MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION , MUMBAI

A PROJECT REPORT ON

"PARENTAL CONTROL APPLICATION"

SUBMITTED TO
MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAIIN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DIPLOMA CERTIFICATE

DIPLOMA IN COMPUTER ENGINEERING
BY

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DEPARTMENT OF COMPUTER ENGINEERING

JSPM's BHIVARABAI SAWANT POLYTECHNIC, WAGHOLI
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(Academic Year- 2023-2024)

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CERTIFICATE

This is to certify that the Project titled **"PARENTAL CONTROL APPLICATION"** has been completed in the

academic year 2023-2024 by

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in partial fulfillment of the Diploma in the Computer Engineering as prescribed by the MSBTE, Mumbai.

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Acknowledgement

I have a great pleasure in presenting this project report on **"PARENTAL CONTROL APPLICATION"** and to express my deep regards towards those who have offered their valuable time and guidance in my hour of need because when any work is to be successfully completed, it should be supported and guided by proper persons. For completing this project, I really got inspiration and guidance from many persons.

I would like to express my sincere and whole hearted thanks to my guide

Prof. Sonali Gaikwad without whose support I was unable to express my ideas in this project. I also thank **Prof. S. G. Gaikwad,** Head of Department for his support and encouragement**.**

I am also glad to express my gratitude and thanks to my parents and my friends who directly or indirectly supported me for completion of this project.

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Certificate by Guide

This is to certify that

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Bhosale Anandi Sanjay

Jagtap Omkar Santosh

Pardeshi Shrutika Ganesh

has completed the Project work under my guidance and supervision and that, I have verified the work for its originality in documentation, problem statement, implementation and results presented in the Project. Any reproduction of other necessary work is with the prior permission and has given due ownership and included in the references.

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VISION AND MISSION OF THE DEPARTMENT

Vision:

To develop technical man power in the field of computer engineering to contribute the socio-industrial requirements.

Mission:

M1 : To develop techno-savvy engineers by imparting comprehensive computer engineering knowledge by innovating teaching and learning process.

M2 : To impart computer engineering education in order to meet societal and industry needs.

M3 : To develop professional skills for lifelong learning through co-curricular and extra-curricular activities.

INDEX

CHAPTER 1

INTRODUCTION

INTRODUCTION TO THE PROJECT

1.1 Motivation

This project is aimed at developing an parental control app for the safety purpose of child. Parent can track the live location of child and parent can lock application of child mobile. The system is an android application that can share child location to the parents. The Real Time location sharing feature on Parental Control App.

Parental control applications are software tools that allow parents to monitor, restrict, or manage the online activity of their children. They can be used to block inappropriate websites, limit screen time, track location, filter content, and more.

Protecting children from cyberbullying, online predators, identity theft, and other online risk. Excessive screen time can have negative effects on a child's physical and mental well-being. Parental control applications assist parents in managing and limiting screen time. Parental control apps often offer features that support educational content and help parents strike a balance between entertainment and learning.

1.2 Background

The background for parental control applications is the history and development of software tools that allow parents to monitor, restrict, or manage the online activity of their children. Parental control applications have evolved over the years, from simple kid modes that locked children in specific apps, to more sophisticated features that can block inappropriate websites, limit screen time, track location, filter content, and more.
Parental control apps are designed to help parents monitor and manage their children's digital activities. The background for these apps stems from the need to address concerns such as inappropriate content exposure, excessive screen time, and online safety. By offering features like content filtering, time limits, and activity tracking, these apps empower parents to create a safer and more controlled online environment for their children.

- The rapid growth and accessibility of the internet and digital devices, which exposed children to various online risks and opportunities.
- The increasing awareness and research on the effects of digital media on children's development, well-being, and learning.
- The diversity and complexity of parenting styles and values, as well as the cultural and individual differences in children's needs and preferences.
- The ethical and legal challenges of balancing parental control and children's autonomy, privacy, and rights.

1.3 Need

Parental control applications are beneficial for several reasons. They help parents:

1.Location Tracking: Keep track of a child's location for safety purposes and to ensure they are where they should be

2. Geofencing: Location Boundaries: Parents can set virtual boundaries (geofences) on a map. If the child enters or exits these predefined areas, parents receive alerts, ensuring awareness of their whereabouts.

3. App Lock: Controlled Access: Parents can restrict access to specific applications, ensuring that children only use approved apps and preventing them from accessing inappropriate content or spending excessive time on certain apps.

4. Appropriate App Usage: Manage and monitor the apps children use, preventing them from accessing potentially harmful or addictive applications.

5. Safe Browsing: Enable safe search features and filter out potentially harmful websites to protect children from inappropriate online content.

6. Educational Guidance: Encourage educational content and limit distractions during study hours to support academic progress.

7. Establish Digital Responsibility: Teach responsible online behaviour and guide children in making safe and informed choices in the digital world

CHAPTER 2

LITERATURE REVIEW

LITERATURE REVIEW

2.1 Existing System

Parental control applications are software tools that allow parents to monitor, manage, and restrict their children's online activities on mobile devices. These tools aim to protect children from potential online risks, such as cyberbullying, exposure to explicit content, and sexual solicitations. However, they also raise privacy and ethical concerns, as they may interfere with the children's autonomy, trust, and development.

A literature review is a systematic and comprehensive analysis of the existing research on a topic. It helps to identify the current state of knowledge, gaps, and future directions for further study. A literature review on parental control applications would involve searching for relevant sources, such as academic papers, reports, and reviews, and synthesizing their findings, methods, and implications.

2.2 Description

Live location sharing is a feature that allows parents to see where their children are at any given time, and also set up geofences to alert them when their children enter or leave certain areas. This can help parents monitor their children's safety and whereabouts, especially if they are using public transportation or walking alone.

There are parental control applications that offer live location sharing as one of their features, but they may differ in other aspects such as screen time management, content filtering, social media monitoring, and more.

- Life360: This app lets you track all other members of your family in real time, see their location history, and get directions to any of their current locations with just a single tap

- Family Keeper: This app helps you manage your children's online activities by blocking inappropriate websites and apps, tracking their screen time and web history, and monitoring their social media accounts. It also has live location sharing that lets you see where your children are on a map, set up geofences for school zones or home areas, and receive notifications when they arrive or leave.

- Fami Safe: This app provides comprehensive parental control features such as screen time limits, app blocking and filtering, web filtering and tracking, location tracking and geofencing, camera monitoring and recording, and more.

Fig.2.1 splash Screen

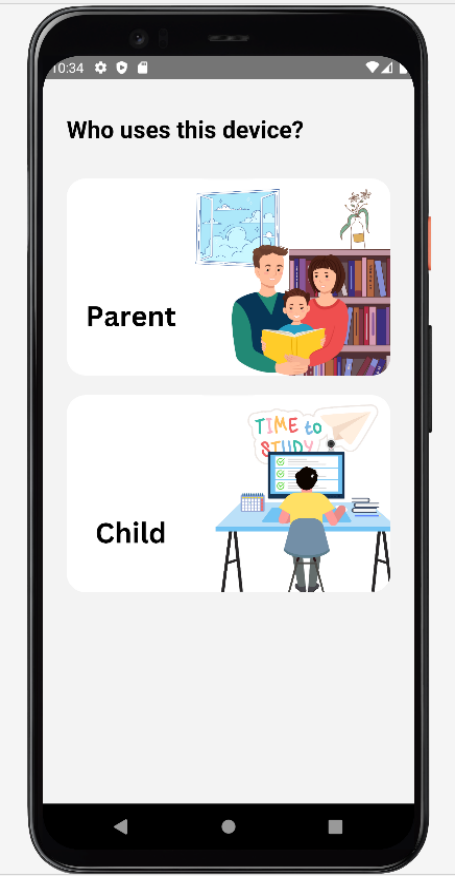


Fig.2.2 Home Page

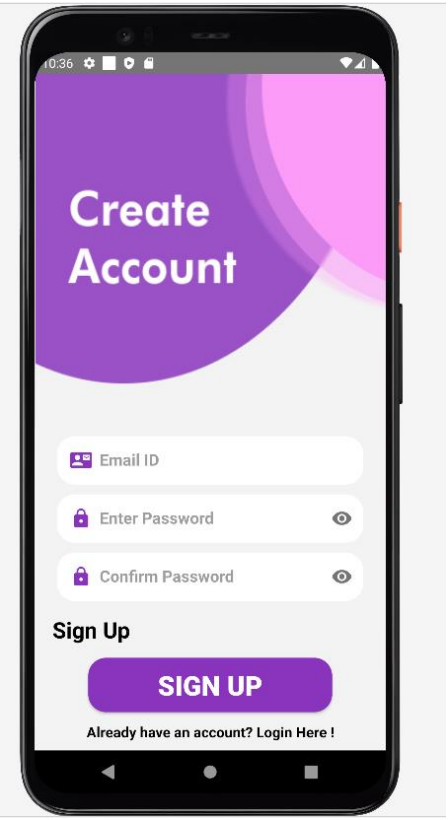


Fig.2.3 Parent Sign up

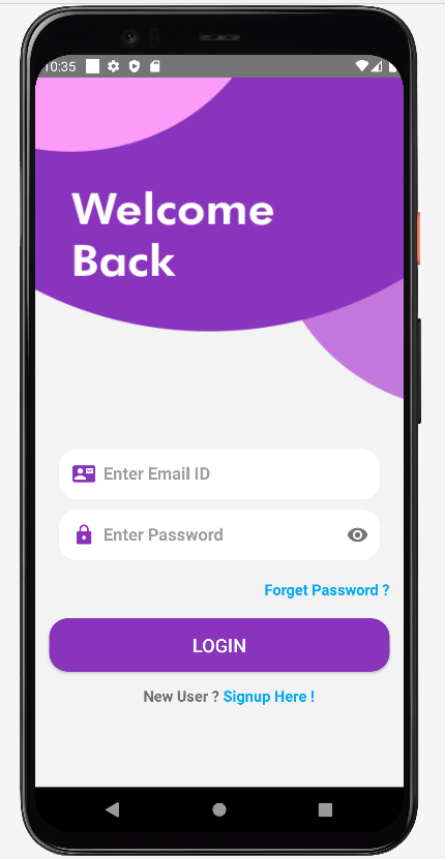


Fig.2.4 Parent Login

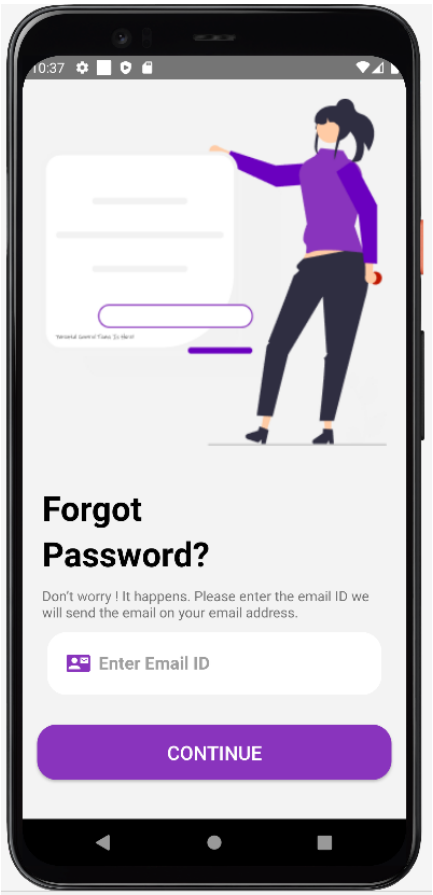


Fig.2.5 Parent Forget Password

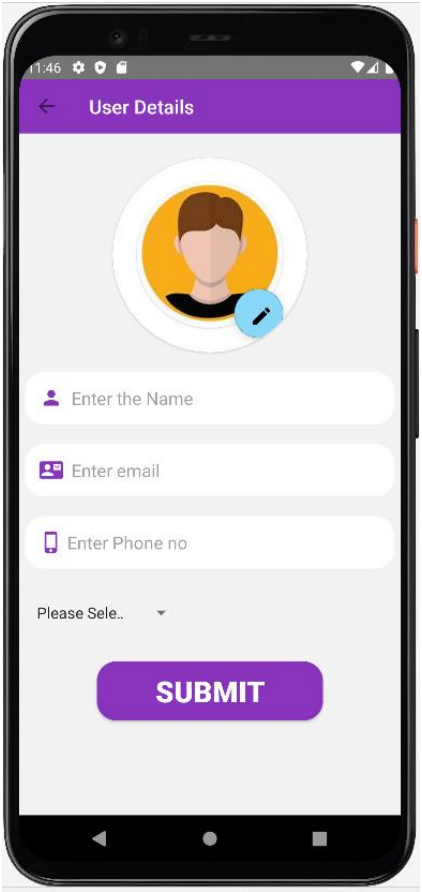


Fig.2.6 Parent User Detail

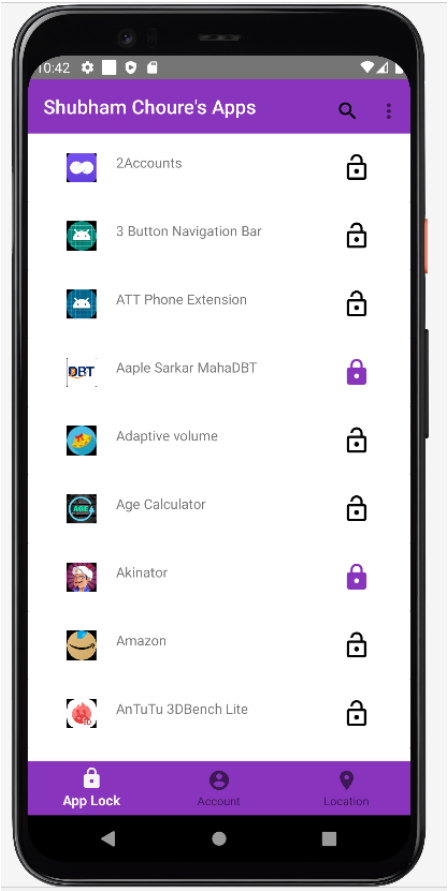


Fig 2.7 Parent App Lock

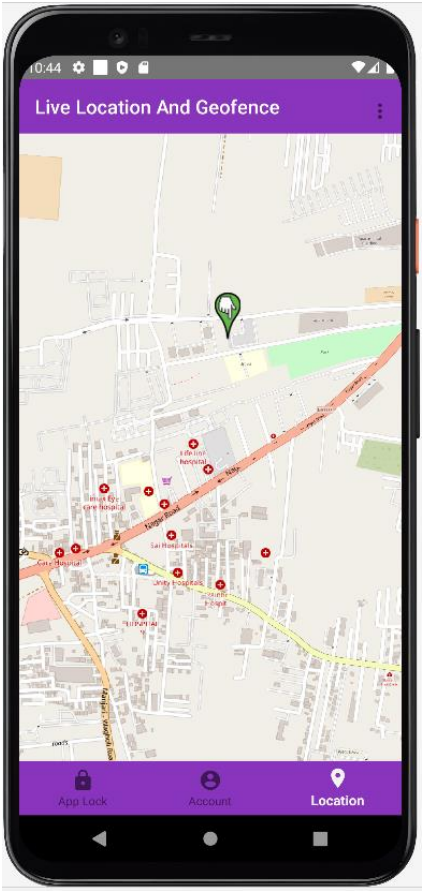


Fig 2.8 Parent Live Location

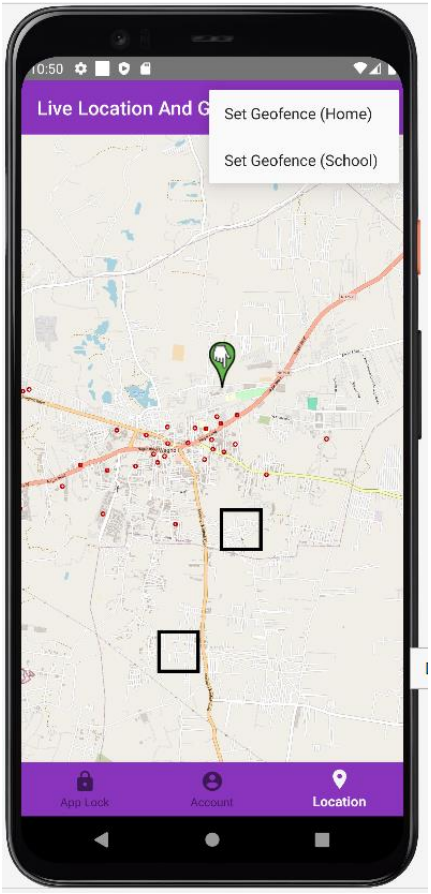


Fig 2.9 Geofencing

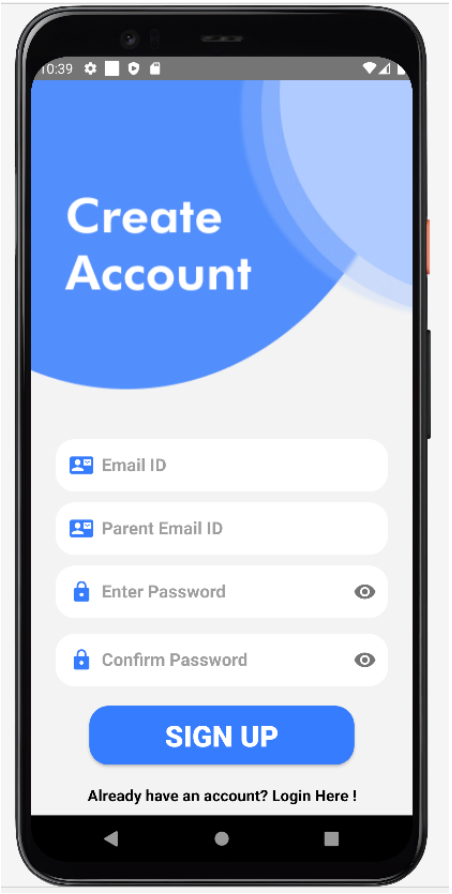


Fig 2.10 Child sign Up

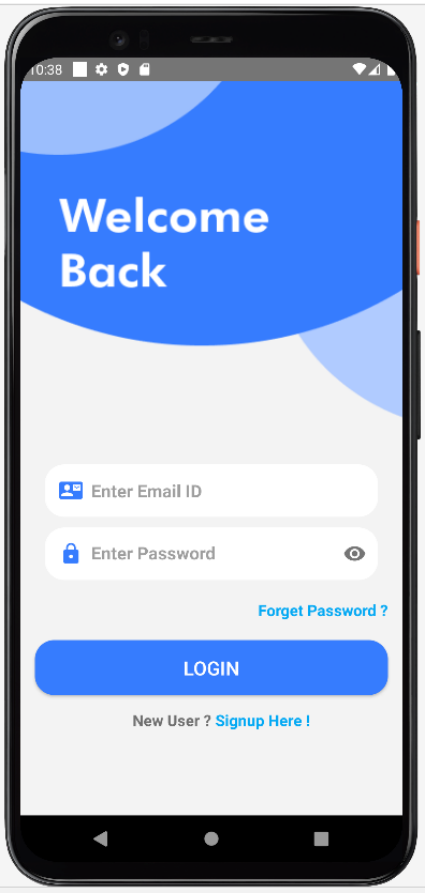


Fig 2.11 Child Login

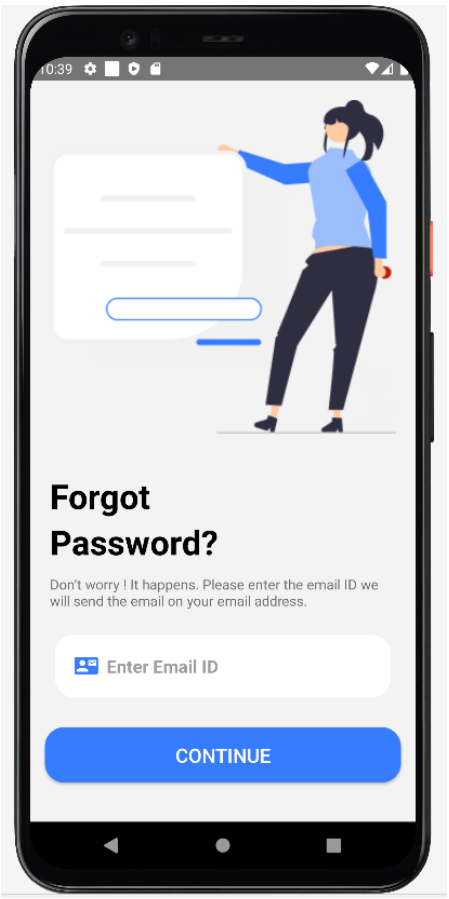


Fig 2.12 Child Forget Password

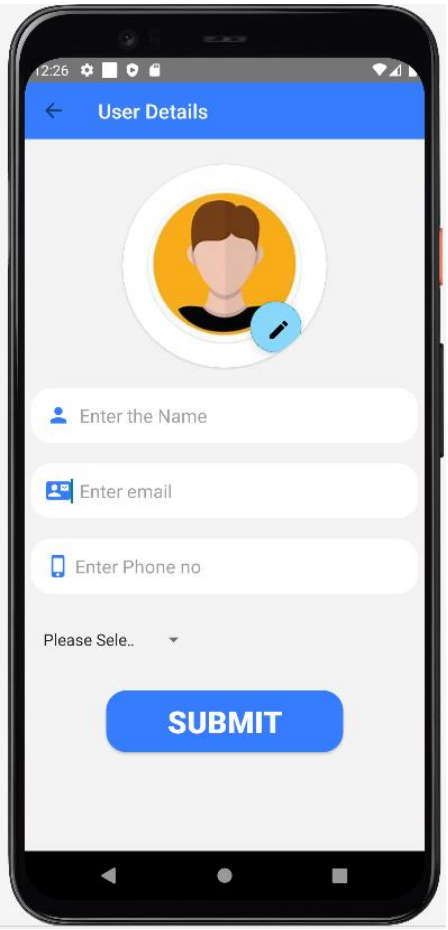


Fig 2.13 Child User Detail

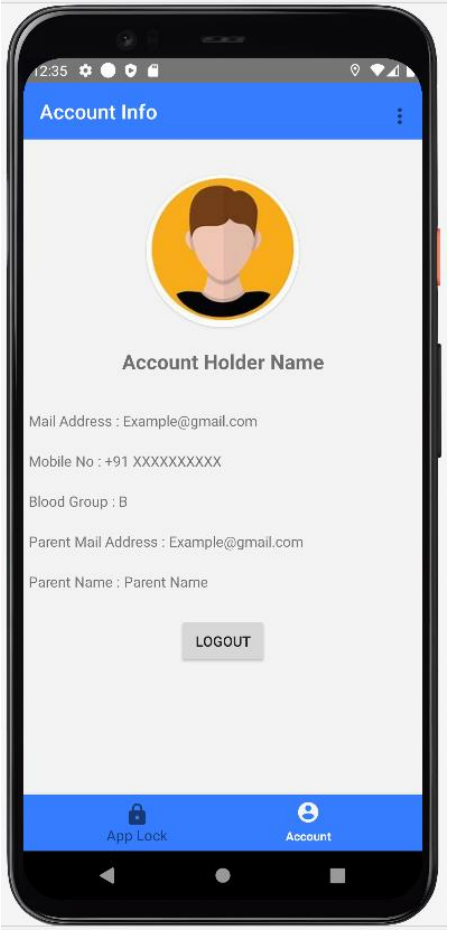


Fig 2.14 Child Account

2.3 Advantages

- Comprehensive Control: The app offers a holistic approach to parental control by combining location tracking and app/website locking in a single application.

- Real-time Updates: Parents receive real-time updates on their child's location and can respond promptly to any safety concerns.

- Customizable Settings: The app allows parents to customize settings based on their child's age and maturity level, ensuring a tailored experience.

- Peace of Mind: Knowing their child's location and being able to restrict access to inappropriate content provides parents with peace of mind.

2.4 Disadvantages

- Privacy Concerns: Constant tracking and monitoring can raise privacy concerns among children and may affect their sense of independence.

- False Positives: The location tracking may have inaccuracies, leading to false alarms for parents.

CHAPTER 3

REQUIREMENT ANALYSIS

REQUIREMENT ANALYSIS

In the software development life cycle (SDLC), Requirement analysis is the first step of major importance. The entire concentration is on gathering the functional and the nonfunctional requirements for the product to be developed and estimating the feasibility of those attributes. Through requirement gathering we ensure that we are setting project goals and objectives much earlier. Complete understanding of the requirements leads to the successful development of the software. If we don't do this step, then however hard we work we will never arrive at the desired final product. This is most crucial as without knowing the exact requirements the final output can never be achieved as desired. For this project, I did a major research on the existing system and discussed the functionality that I wanted to develop with my major professor and finally concluded on a concrete set of requirements that I wanted to see as an outcome of my project.

Software Requirements

- Front End :

- **XML :** (eXtensible Markup Language) is a markup language that defines rules for encoding documents in a format that is both human-readable and machine-readable.
- **Figma :** on the other hand, is a web-based design and prototyping tool.

- Back End :

- **MySQL**: MySQL is a database, widely used for accessing querying, updating, and managing data in databases.
- **Java** : It is high level and object oriented language

Operating System

- Android operating system version marshmallow or higher
- Api level 23 or higher

Hardware Requirements

- Mobile device
- 1 GB ram
- 8 GB storage

Functional Requirements

The proposed system has the following functionalities:

- Google sign in
- Child can share live location sharing link to the contact number
- Child can share live location sharing link to the g-mail
- Instant live location sharing
- Location Alarm
- Schedule location sharing
- Conditional sharing
- Schedule messaging
- Tracking location of another users
- Notifications
- Mailing
- Messaging
- Map
- Light weight
- Location statuses of another child

Non-Functional Requirements

The major difference between Functional and Non-functional difference lies in two keywords. "What" and "How", While what the system does is described by its functional requirements, how the system achieves those quality attributes are discussed by the nonfunctional requirements. The non-functional requirements focus on the scalability of the system, security of the system, reliability and maintenance of the system which are ensured by verifying and validating the system. The proposed system meets the non-functional requirements likesecurity by several form validations and google sign in, reliability by maintaining integrity witherror messages, controlling access of the users. The application is made more scalable with an advanced search feature that filters and delivers all matching places from the map Since the application code is object oriented in nature maintainability and reusability is also ensured.

CHAPTER 4

SYSTEM DESIGN AND ARCHITECTURE

SYSTEM DESIGN AND ARCHITECTURE

4.1 Architectural Design

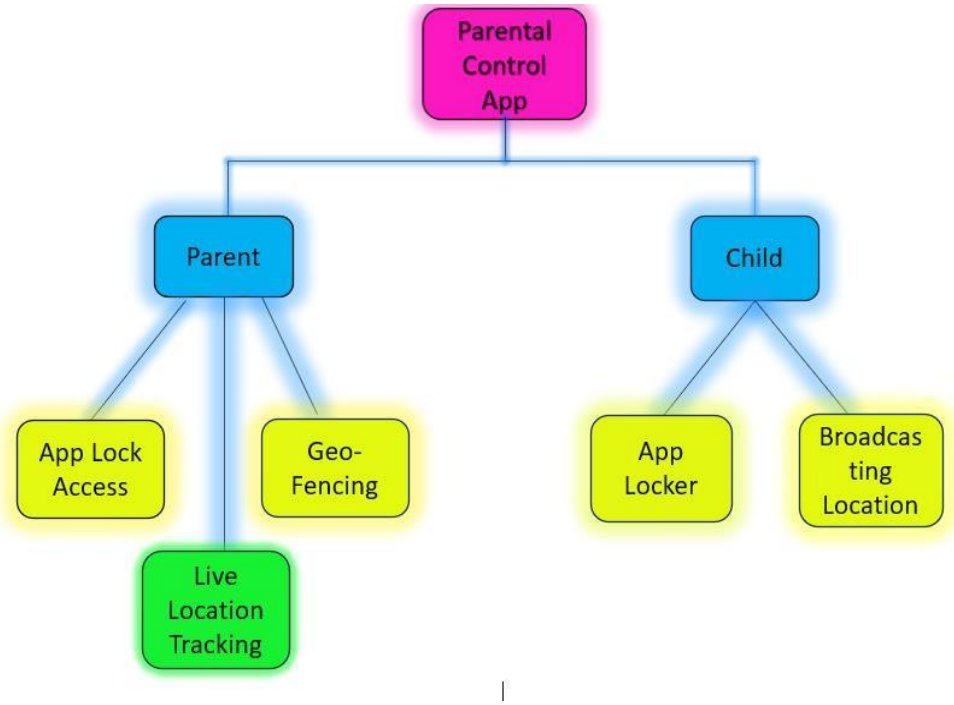


Fig 4.1: Architectural Design of Parental Control App

Explanation:

First the user will open the app. Then the app will check is the user entered the app first time from the installation of app if yes then app will ask for the permissions which are needed for running the functionalities. Then the app will open a google sign in dialog where the user can select an account from the list or create account. If the user is not entered first time or after the process taking permissions and signing in the user will be able to see the options screen where user can choose any function of the app to use it.

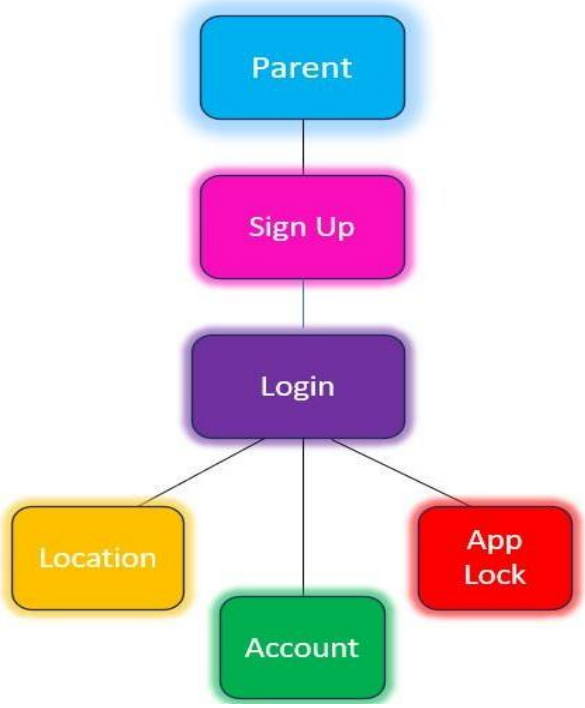


Fig 4.2 DFD 1 of parent

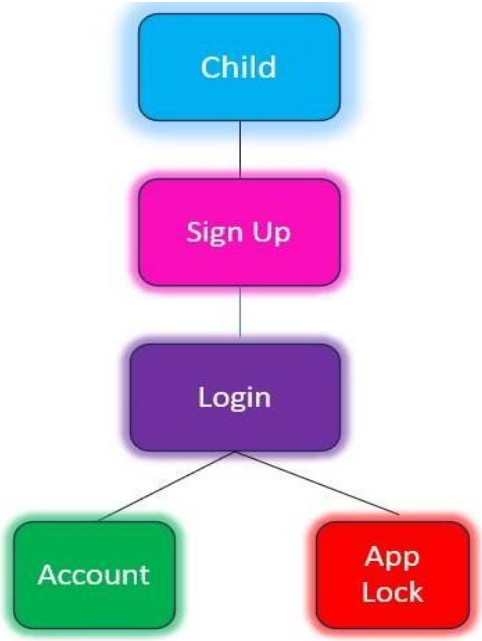


Fig 4.3 DFD 1 of Child

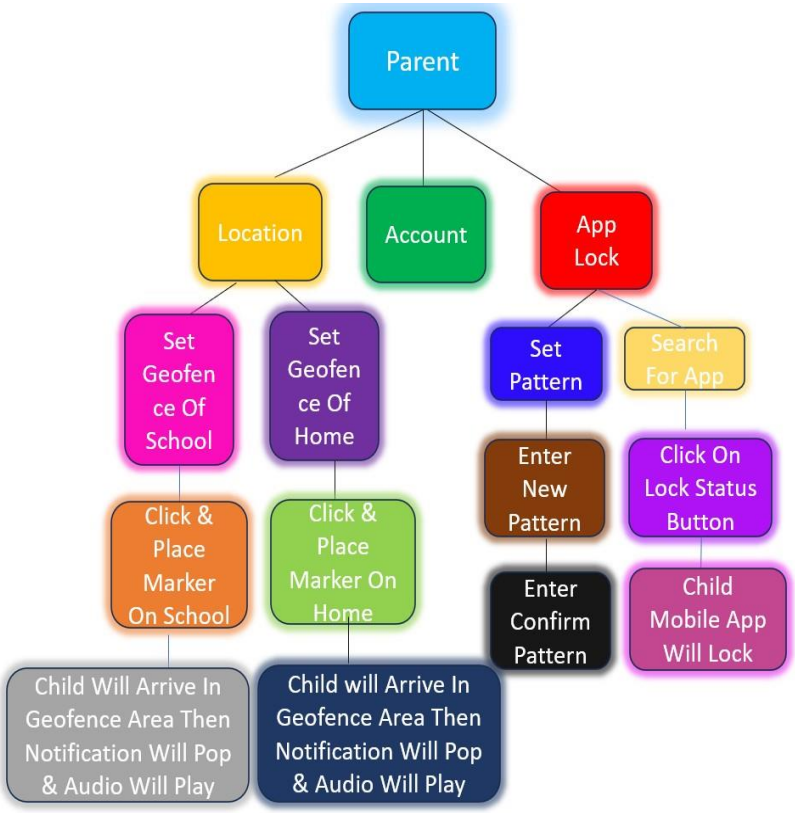


Fig 4.4 DFD 2 of Parent

CHAPTER 5

METHODOLOGY

METHODOLOGY

The model that is basically being followed is the WATER FALL MODEL, which states that the phases are organized in a linear order. First of all the feasibility study is done Once that part is over the requirement analysis and project planning begins. If system exists one and modification and addition of new classes is needed, analysis of present system can be used as basic model. The design starts after the requirement analysis in complete and the coding begins after the design is complete. Once the programming is completed, the testing is done. In this model the sequence of activities performed in a software development project are :-

- Requirement Analysis
- Project Planning
- System design
- Detail design
- Coding
- Unit testing
- System integration & testing

Testing Process

In the software development life cycle, after the requirement analysis, feasibility study, design and coding phase, one of the phase of utmost importance is the testing phase. In this phase, we get to see if the expected and final outcomes are same with all the required specifications being maintained as per the requirement. This is the debugging phase of the application on its entirety and not simple debugging of few lines of code on the IDE This phase starts with the smallest unit of a code through Unit Testing and travels a long way till it ends with User Acceptance Testing. For industrial applications, testing is performed through highly automated tools like Docker for NodeJS applications, but such automated testing tools are out of scope for this project. This testing phase helps in finding bugs which can be at the code level, system level, environment level, then fixing those bugs, then retesting the same functionalities to check the new changes are compatible with others and then at the end of many testing strategies the product is delegated to corresponding authority for release. Testing at the application/code level is performed by writing test cases. To err is human- we all know. When code is nothing but human typed language with a sense of grammar and context understandable by the OS and computer scientists, there can always exist errors. We can eliminate these errors by thinking about corner cases or scenarios that might never happen but if happens, our application is strong enough to handle them. Testing the application with every possible scenario which it can/cannot handle and still our application staying steadfast is what we target for.

Testing Levels Unit Testing

Testing an application to its smallest unit in called Unit Testing Again, testing each class of an application which testing is all about and checking validations against unforeseen scenarios is what unit testing is all about. Once a bug in detected, that is recorded in the hog tracker, a ticket is raised, this buy is fixed, and again new unit test cases are written perform unit testing over the debugged piece of code. Integration Testing-Once each individual part of the system is tested, every smallest unit is tested, different classes of the system are now integrated together and tested. Whether the integration works of whether a part of the system that is functional individually starts failing when integrated with another part is what integration testing is all about. System Testing - That an integrated system meets all its specifications and requirements in decided by system Testing. Regression Testing-Once the system is debugged, it is tested again to see if it is compatible with the changes made and compatible with any changes made to the environment. Load Testing - Testing that the system can take as much load as its supposed to take and testing how much load it can take and to what extent it can exceed as limit and where it breaks. Performance Testing - Testing how the system performs like slow/fast and how it performs under certain workload.

CHAPTER 6

IMPLEMENTATION DETAILS

IMPLEMENTATION DETAILS

DETAILS OF DESIGNS WORKING AND PROCESSES

6.1 Test Cases

Test Cases are good in revealing the presence of faults. Successful in implementation of test cases implies that there are no error in program. Test cases should be minimum as they are expensive in case of money & efforts. Primary objectives of test cases are to ensure that if there is an error or fault in program it is exercise by the test cases. An ideal test case set is one that succeeds only if there are no errors in the program. One possible ideal set of test case is one that includes all possible I/P to the program and is called exhaustive testing. A test case is good if it detect in undiscovered error in program/m.

Tests Performed on Parental Control App

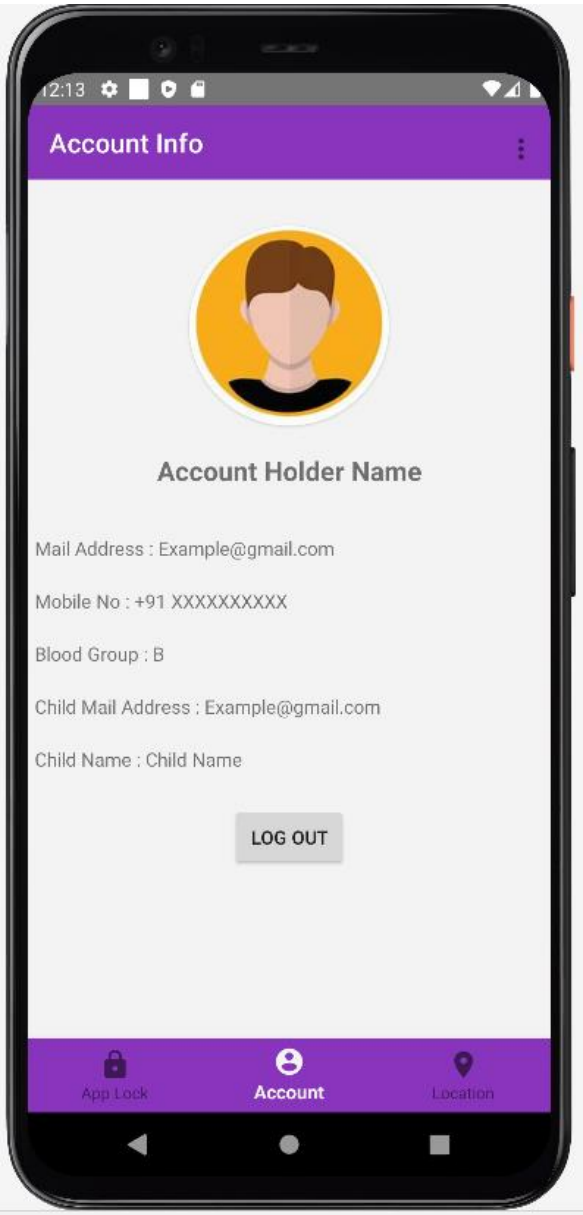
Test Case	Objective	Test Steps	Expected Result	Actual Result	Status
Sign-Up Process	Ensure a smooth and secure sign-up process for users.	1. Open the parental control app. 2. Click on the "Sign-Up" button. 3. Fill in the required information (username, email, password). 4. Submit the form.	User should receive a confirmation email. User data should be securely stored in the database.	Confirmation email received. User data stored securely.	Pass
Login Functionality	Verify that users can successfully log in to the parental control app.	1. Open the app. 2. Enter valid credentials (username/email and password). 3. Click on the...	User should be logged in successfully. Access to the app's main interface granted.	Successfully logged in. Access to the main interface granted.	Pass
App Lock	Test the application's ability to lock specified apps.	1. Navigate to the app lock feature. 2. Select an app to lock. 3. Attempt to open the locked app.	Locked app should require authentication (e.g., password or PIN) to access.	Locked app prompted for authentication.	Pass

Live Location	Confirm the accuracy and real-time nature of the live location feature.	1. Enable the live location tracking. 2. Move to a different location. 3. Check the displayed live location on the parent's device.	Live location on the parent's device should accurately reflect the child's current location in real-time.	Live location updated in real-time.	Pass
Geofencing	Ensure geofencing functionality for setting up location boundaries.	1. Set up a geofence with specific boundaries. 2. Receive notification when the child enters/exits the geofenced area.	Notification should be received promptly upon the child entering or exiting the defined geofenced area.	Prompt notification received.	Pass

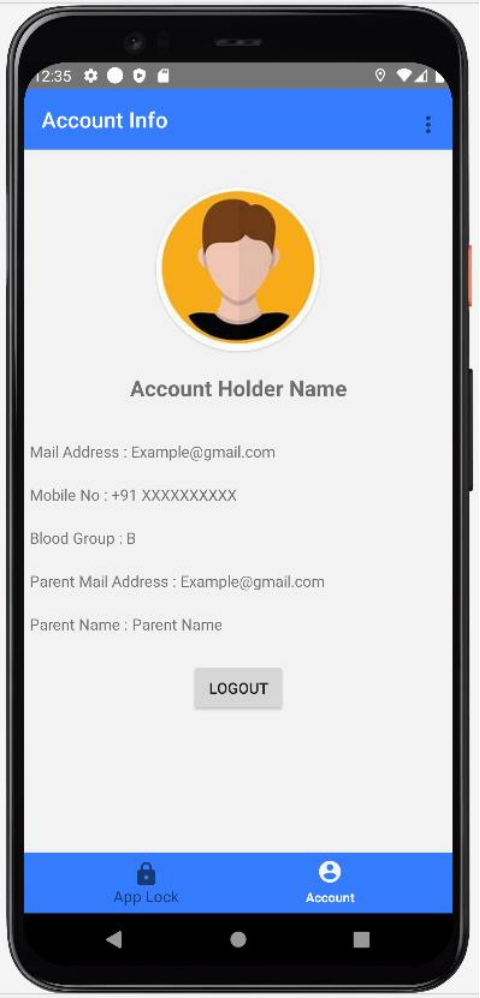
6.2 Software

1) Splash Screen (Figure 6.1)

2) Home Screen of Parent



3) Home Screen of Child



CHAPTER 7

RESULT ANALYSIS

RESULT ANALYSIS

7.1 Result

Parental Control App an emergency application plays a very important role in today's evolutionary world. It secures child life from coming threats. It help us to protect our child from dangers application . The application help us to travel safe with his "Location" feature. We can protect our children from unwanted activities. The power saving mode in location makes the application unique from other similar ones. The simplicity of the app makes it lightweight and compatible for various devices. The application can be used by the parent and child. The key feature of the application is ‘Live location Sharing and App lock ‘which helps parent and child their which also makes the application unique. Building an Parental Control App is very helpful for many people.

7.2 Applications

- Improve Safety of Child
- Improve Security of Child
- Education and Productivity
- Emergency Response and Rapid Location Sharing
- Customized Content Exposure
- Digital Discipline and Screen Time Management
- Protect child from unwanted activities

CHAPTER 8

CONCLUSION AND FUTURE SCOPE

CONCLUSION AND FUTURE SCOPE

CONCLUSION :

Parental control applications with features like app lock, live location tracking, and geofencing provide effective tools for parents to manage and monitor their children's digital activities. App lock ensures restricted access to specific apps, promoting a safer online environment. Live location tracking enhances parental oversight by allowing real-time monitoring of a child's whereabouts. Geofencing adds an extra layer of security, enabling parents to set geographical boundaries and receive alerts if their child enters or exits predefined areas. Together, these features empower parents to safeguard their children's online experiences and physical safety.

The proposed Android parental control app bridges the gap in the existing solutions by offering a comprehensive approach to child safety and digital discipline. With real-time location tracking and remote app/website locking, parents can strike a balance between ensuring their child's well-being and granting them digital autonomy. The app addresses privacy concerns and provides a versatile tool for modern parenting.

FUTURE SCOPE :

The future scope of parental control apps may involve more advanced AI algorithms for content filtering, real-time monitoring, and context-aware restrictions. Additionally, features addressing emerging technologies like augmented reality and advanced social media platforms could be integrated to enhance effectiveness in safeguarding children online. As digital landscapes evolve, parental control apps might also focus on promoting digital literacy and responsible online behaviour.

CHAPTER 9

PAPER AND CERTIFICATE

9.1 Publish Paper

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Parental Control App

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ABSTRACT

This paper presents a parental control app that uses geofencing technology for real-time location tracking. Parents can set virtual boundaries and receive notifications when their child crosses them, enhancing security. The app also allows parents to remotely lock specific apps on their child's phone, addressing screen time and content concerns. Developed using Java and XML, the app offers a user-friendly interface. Firebase is used for backend infrastructure, providing real-time data synchronization, authentication, and cloud storage. The app prioritizes user privacy and data security, implementing encryption and secure authentication mechanisms. This parental control app is a comprehensive solution for modern parenting challenges, combining advanced geofencing with remote app locking to help parents monitor their child's digital activities effectively.

Keywords: Java, XML, Firebase, GitHub, MySQL.

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I. INTRODUCTION

In an era dominated by digital technology, smartphones and other mobile devices have seamlessly integrated into the fabric of our daily lives. The advantages they bring, such as easy access to information, communication tools, and entertainment, are undeniable. However, with these benefits come inherent risks, especially for the younger demographic. Children using smartphones may be exposed to inappropriate content, potential cyberbullying incidents, and the risk of engaging with strangers online. Recognizing these challenges, we have developed a comprehensive parental control application aimed at empowering parents to actively manage and monitor their child's smartphone usage and location.

The Evolving Role of Smartphones in our Lives:
Smartphones have transformed from mere communication devices to multifunctional tools that cater to various aspects of our lives. From educational applications and interactive games to social media platforms, the digital landscape accessible through smartphones is vast and diverse. This evolution has created a need for parents to strike a balance between leveraging the benefits of technology and safeguarding their children from potential pitfalls.

Addressing Concerns with a Robust Parental Control App: Our parental control app is designed to serve as a proactive solution to the challenges posed by children's smartphone usage. It provides a comprehensive set of tools that enable parents to not only monitor but also manage their child's interactions with the digital world. By leveraging the app, parents gain insights into the content their children are exposed to, the duration of their screen time, and their real-time location.

Real-time Location Monitoring: One key feature of the app is real-time location monitoring. Using advanced geofencing technology, parents can receive instant notifications when their child enters or exits predefined areas. This functionality enhances the physical safety of children by allowing parents to track their whereabouts, providing peace of mind and prompt responses to any unexpected events.

Content Management and App Locking: The application goes beyond location tracking, offering parents the ability to manage the content their children access. With remote app locking capabilities, parents can restrict access to specific applications, ensuring that their children engage with age-appropriate content. This feature is particularly valuable for managing screen time and fostering a healthy digital environment.

Technical Implementation:
The app's development was executed meticulously, utilizing robust technologies to ensure a seamless user experience. The frontend was crafted using Java and XML, prioritizing user-friendliness and responsiveness. The backend infrastructure relies on Firebase, a scalable and secure platform that facilitates real-time data synchronization and cloud storage. Emphasis was placed on data security, incorporating encryption protocols and secure authentication mechanisms to protect sensitive information.

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II. METHODOLOGY

Working:

The app was developed using Java and XML for the frontend to ensure a user-friendly interface and seamless navigation. Firebase was used for the backend to provide secure data storage and real-time data syncing. We utilized geofencing technology to enable real-time tracking of the child's location and to send instant notifications to the parent when the child enters or exits a designated area. Additionally, the app provides parents with the ability to remotely lock specific apps on their child's phone from their own device, offering greater control over their child's smartphone usage.

Hardware requirement:

It needs an Operating System (Windows 10), processor, 8 GB RAM, 50 GB free Hard disk space.

Software requirement:

There should be a Parental Control Application & WINDOWS 8 / 10 / 11, Android studio. Net 2008 Enterprises. This app will be built using Java or xml on android studio platform as we know java is platform independent.

Use of Application:

The primary use of the application is to provide parents with a comprehensive tool for monitoring and managing their child's smartphone activities. This includes real-time tracking of the child's location through geofencing, instant notifications for location-based events, and the ability to remotely lock specific applications on the child's device. The application serves as a digital parenting solution, offering enhanced control and awareness over a child's smartphone usage.

Needs of the Application:

The application addresses the growing concerns of parents regarding the safety and responsible use of smartphones by children. Its key needs include:

1. Real-Time Tracking: The application fulfils the need for parents to have continuous and real-time visibility into their child's location, enhancing their sense of security.
2. Geofencing Technology: The incorporation of geofencing technology addresses the need for instant notifications when a child enters or exits designated areas, providing parents with timely information about their child's movements.
3. Remote App Locking: To meet the need for enhanced parental control, the app allows parents to remotely lock specific applications on their child's phone, promoting responsible smartphone usage.
4. User-Friendly Interface: The application strives to meet the need for a user-friendly interface and seamless navigation to ensure accessibility for parents with varying levels of technical expertise.
5. Security and Data Synchronization: Leveraging Firebase, the app fulfils the need for secure data storage and real-time data syncing, ensuring the confidentiality and reliability of the information shared between the child's device and the parent's device.

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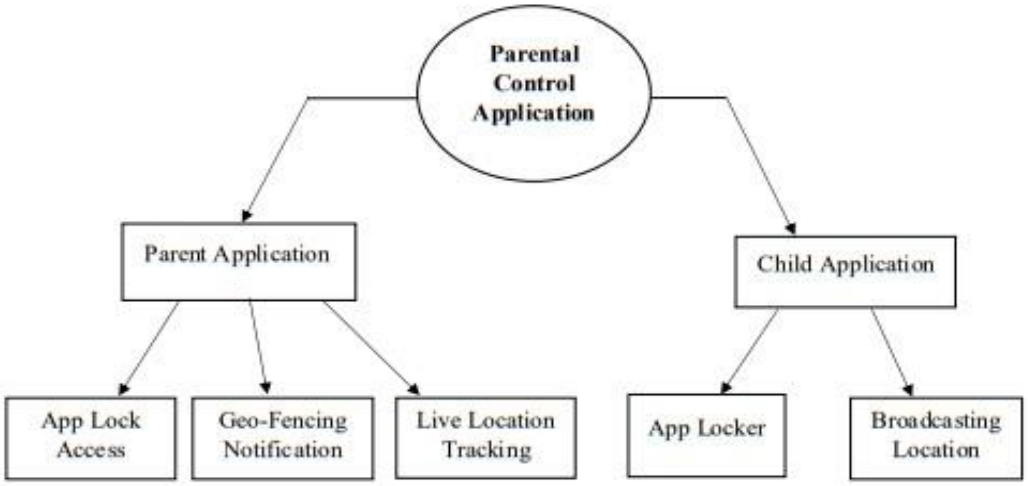
III. MODELING AND ANALYSIS

DATAFLOW DIAGRAM



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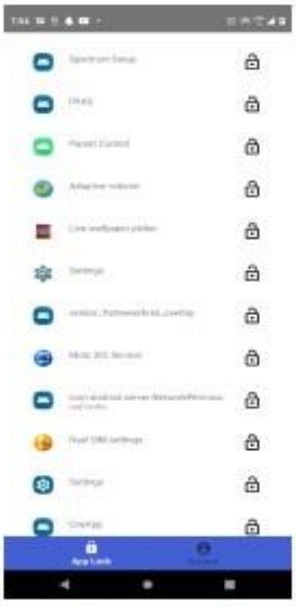
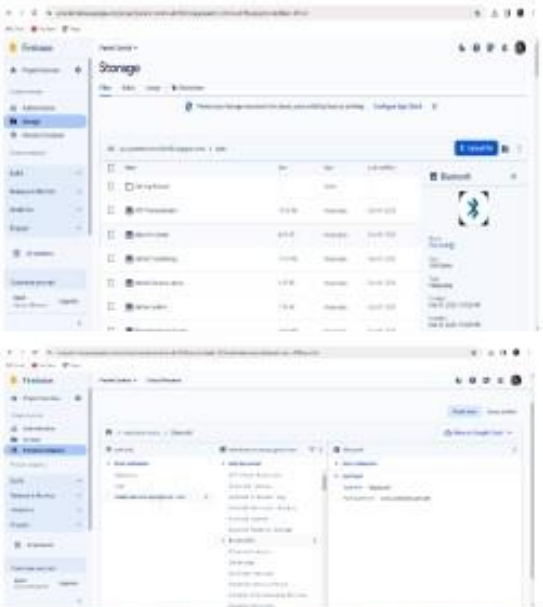
IV. RESULTS AND DISCUSSION

1.There are two parts of parental control app child and parent here are login pages for child as well as parent.

2. Following images are of app lock feature along with its database.





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V. CONCLUSION

In conclusion, we have successfully developed a comprehensive parental control app that equips parents with a robust set of tools to monitor their child's smartphone usage and location. The app is not only affordable but also user-friendly, making it an ideal solution for parents seeking to ensure their children's safety in the digital world.

VI. REFERENCES

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[2] For Technical Questions - https://stackoverflow.com/questions/tagged/android.
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9.2Certificate

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CHAPTER 10
REFERENCE

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[2] "Android Application Development for Java Programmers": This book provides a comprehensive guide to building Android apps for Java programmers4.

[3] "Android Application Development For Dummies": This book is a beginner-friendly guide that introduces the basics of Android Application Development with a focus on Java4.

[4] Android API reference: This is a comprehensive guide provided by Android Developers. It covers everything from Jetpack, AndroidX, Material Components, to Android NDK and more1.

[5] Reference | Android Developers: This guide provides essentials for modern Android development, including UI design, architecture, and quality planning2.

[6] Finally understanding how references work in Android and Java: This article provides a deep understanding of how references work in Android and Java3.