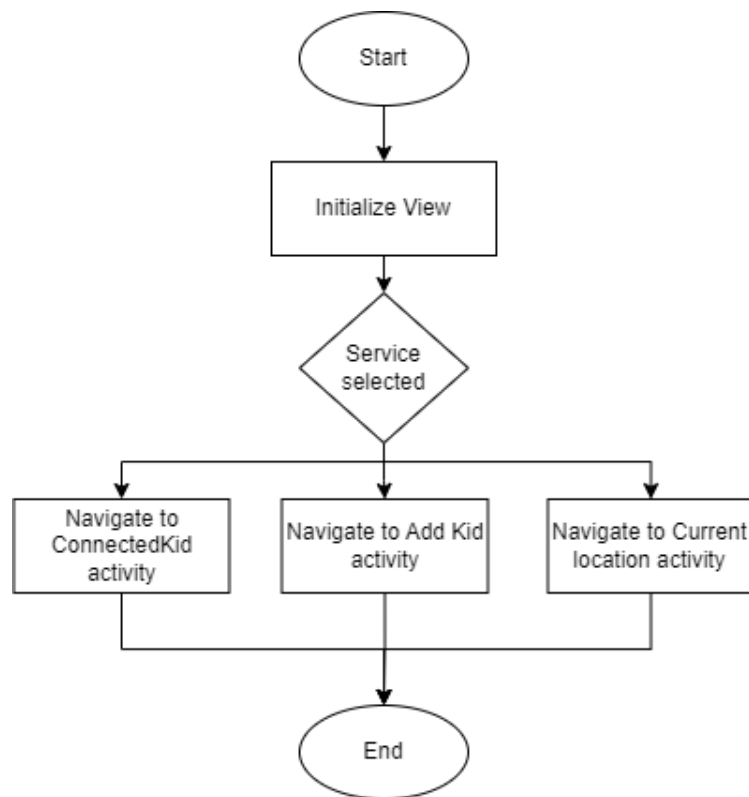


Figure 4.3.3

In the “selectServices” activity, users are allowed to select the services provided by this app, which are “ConnectedKid”, “AddKid” and “CurrentLocation”. When the user selects one of these services, the app will navigate to the corresponding activity to perform the selected services.

4.3.4 AddKid Activity (Parent App)

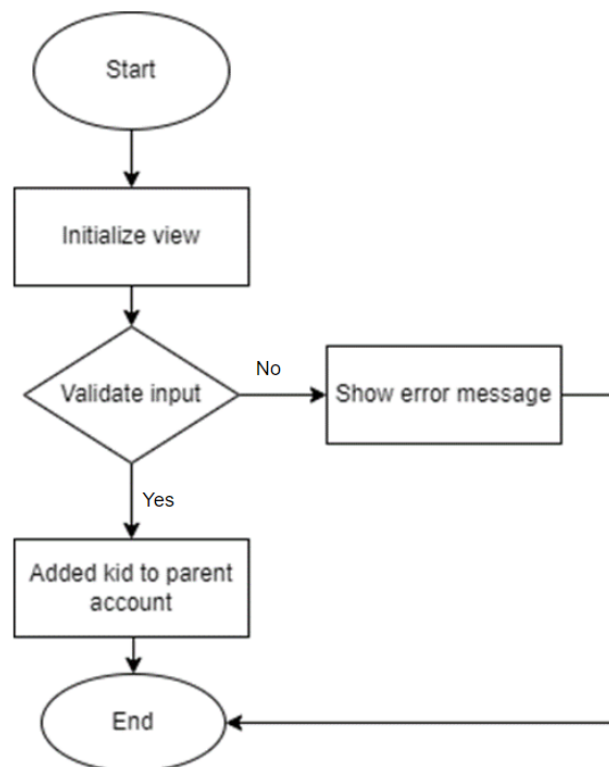


Figure 4.3.4

In the “AddKid” activity, parents can enter a valid username of their kids to establish a connection between kid and parent accounts. Once a valid username is entered, the system checks if the username exists in the “kids” node of the database. If the username is valid, the kid’s data is linked to the parent’s account, and the connection is successfully stored in the “parents” node of the database. If it does not exist in the database, the system displays an error message and the connection process is failed.

4.3.5 ConnectedKid Activity (Parent App)

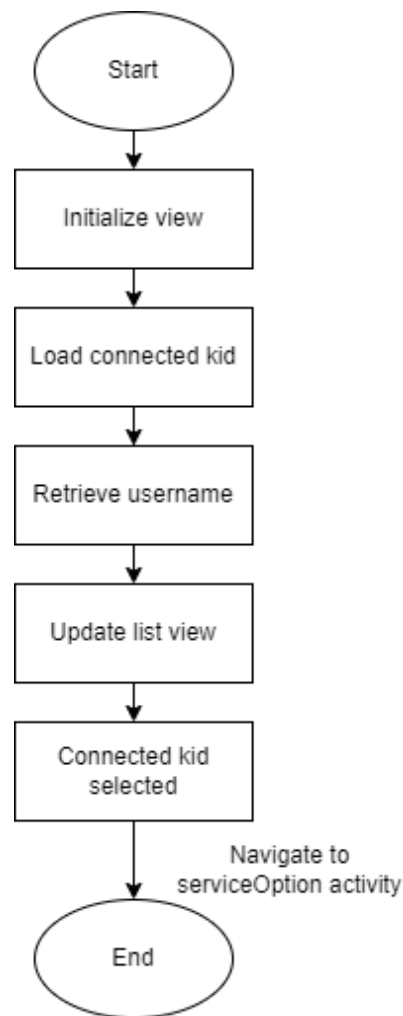


Figure 4.3.5

In this activity, the system will retrieve the list of kids connected with the current parent and fetch the username of each connected kid by their ID. Once the usernames of all connected kids are retrieved, the list view is updated with these usernames. Then parents can select a kid from the list and navigate to the “serviceOption” activity.

4.3.6 KidLocationHistory Activity (Parent App)

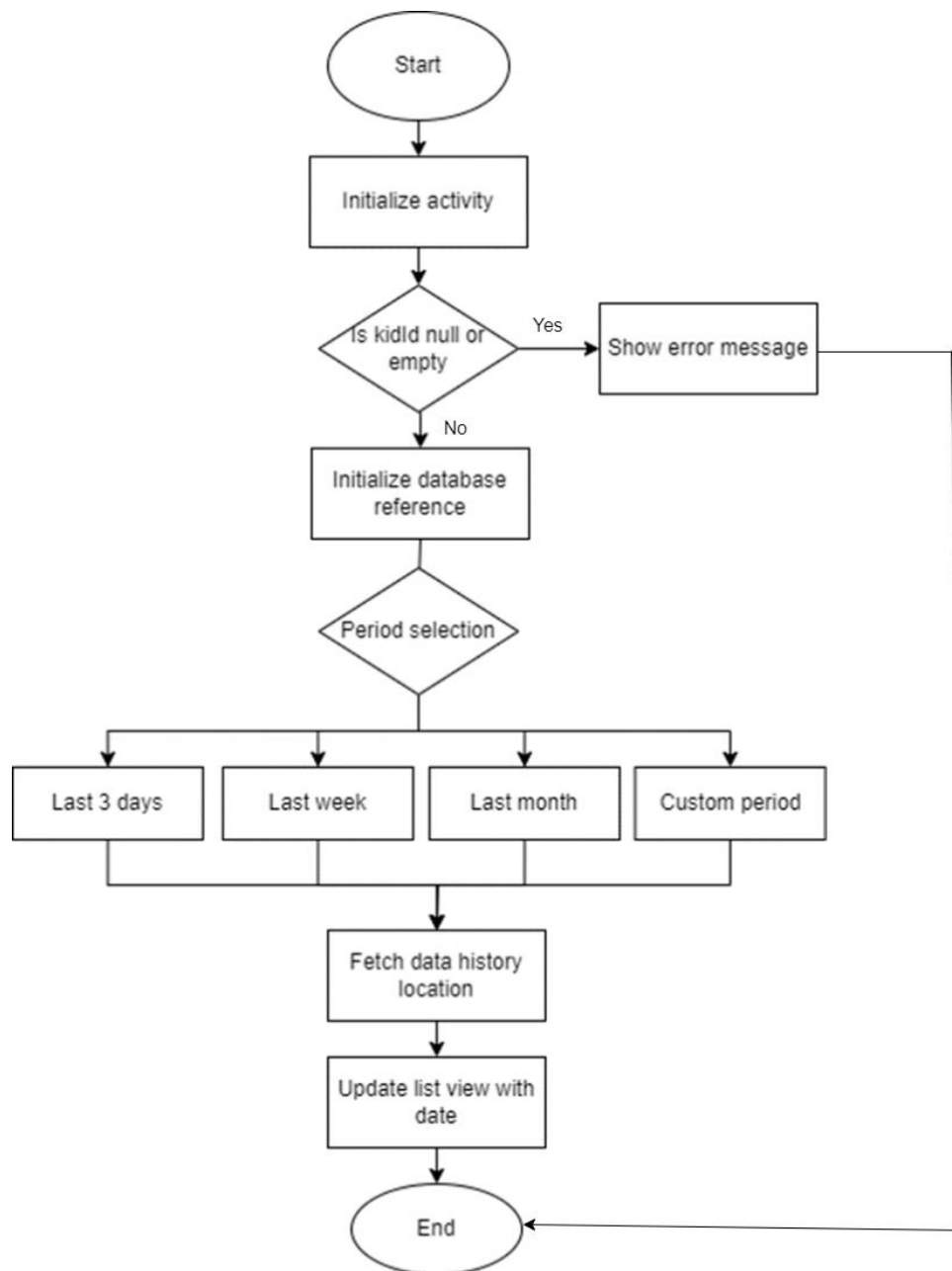


Figure 4.3.6

In this “KidLocationHistory” activity, the system will check the “kidId” under the “kids” node to confirm that the kid exists in the real-time database. If the kid exists, the system will setup the database reference to access the historical location data of the kid. If the kid does not exist, the system will notify the user and stop further processing. This app allows the user to select

the period of the historical location data, depending on the selection of the user, the system will fetch the corresponding result and update the list view with the date to the user.

4.2.7 TrackKidLocation Activity (Parent App)

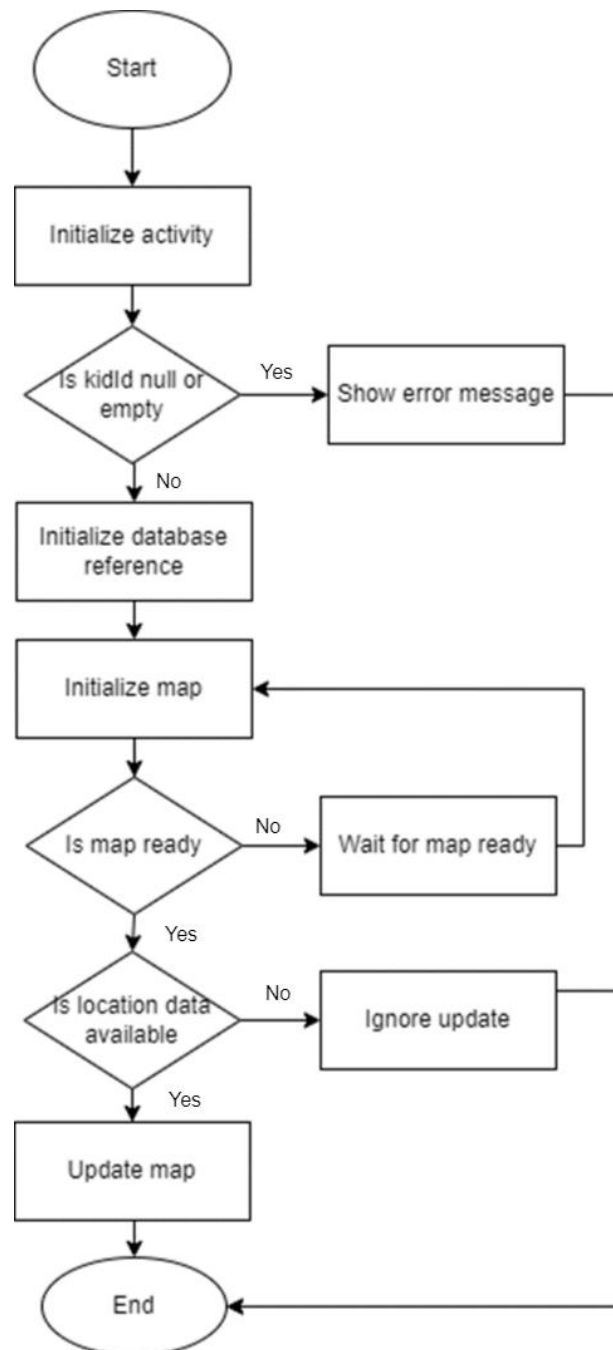


Figure 4.3.7

Chapter 4

When this activity starts, the system will check if the “kidId” exists. If not, an error message is displayed and the activity closes. If the “kidId” exists, it will set up connections to the Firebase real-time database to retrieve the location and username of the kid. The system will wait for the Google map to be ready. Once the Google map is ready, it starts listening for updates to the kid’s location. If new location data is received, the map updates with the latest location of the kid. If there is no new data, it ignores the update.

4.2.8 Login Activity (Kid App)

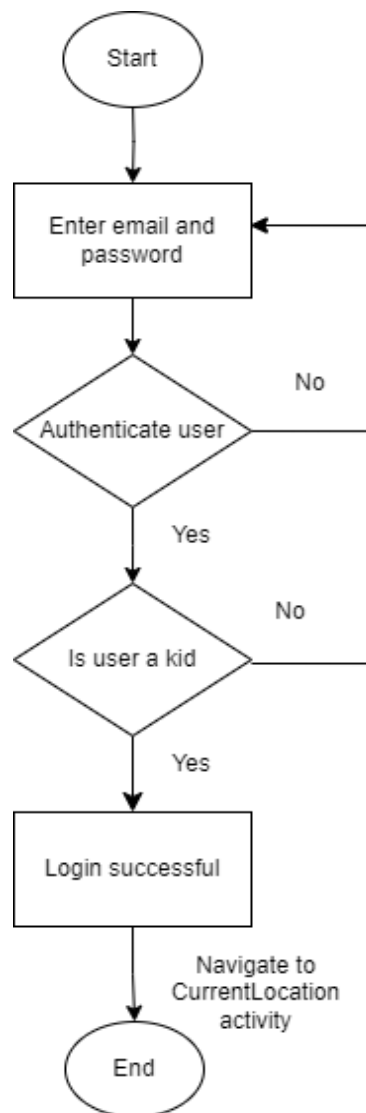


Figure 4.3.8

Chapter 4

The figure above indicates that users can enter their email and password to log in to the kid app. The system will authenticate the users with Firebase to their account registration and verify their roles. If the user logs in using the kid account, the user logs in to the system and navigates to the “CurrentLocation” activity. If not, the login will fail, display a message and the user stays on the login page to re-enter the email and password.

Chapter 5

System Implementation

5.1 Software Setup and Configuration

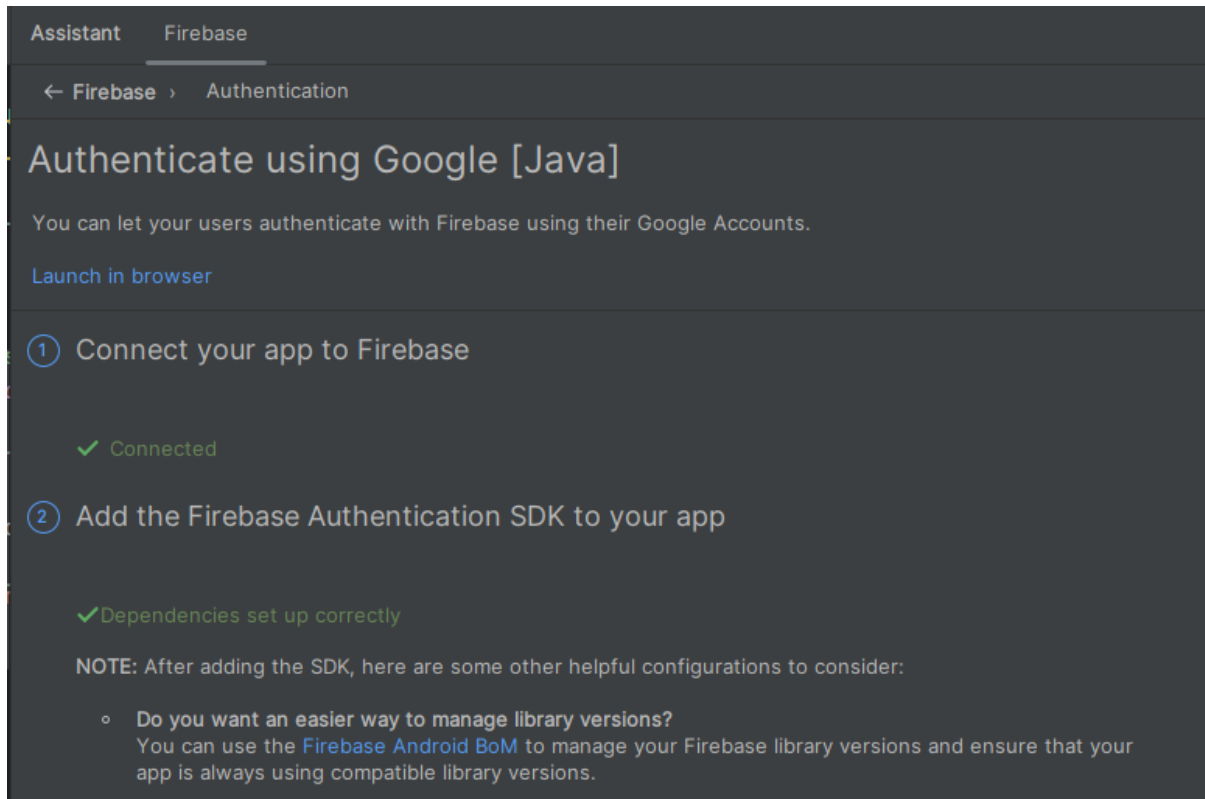


Figure 5.1 (a)

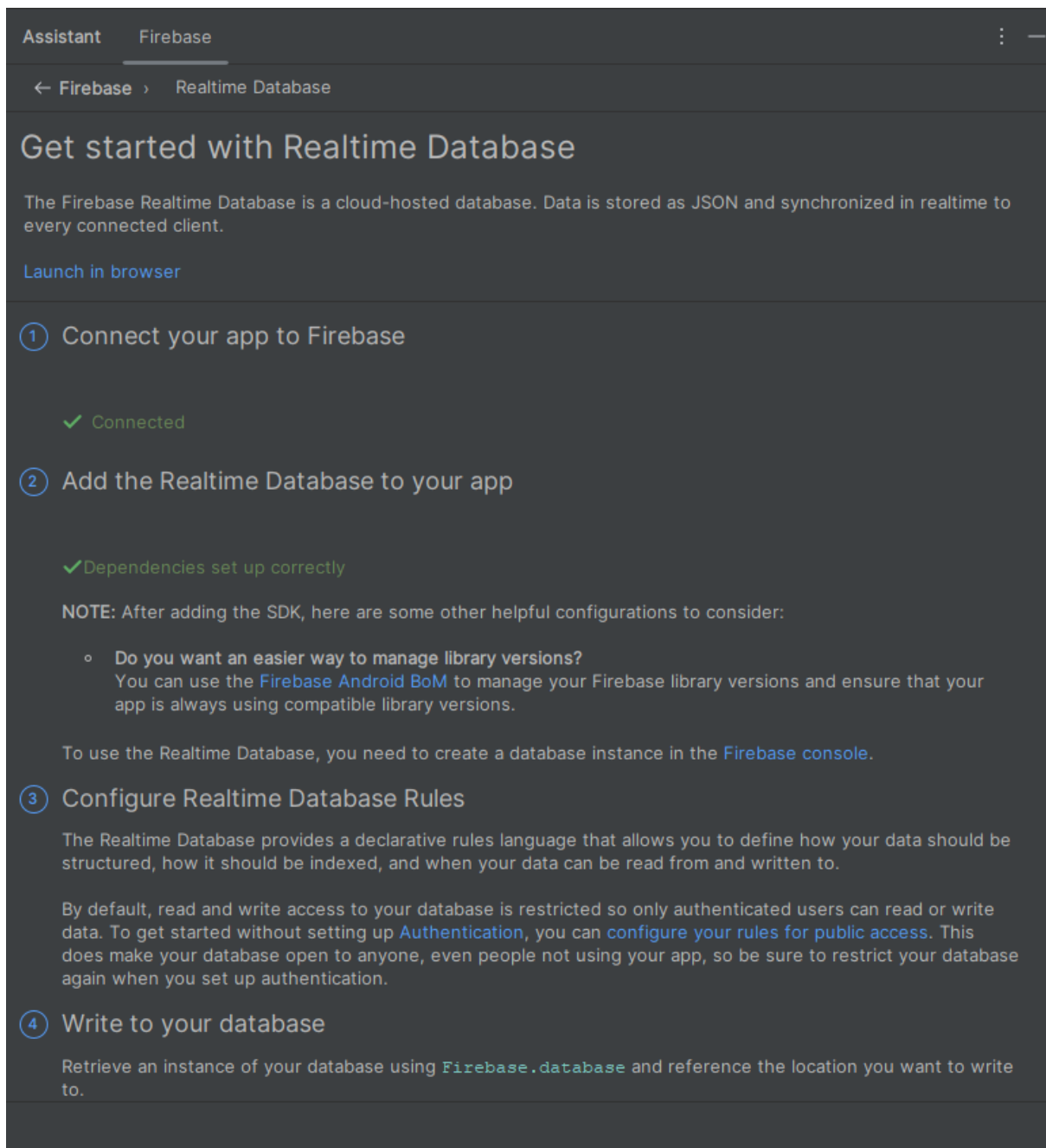


Figure 5.1 (b)

Firstly, create an Firebase account by using a Google account. Create a project for this mobile application through Firebase. Connect the Android Studio to Firebase Authenticate and Realtime Database. By integrating Firebase Authentication, this mobile application can allow users to create an account to login to the system securely. Besides that, integrating the Firebase Realtime database can store data like user credentials, location data, history location, and so on.

Chapter 5

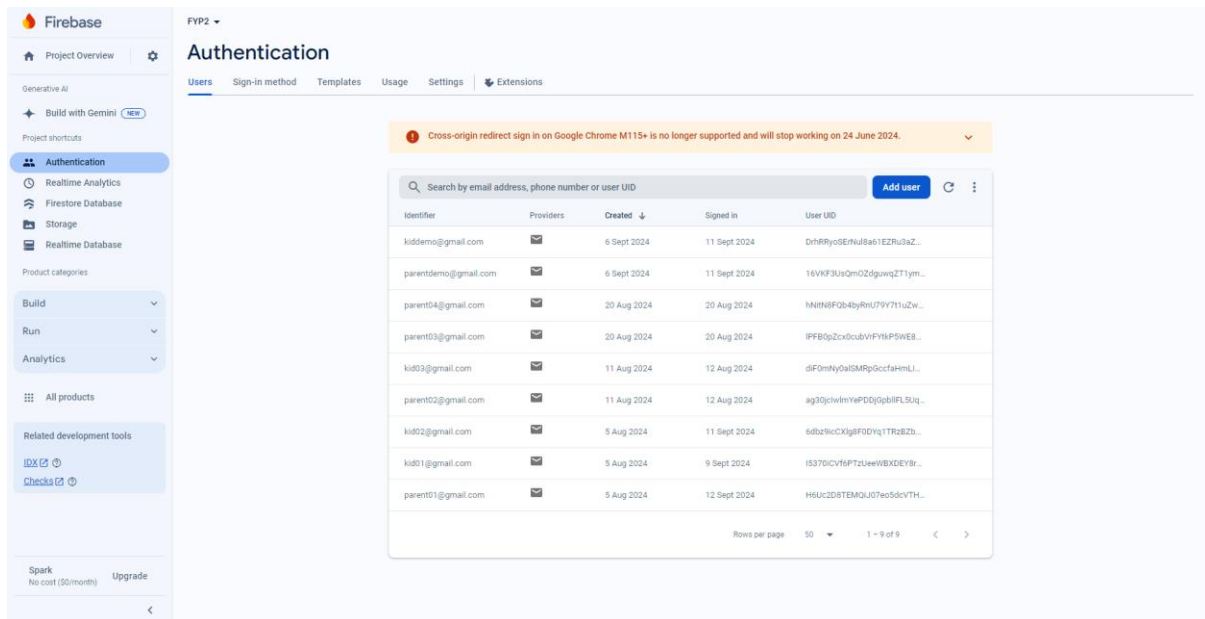


Figure 5.1 (c)

Firebase Authenticate will handle the user authentication securely and confirm the user already has an account during the login process.

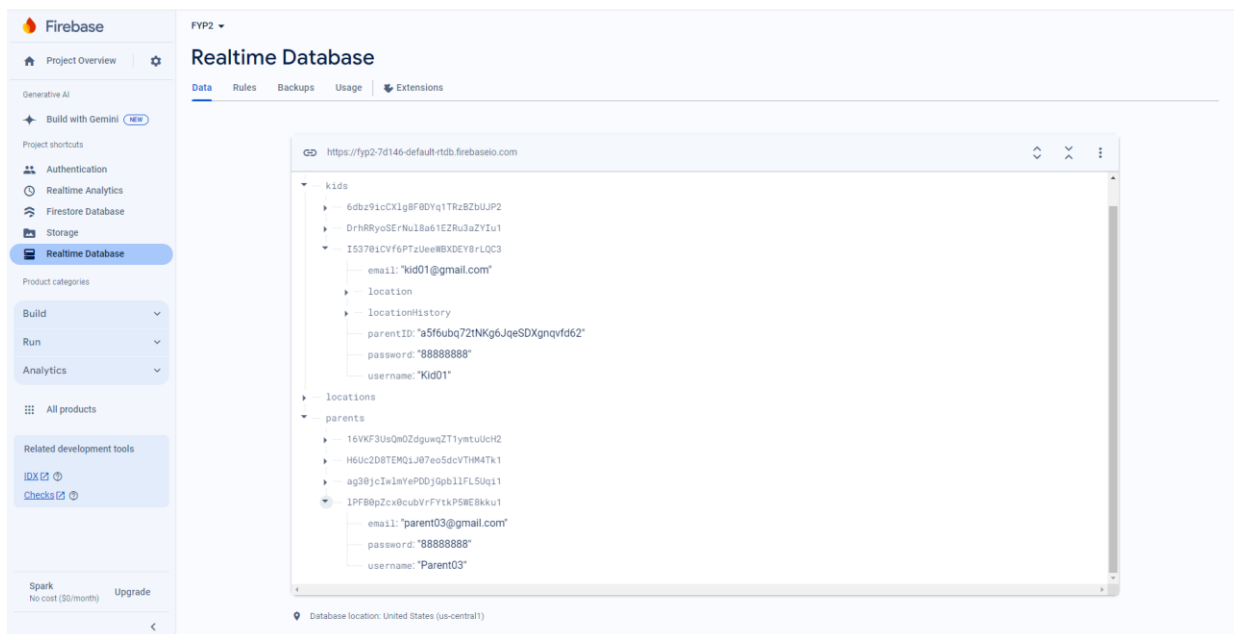


Figure 5.1 (d)

The Firebase Realtime database will store the data received by the parent app and kid app.

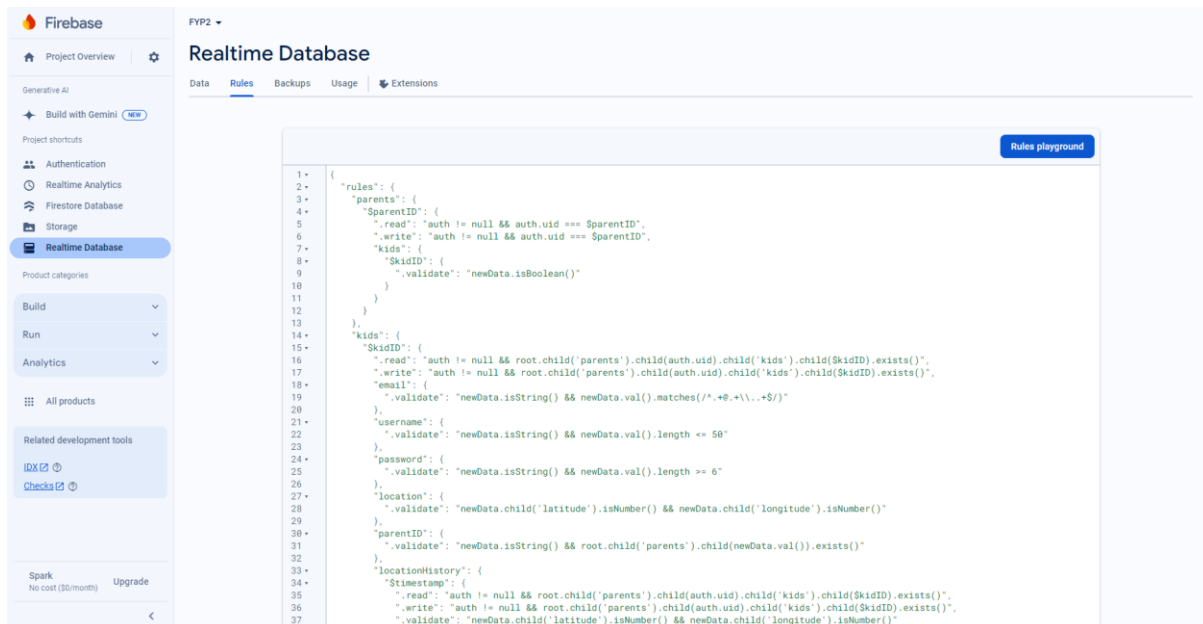


Figure 5.1 (e)

The system should set up the rules for the Firebase Realtime database to ensure data security and node management. The data received from the parent app and the kid app will be stored in the real-time database under different nodes, so that the application can retrieve and update the data efficiently. Besides that, defining the rules can ensure that only specific users can read or write to particular parts of the database.

5.2 System Operation

5.2.1 Login (Parent App)

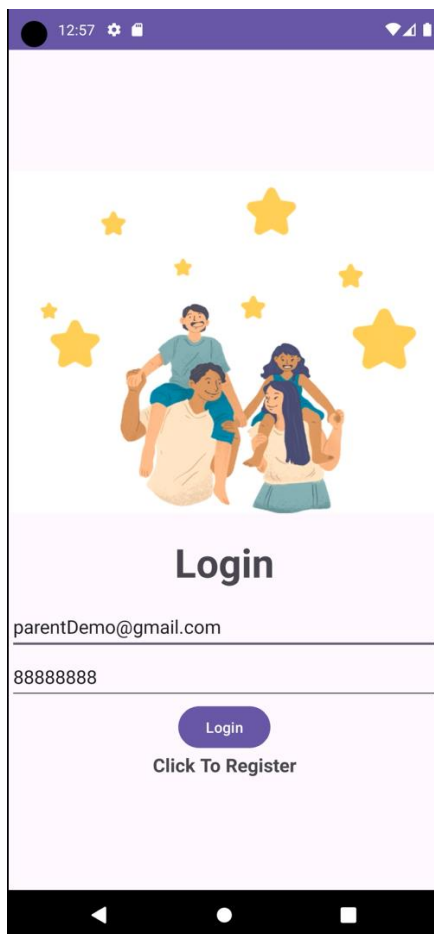


Figure 5.2.1 (a)

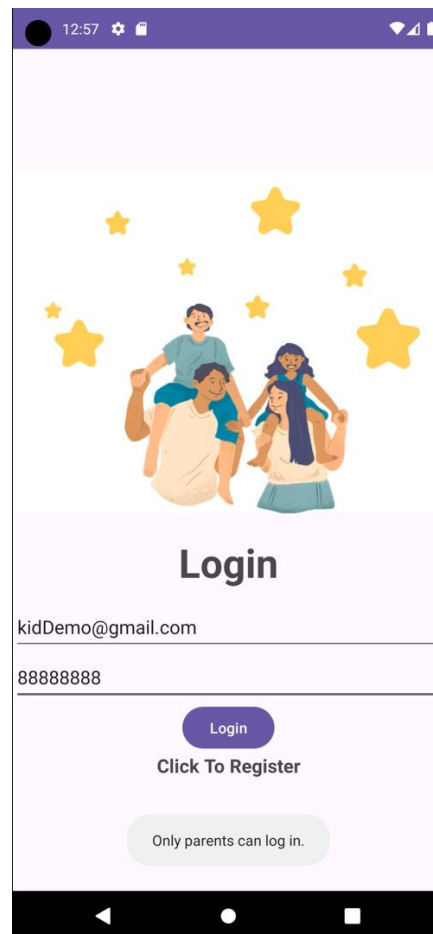


Figure 5.2.1 (b)

Parents enter their email and password to log in to the system successfully. This parent app only allows parents to log in. If a kid account is used, the system will display a message “Only parents can log in”.

5.2.2 Register (Parent App)

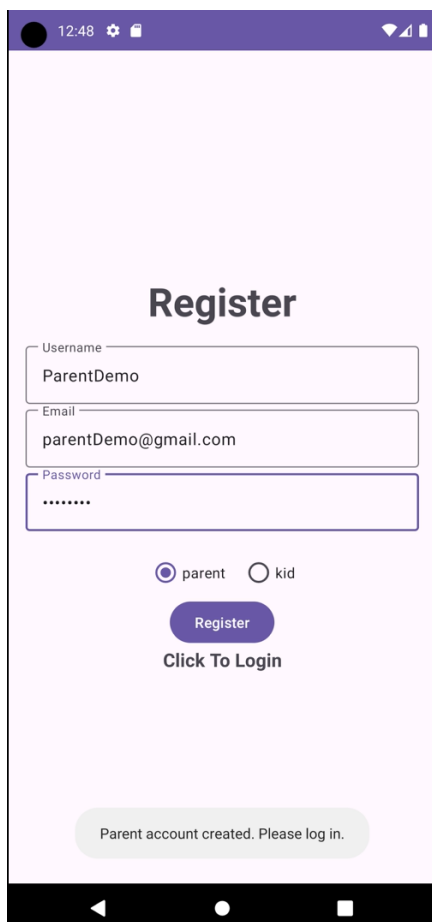


Figure 5.2.2 (a)

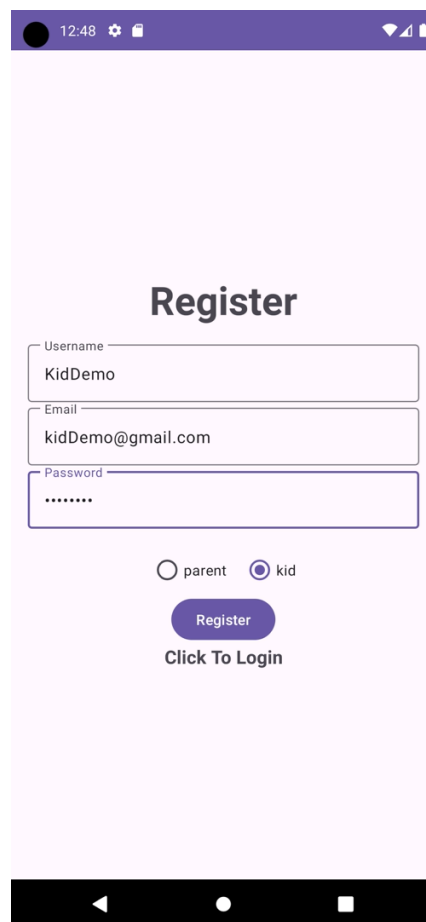


Figure 5.2.2 (b)

Parents register an account by providing a username, email, password, and the role of that account. Besides that, parents can create an account for their kids, only need to select the role as a kid. If the account is created successfully, display the message “Parent account created. Please log in” and navigate to the login page.

5.2.3 Add Kid (Parent App)

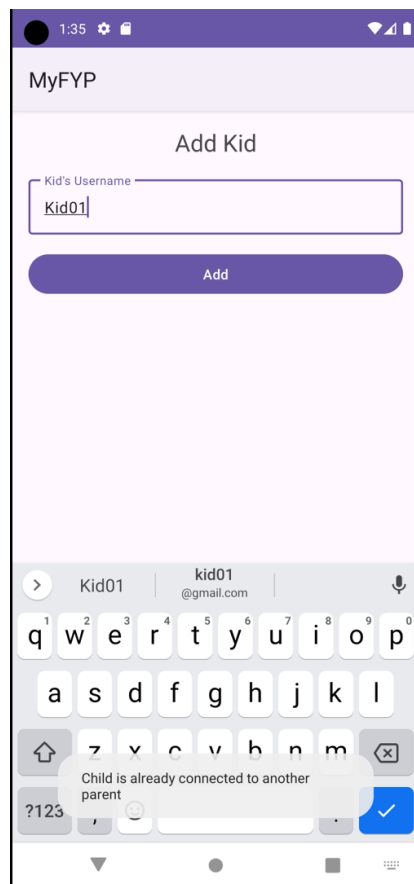


Figure 5.2.3 (a)

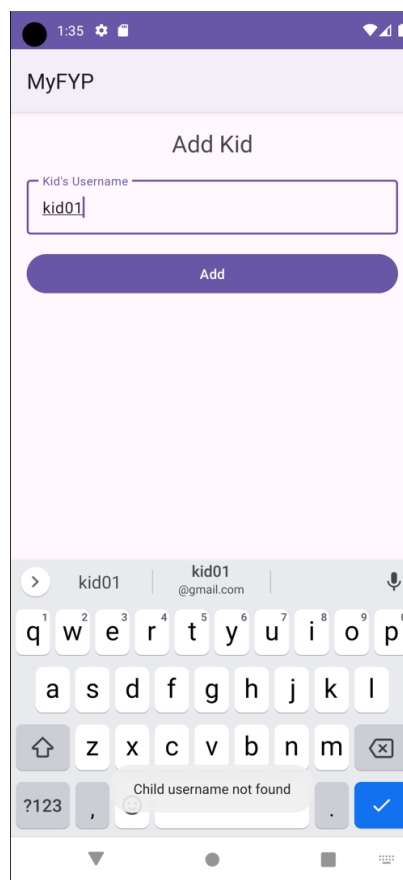


Figure 5.2.3 (b)

Parents go to the add kid activity, they should enter the username of their kid to establish a relationship with the kid. If not, the system will display a message. For example, if parents provide an invalid username, the system will display the message “Child username not found”, which means the username entered by parents does not exist in the real-time database. Besides that, if a parent enters an invalid username that is already connected to another account, it will display the message “Child is already connected to another parent”.

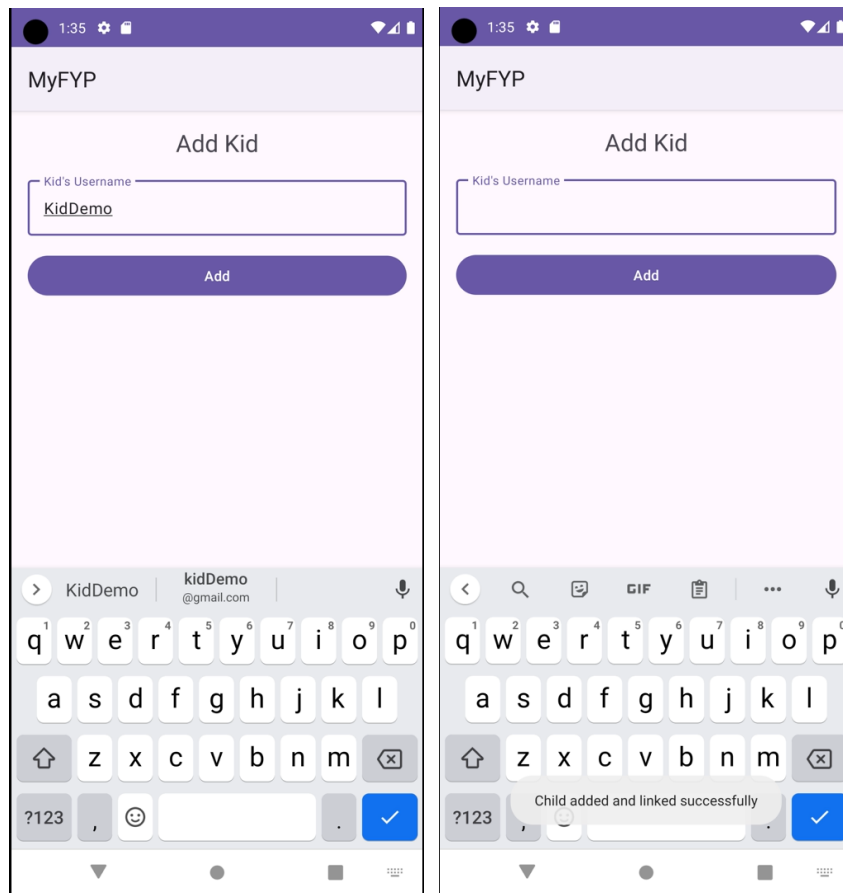


Figure 5.2.3 (c)

Figure 5.2.3 (c)

Parent enters the correct username of their kid, the kid is added and stored in the parent's account. "AddKid" activity success will display the message "Child added and linked successfully".

5.2.4 History Location (Parent App)

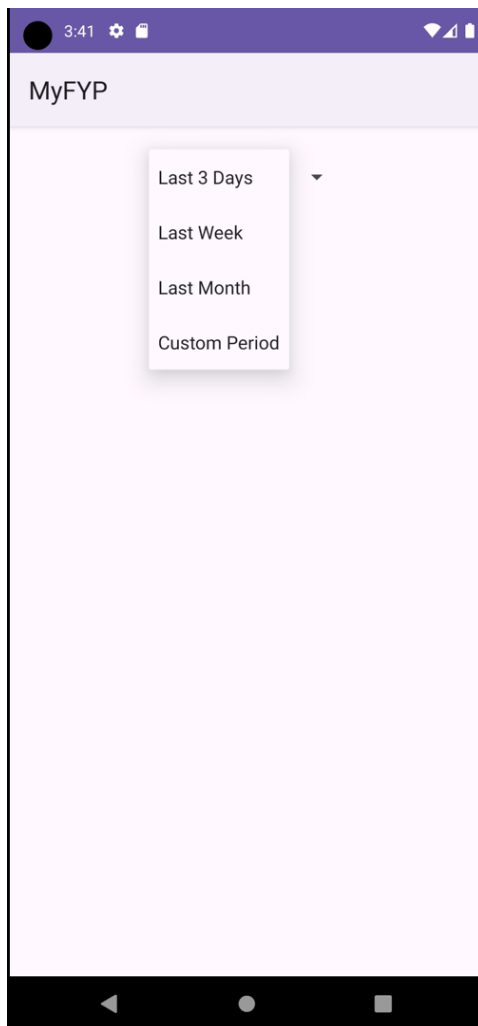


Figure 5.2.4 (a)



Figure 5.2.4 (b)

In this activity, allow the user to select the period of historical location data to review. According to their selection, the system will retrieve the corresponding result for users. For example, when the user selects the "last week" option, the system will retrieve and update the list view about the last week's historical location record for the user.

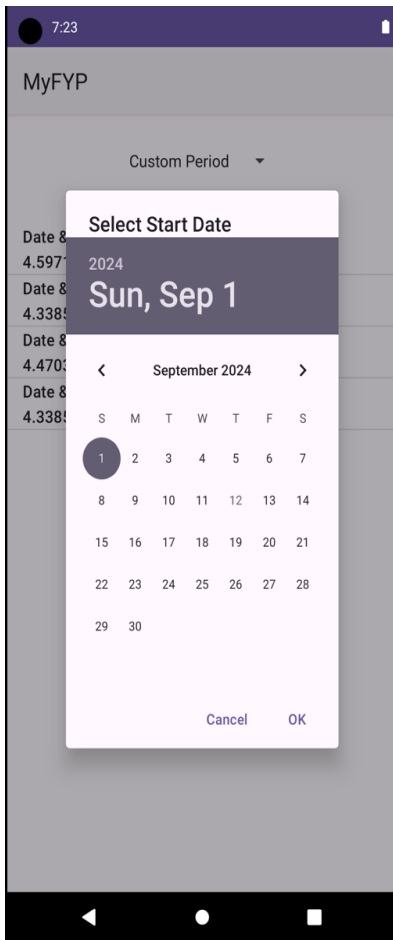


Figure 5.2.4 (c)

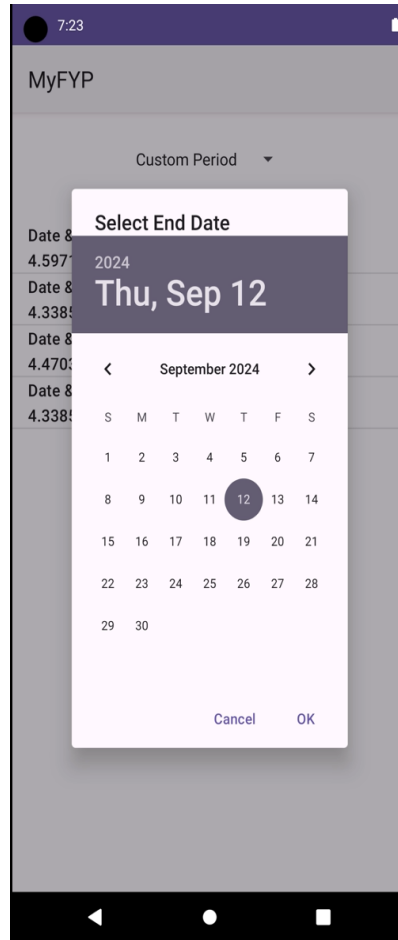


Figure 5.2.4 (d)



Figure 5.2.4 (e)

When the user selects the “Custom Period” option, the system will display a date picker to let users choose the start date and the end date of the period of historical location. According to the Figure and Figure, the user decides the period from September 1 to September 12. Then, the system will retrieve the period selected by the user and update the list view of the historical location for the user, like Figure.

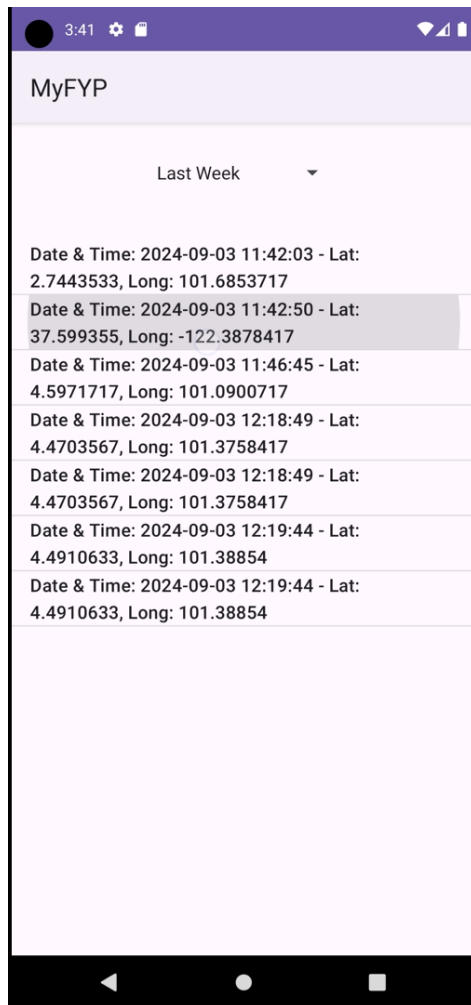


Figure 5.2.4 (f)

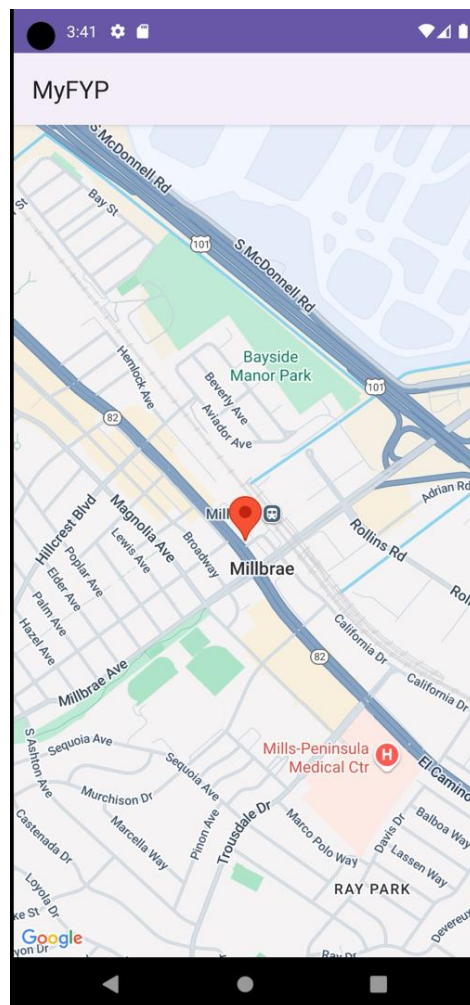


Figure 5.2.4 (g)

Besides that, this activity will not only show the information of historical location, but when users click the historical location on the list view, the system will navigate the users to the map view, which means will display the historical location on the map with the marker.

5.3.5 Real-time location tracking (Parent App)

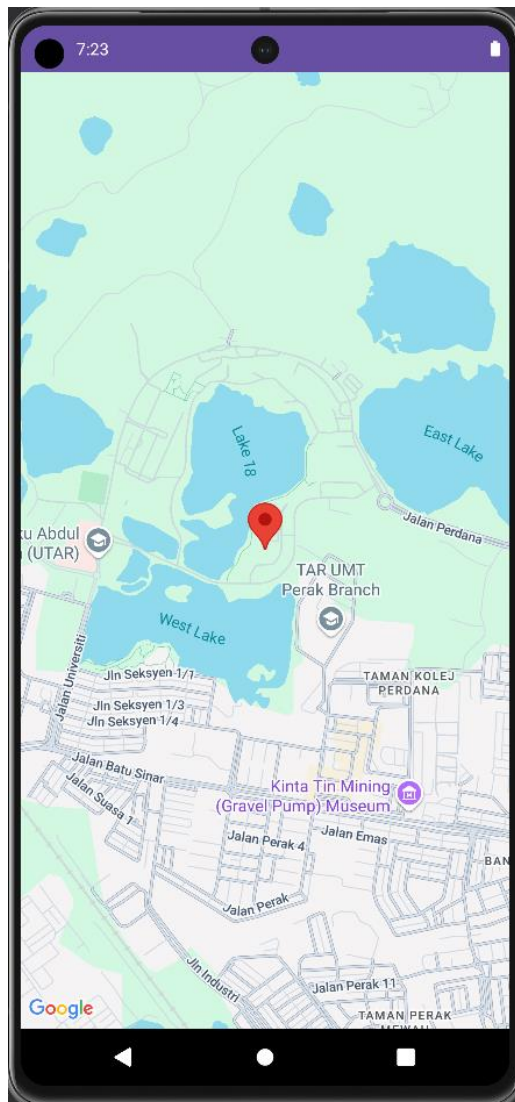


Figure 5.2.5 (a)

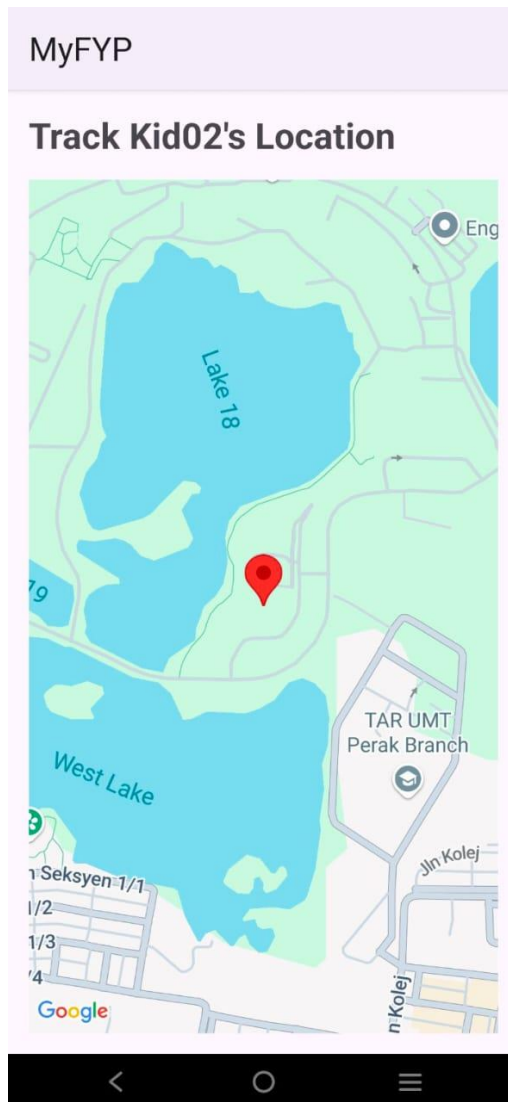


Figure 5.2.5 (b)

In this activity, the user can view the real-time location of the target. Figure is the parent app, and Figure is the kid app. Once there is a new location update of the kid account, the parent app will retrieve the location data and display the latest location of the kid. If there is not a new location update, there will be no changes in the map, and the marker will stay there.

Chapter 6

System Evaluation and Discussion

6.1 System Testing Setup and Result

6.1.1 System Testing Setup

In this activity, the test will use the emulator, mobile phone, and the extended controls of the emulator to test the features of real-time location tracking and historical location. The test will use the “Location” of the extended controls, set the location manually by entering the name of the location. The emulator will use the kid app to login to the kid account and the mobile phone will use the parent account to login to the parent app.

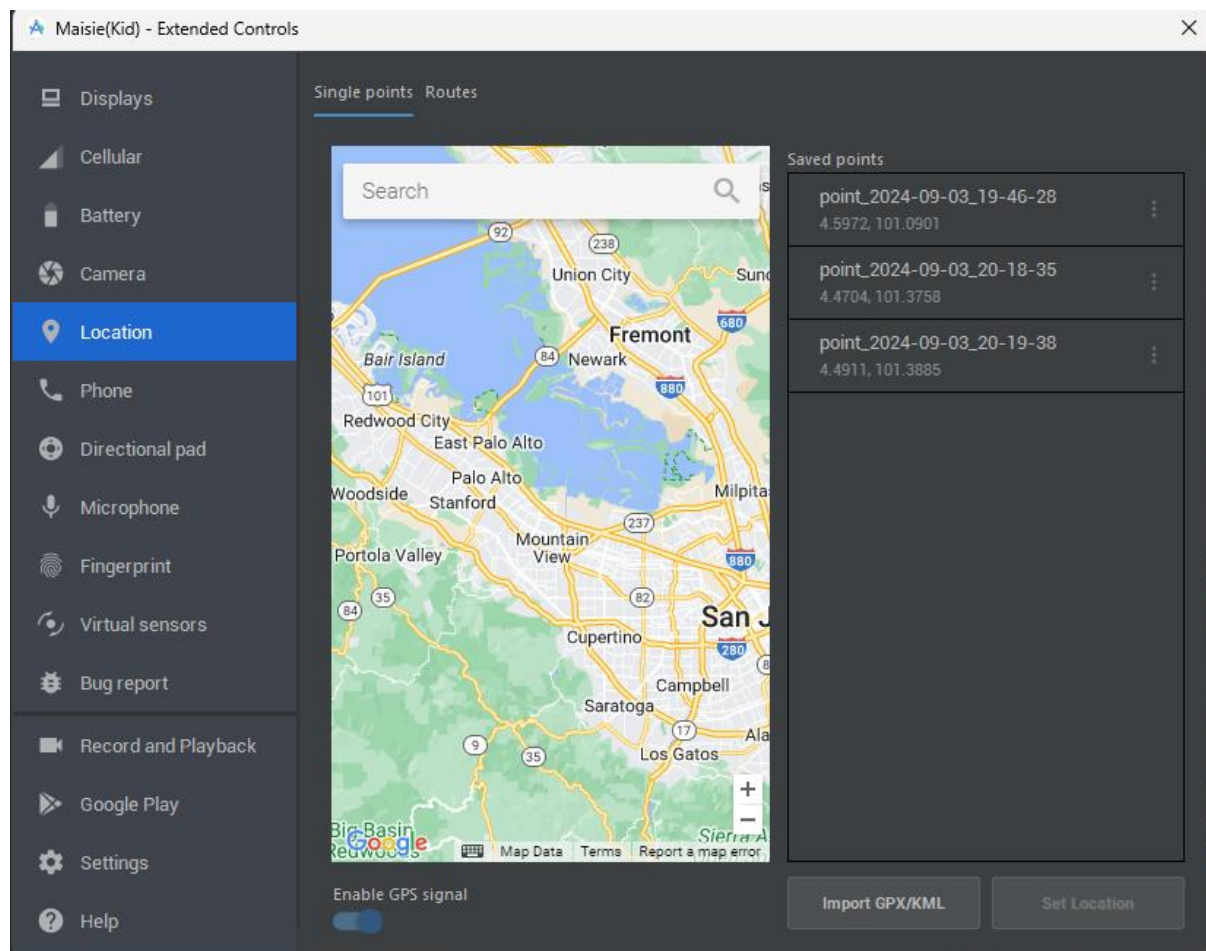


Figure 6.1.1 (a)

To run the parent app on the mobile phone, the phone should enable the debugging wireless on the phone and pair the phone over Wi-Fi by using a QR code or a pairing code. After pairing the phone successfully, the test will start to test the features of this project.

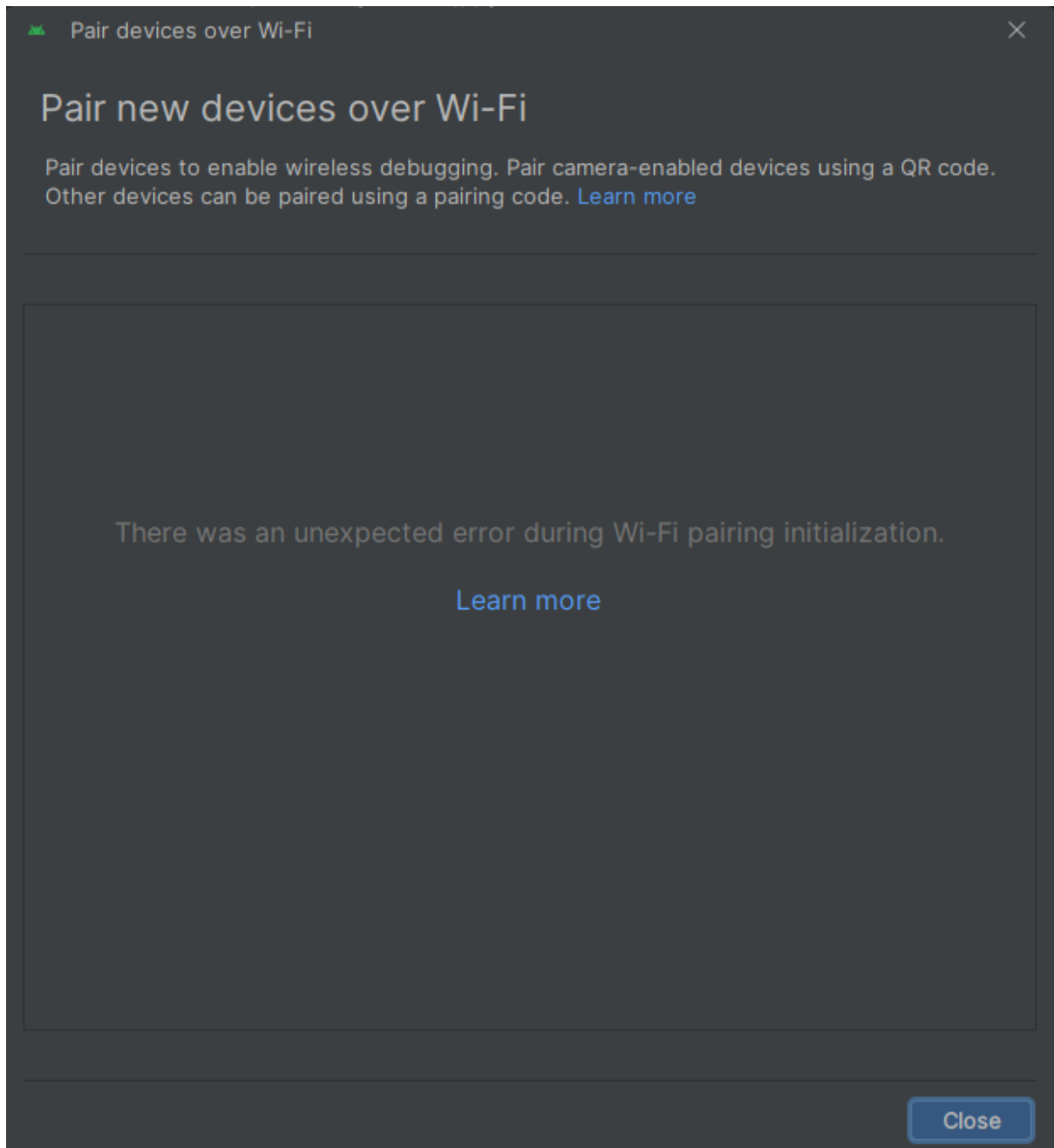


Figure 6.1.1 (b)

6.1.2 Testing Result

Table 6.1.2 (a)

No	Descriptions	Expected Latitude	Expected Longitude	Received Latitude	Received Longitude	Pass/Fail
1	Verify the data of real-time location tracking	4.4910633	101.38854	4.4910633	101.38854	Pass
2	Verify the data of real-time location tracking	4.335205	101.141155	4.335205	101.141155	Pass
3	Verify the data of real-time location tracking	4.3362564	101.1411716	4.3362564	101.1411716	Pass
4	Verify the data of real-time location tracking	4.3371917	101.1423146	4.3371917	101.1423146	Pass
5	Verify the data of real-time location tracking	4.3385567	101.13723	4.3385567	101.13723	Pass

According to the Figure, it is designed to test the accuracy of location data received by the parent app from the kid app and ensure the parent app updates in real time when the location of the kid changes. Once the kid app updates a new location, it will update the latest location on the map with the marker automatically. Meanwhile, the parent app checks if there is a new location data update under the “kids” node, the system will retrieve the new data and update the map view with the marker on the parent app. This Figure proves that the parent app will immediately reflect the updated location of the kid on the map in real-time without delay.

Table 6.1.2 (b)

No	Descriptions	Expected Latitude	Expected Longitude	Received Latitude (database)	Received Longitude (database)	Received Latitude (parentApp)	Received Longitude (parentApp)	Pass/Fail
1	Verify the data of real-time location tracking	4.4910633	101.38854	4.4910633	101.38854	4.4910633	101.38854	Pass
2	Verify the data of real-time location tracking	4.335205	101.141155	4.335205	101.141155	4.335205	101.141155	Pass
3	Verify the data of real-time location tracking	4.3362564	101.1411716	4.3362564	101.1411716	4.3362564	101.1411716	Pass
4	Verify the data of real-time location tracking	4.3371917	101.1423146	4.3371917	101.1423146	4.3371917	101.1423146	Pass
5	Verify the data of real-time location tracking	4.3385567	101.13723	4.3385567	101.13723	4.3385567	101.13723	Pass

To verify that the new location data update will immediately reflected in both the parent app and the real-time database. This table confirms that the latest location is stored in the history, allowing the parent app to retrieve the history location data, when they need to review.

6.2 Objectives Evaluation

The objectives of the project are achieved. Firstly, provide a user-friendly mobile application for users. The UI design of this mobile application focuses on simplicity and the services that are provided to the user are clear and easy to use.

Secondly, enable parents to track the real-time location of kids. Parents can use the parent app to monitor and track the real-time location of their kids after they establish a successful connection. When the kid is moving, the Google location services will retrieve the current location of that kid and store it in the database. Meanwhile, there is a new location update from the kid app, and the parent app will retrieve the latest location of the kid and display it on a map with a marker.

Chapter 6

Thirdly, enable parents to review the historical location of kids. Parents can use the parent app to review the historical location of their kids and select the particular for review. Depending on the selection of the user, the system will provide the corresponding result.

Chapter 7

Conclusion and Recommendation

7.1 Conclusion

The main goal of this project was to create a user-friendly application that enable parents and guardians keep track of their children's safety, especially when they are busy and have limited time. The application meets its objectives by allowing parents to:

1. **Real-Time Locations Tracking:** Parents can see where their children are at any given moment.
2. **Review Historical Locations:** Parents can access historical location data to monitor their kid's movements over time.

The project used the Agile methodology, which allowed for iterative development and regular testing. This approach helped in minimizing risks and ensuring that the application's requirements were met effectively.

The design of the application focuses on simplicity and ease of use, making it accessible for parents. Testing results confirm that the application works effectively and aligns with its intended goals, providing a reliable tool for ensuring children's safety.

7.2 Recommendation

1. To improve this mobile application by adding features of geofencing. Hence, parents can set the restriction for their kids to protect their kid from damage.
2. To enhance the user experience by adding a feature of setting preferences. Hence, users can reset their username, email and password if needed.
3. To enhance the monitor features, it can allow users to share the tracker with someone who can be trusted. Hence, they can help to monitor and protect the kid.

REFERENCES

- [1] “Kidnapping scam under probe after woman has close call, say police”. *Straits Times*. [Online] Available at: <https://www.nst.com.my/news/crime-courts/2023/06/922988/kidnapping-scam-under-probe-after-woman-has-close-call-say-police> (Accessed: 8 September 2023).
- [2] “Parents warned scammers are pretending to be their children”. *News.com.au*. [Online] Available at: <https://www.news.com.au/national/crime/parents-warned-scammers-are-pretending-to-be-their-children/news-story/8c15ce6123decc81d55c4157438215a5> (Accessed: 8 September 2023).
- [3] Yonder Consulting, Mar. 2023. [Online]. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0025/255409/online-scams-and-fraud-summary-report.pdf (Accessed: 8 September 2023).
- [4] “Parents fear children will fall victim to ‘gaming fraud,’” *The Independent*, Jul. 26, 2022. [Online] Available at: <https://www.independent.co.uk/news/uk/home-news/video-games-fraud-online-scams-b2131308.html> (Accessed: 9 September 2023).
- [5] *Find my kids: Location tracker - apps on google play* (no date) [Online]. Available at: https://play.google.com/store/apps/details?id=org.findmykids.app&hl=en_US&pli=1 (Accessed: 9 September 2023).
- [6] Sim, S. (2024, February 12). Scammers are using AI to clone kids’ voices and fool parents in India. *The Star*. [Online]. Available at: <https://www.thestar.com.my/aseanplus/aseanplus-news/2024/02/12/scammers-are-using-ai-to-clone-kids-voices-and-fool-parents-in-india>
- [7] Lee, E. (2023, September 28). The best ways to track your kid (And why you might not want to). *Wirecutter: Reviews for the Real World*. [Online]. Available at: <https://www.nytimes.com/wirecutter/blog/best-ways-to-track-your-kid/> (Accessed: 17 April 2024).
- [8] *Set up Visual Studio code*. (2021, November 3). [Online]. Available at: <https://code.visualstudio.com/learn/get-started/basics> (Accessed: 17 April 2024).
- [9] GeeksforGeeks. (2024, January 10). *Agile development models Software engineering*. GeeksforGeeks. [Online]. Available at: <https://www.geeksforgeeks.org/software-engineering-agile-development-models/> (Accessed: 17 April 2024).

Reference

- [10] Team, A. C. (n.d.). *Waterfall Methodology: Project Management | Adobe Workfront*. [Online]. Available at: <https://business.adobe.com/blog/basics/waterfall> (Accessed: 17 April 2024).
- [11] Developer. (2024, June 21). [Online]. Available at: https://developer.android.com/studio?gad_source=1&gclid=Cj0KCQjw-uK0BhC0ARIsANQtgGPpp4kFOVccrj9dGxz0e8d0YJGP1E6QFMlv5FM3ZtnD4WqInB7cmP8aAv2QEALw_wcB&gclsrc=aw.d
- [12] *Child tracking*. (n.d.). PCMag. Retrieved September 2, 2024. [Online]. Available at: <https://www.pcmag.com/encyclopedia/term/child-tracking>
- [13] Mokhtar, I. L. (2023b, December 6). *To track or not to track, the pros and cons of tracking your child*. Sinar Daily. Retrieved September 2, 2024. [Online]. Available at: <https://www.sinardaily.my/article/213539/culture/family/to-track-or-not-to-track-the-pros-and-cons-of-tracking-your-child>
- [14] Awan, H. (2023, May 31). *What is Location Tracking? Pros and Cons of Location Tracking*. Efani. [Online]. Available at: https://www.efani.com/blog/location-tracking#content_2nd
- [15] *TechTarget*. (n.d.). [Online]. Available at: <https://www.techtarget.com/whatis/definition/GPS-tracking>
- [16] Balaban, D. (2024, June 29). Everything You Need to Know About Location Tracking and Its Ramifications. *SecureWorld*. [Online]. Available at: <https://www.secureworld.io/industry-news/location-tracking-benefits-risks>
- [17] Kyuder, T. (2024, April 5). *Wi-Fi Positioning Systems for Improving Business Efficiency (2024 Guide)*. [Online]. Available at: <https://navigine.com/blog/wifi-for-indoor-positioning-and-navigation/>
- [18] Flitton, A. (2019, May 8). GPS vs cellular locating technology. *AvantGuard Monitoring Centers*. [Online]. Available at: <https://www.agmonitoring.com/blog/industry-news/gps-vs-cellular-locating-technology>
- [19] *View of “It’s about safety not snooping”: Parental attitudes to child tracking technologies and geolocation data*. (n.d.). [Online]. Available at: <https://ojs.library.queensu.ca/index.php/surveillance-and-society/article/view/15719/10611>

Reference

- [20] Athanasiou, Spiros & Georgantas, Panos & Gerakakis, George & Pfoser, Dieter. (2009). Utilizing Wireless Positioning as a Tracking Data Source. 5644. 171-188. 10.1007/978-3-642-02982-0_13.
- [21] Spadafora, A. (2024, September 11). *The best parental control apps for Android and iPhone 2024*. Tom's Guide. [Online]. Available at: <https://www.tomsguide.com/us/best-parental-control-apps,review-2258.html#section-the-best-parental-control-app-for-value>

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y4T1	Study week no.: 9
Student Name & ID: Ling Mei Sim 20ACB01775	
Supervisor: Puan Nor' Afifah Binti Sabri	
Project Title: Kids tracking mobile application	

1. WORK DONE

- I have completed the authentication feature for the parent app and the kid app.
- I have completed the real-time location tracking.
- I am debugging the feature of reviewing the history location of kids.

2. WORK TO BE DONE

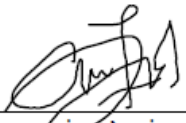
- Testing the current feature to find the potential error
- Plan to make improvements for these features like allowing user to select the period of historical location.
- Plan to start designing the UI.

3. PROBLEMS ENCOUNTERED


- The data of history location cannot be retrieved.

4. SELF EVALUATION OF THE PROGRESS


- I am completing the tasks effectively



Supervisor's signature



Student's signature



KID TRACKING SYSTEM

To Protect Your Love One!

Our Objectives


1. PROVIDE A USER-FRIENDLY PLATFORM FOR USER
2. PROVIDE THE REAL-TIME LOCATION OF THE TARGET
3. PROVIDE THE HISTORICAL RECORD OF THE WHEREABOUTS OF CHILDREN

Introduction

THIS KIDS TRACKING APPLICATION PRIMARILY SERVES AS A FREE PLATFORM FOR PARENTS TO MONITOR THE REAL-TIME LOCATION OF THEIR CHILDREN WHEN THEY ARE NOT WITH THEM OR BUSY ON THEIR BUSINESS OR WORKS.

Conclusion

OUR KID TRACKING SYSTEM OFFERS PEACE OF MIND FOR PARENTS EVERYWHERE. WITH REAL-TIME LOCATION TRACKING, HISTORICAL WHEREABOUTS RECORDS, AND A USER-FRIENDLY INTERFACE, KEEPING TABS ON CHILDREN HAS NEVER BEEN EASIER. CHOOSE OUR SYSTEM FOR RELIABLE TRACKING AND ENSURE THE SAFETY OF YOUR LUV ONE.



PLAGIARISM CHECK RESULT

Turnitin Originality Report

Processed on: 12-Sep-2024 18:18 KST
 ID: 2451848724
 Word Count: 6651
 Submitted: 1

turnitinCheck.docx By meisim ling

Similarity Index	Similarity by Source
6%	Internet Sources: 4% Publications: 1% Student Papers: 3%

1% match (Internet from 15-Dec-2022) https://eprints.utar.edu.my/4673/1/fyp_CS_2022_TSL.pdf
< 1% match (Internet from 10-Oct-2023) http://eprints.utar.edu.my/5563/1/fyp_IA_2023_ORFY.pdf
< 1% match (Internet from 10-Oct-2022) http://eprints.utar.edu.my/3838/1/16ACB04102_FYP2.pdf
< 1% match (Internet from 16-Sep-2023) http://eprints.utar.edu.my/5526/1/fyp_IA_2023_ACD.pdf
< 1% match (Internet from 13-Mar-2024) https://eprints.utar.edu.my/6034/1/fyp_CS_2023_HIZO.pdf
< 1% match (student papers from 18-Apr-2024) Submitted to Universiti Tunku Abdul Rahman on 2024-04-18
< 1% match (student papers from 06-Sep-2023) Submitted to Universiti Tunku Abdul Rahman on 2023-09-06
< 1% match (student papers from 15-Sep-2023) Submitted to Universiti Tunku Abdul Rahman on 2023-09-15
< 1% match (student papers from 21-Apr-2022) Submitted to Universiti Tunku Abdul Rahman on 2022-04-21
< 1% match (student papers from 27-Aug-2024) Submitted to Universiti Tunku Abdul Rahman on 2024-08-27
< 1% match (publications) Suman Ghosal, Amitava Choudhury, Vikram Kumar Saxena, Arindam Biswas, Prasenjit Chatterjee, "Advances in Data Science and Computing Technology - Methodology and Applications", CRC Press, 2022
< 1% match (Internet from 28-Dec-2023) https://www.komsguide.com/us/best-parental-control-apps-review-2256.html
< 1% match (Internet from 29-Dec-2023) https://kavatechnologies.odoo.com/shop/realme-v50s-11853
< 1% match (student papers from 02-Mar-2023) Submitted to Broward Community College on 2023-03-02
< 1% match (student papers from 18-May-2024) Submitted to American National University on 2024-05-18
< 1% match (student papers from 28-Aug-2024) Submitted to Union High School on 2024-08-28
< 1% match (student papers from 11-Jul-2022) Submitted to RDI Distance Learning on 2022-07-11
< 1% match (student papers from 19-Apr-2023) Submitted to University of Hertfordshire on 2023-04-19
< 1% match (Internet from 25-Aug-2024) https://www.jjnd.org/papers/IJHR2405207.pdf
< 1% match (Internet from 21-Oct-2022) https://diglib.tugraz.at/download.php?id=60b0d20fec49d8&location=browse
< 1% match (Internet from 18-Jul-2021) https://fict.utar.edu.my/documents/FYP/IIPSPW_template/IIPSPW_Report_Template_CN.docx
< 1% match (Internet from 14-Jan-2024) https://www.knowledgehut.com/blog/agile/sdlc-vs-agile
< 1% match (Naoki Kanda, Chihaya Abe, Shintaro Goto, Keigo Yamada, Kumi Nakai, Yuji Saito, Kelsuke Asai, Taku Nonomura. "Proof-of-concept study of sparse processing particle image velocimetry for real time flow observation", Experiments in Fluids, 2022) Naoki Kanda, Chihaya Abe, Shintaro Goto, Keigo Yamada, Kumi Nakai, Yuji Saito, Kelsuke Asai, Taku Nonomura, "Proof-of-concept study of sparse processing particle image velocimetry for real time flow observation", Experiments in Fluids, 2022
< 1% match (Internet from 19-May-2021) https://roboticsbiz.com/top-7-location-based-tracking-technologies/
< 1% match (Internet from 12-May-2024) https://educationdocbox.com/73283123-Homework_and_Study_Tips/Real-time-sentiment-analysis-for-detection-of-terrorist-activities-in-kenya.html
< 1% match (Internet from 10-Jan-2024) https://www.packtpub.com/product/mobile-devops-playbook/9781803242552
< 1% match (Internet from 06-Dec-2020) https://findmykids.org/blog/en/iphone-parental-monitoring-apps

Universiti Tunku Abdul Rahman			
Form Title : Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)			
Form Number: FM-IAD-005	Rev No.: 0	Effective Date: 01/10/2013	Page No.: 1 of 1



FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

Full Name(s) of Candidate(s)	Ling Mei Sim
ID Number(s)	20ACB01775
Programme / Course	FICT-CN
Title of Final Year Project	Kids Tracking Mobile Application

Similarity	Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)
Overall similarity index: <u>6</u> % Similarity by source Internet Sources: <u>4</u> % Publications: <u>1</u> % Student Papers: <u>3</u> %	
Number of individual sources listed of more than 3% similarity: <u>2</u>	All had been checked. Everything is good.
Parameters of originality required and limits approved by UTAR are as Follows: (i) Overall similarity index is 20% and below, and (ii) Matching of individual sources listed must be less than 3% each, and (iii) Matching texts in continuous block must not exceed 8 words <i>Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.</i>	

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

Signature of Supervisor

Name: Puan Nor' Afifah Binti Sabri

Signature of Co-Supervisor

Name: _____



UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY (KAMPAR CAMPUS)

CHECKLIST FOR FYP2 THESIS SUBMISSION

Student Id	20ACB01775
Student Name	Ling Mei Sim
Supervisor Name	Puan Nor' Afifah Binti Sabri

TICK (✓)	DOCUMENT ITEMS
	Your report must include all the items below. Put a tick on the left column after you have checked your report with respect to the corresponding item.
✓	Title Page
✓	Signed Report Status Declaration Form
✓	Signed FYP Thesis Submission Form
✓	Signed form of the Declaration of Originality
✓	Acknowledgement
✓	Abstract
✓	Table of Contents
✓	List of Figures (if applicable)
✓	List of Tables (if applicable)
✓	List of Symbols (if applicable)
✓	List of Abbreviations (if applicable)
✓	Chapters / Content
✓	Bibliography (or References)
✓	All references in bibliography are cited in the thesis, especially in the chapter of literature review
✓	Appendices (if applicable)
✓	Weekly Log
✓	Poster
✓	Signed Turnitin Report (Plagiarism Check Result - Form Number: FM-IAD-005)
✓	I agree 5 marks will be deducted due to incorrect format, declare wrongly the ticked of these items, and/or any dispute happening for these items in this report.

*Include this form (checklist) in the thesis (Bind together as the last page)

I, the author, have checked and confirmed all the items listed in the table are included in my report.

Ling Mei Sim

(Signature of Student)

Date: 12/9/2024