

**IMPLEMENTATION OF APP LOCKER TO STAY IN FOCUS DURING
WORKING HOURS USING ANDROID SMART PHONES**

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Degree of Bachelor of Science in Computer Science and Engineering

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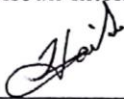
APPROVAL

This Project titled “App Locker”, submitted by **Tahsin Jawad, ID No: 151-15-5140; Clinton Placid Rozario, ID No: 151-15-5077** and **Kawser Ahmed Shovon, ID No: 151-15-5058** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12th December 2018.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Narayan Ranjan Chakraborty, Assistant Professor, Department of CSE, Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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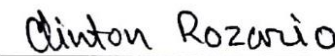


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ABSTRACT

Due to the increased capabilities of android smart phones, it is proposed in this research project that a system which can be used to Lock the Apps to pay attention while we are at work or studying. Smart App Locker an Android Native Application will help us to lock our application which we don't want to access while we are at work or studying. This application has feature of Pattern Lock and Password Lock. We can lock each application separately. Now we can restrict our applications to access without our permission. It will help us to prevent from Data loss from beginner users or children. Our gadgets regularly hold excessively delicate data that we try to discover distinctive approaches to guarantee we limit the danger of information loss. Consequently any item that guarantees to give enhanced strategies to enable you to secure your information. Smart App Locker is the ultimate tool to protect our apps we can even choose between the lock pattern mode at all times. One of the main benefits of using Smart App Locker is that it helps us to take complete control over what apps we use and how we use them, but at the same time we get complete customization options and incredible attention to detail.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

App Locker is an Android Native Application which will assist you with locking your application which you would prefer not to access without your consent. This application has Pattern Lock, Password Lock and Fingerprint Lock. You can lock every application independently. With the help of our App Locker you can confine your applications to access without your consent. It will assist you with preventing from Data misfortune from tenderfoot clients or kids. One of the principle advantages of utilizing Smart App Locker is that it encourages you take full control over what applications you use and how you utilize them. You can change the password from the side menu and you can also reset the password from the Menu alternative as well.

App locker application is exceptionally productive in work since it is tinny in size and furthermore expends less battery with the goal that your smartphone perform easily. App Locker can lock any social application, contacts and numerous different applications in your smartphone [1].

1.2 Motivation

Keeping your cell phones from undesirable clients is basic nowadays, when you may have a wide range of data that you'd like to keep individual. Regardless of whether you need to shield your children from getting to your photographs or your flat mate from getting to your Facebook account, an application bolt can ensure that just you choose who sees your stuff.

In our day to day life, we use our Smartphones. And we do various activity based on the Smartphone Apps. Sometimes we want to concentrate in our work or study. But, some of us are so addicted using our Smartphones that we can't give our full concentration on our work or Study. In this situation we can lock those Apps in which we are addicted and concentrate in our work or study. Sometimes many parents give their Smartphones to their children. But they don't want to give access to all Applications to their children. In this situation our App Locker can be a great solution for them.

1.3 Problem Statement

While switching application you have to type password every time, because we don't have feature to make applications unlocked until you lock your device. You will get undesirable lock screen while using the applications that you have locked.

1.4 Project Objective

Our App Locker don't have only Passcode option, we provide pattern lock and fingerprint lock also to ensure the maximum security level. In case you're searching for some slick plan highlights to include, a ton of application bolt programming will enable you to pick in to application structures or distinctive home screens relying upon what get to level you've chosen. Suppose you need to limit the capacity for others to get to your photographs – Our App Locker can push you to explicitly lock particular substance like photographs or messages. One of the most serious issues that guardians have nowadays is children of any ages accessing budgetary data or application stores, or incidentally acquiring in-application content. The most ideal approach to stay away from this is by introducing an App Locker with the goal that you can make sure to secure against undesirable costs. There is nothing more terrible than the distrustfulness that somebody is experiencing your things, so an application bolt will enable you to feel more anchor about what is on your cell phones. Since app lock is a security feature intended to give you a chance to choose who approaches what on your telephone or tablet, numerous frameworks will also have extra security includes that watch out for application related malware or undesirable telephone snoops.

1.5 Scope of the Project

Our App has a simple access. It gives space control. It is small in size. Has some cool design features. It has layers of protection (Password Lock, Pattern Lock & Fingerprint Lock). It will save you money (It's Free to Download). It goes to sleep and wakes back up. It increases overall security. It gives you peace of mind.

CHAPTER 2

BACKGROUND

2.1 Introduction

App Locker "Stay focused", is an application that will help you to stay away from your smartphone and be focused on your work. This application has Pattern Lock password lock and Finger lock features. You can lock each and every Applications separately.

This application will help you if you are not able to focus on any work, but you can make your app available through this application for a specific time. You're doing an important work, suddenly a notification comes to your phone and you enter Facebook, Twitter, Instagram, and WhatsApp etc. Or you have started playing games. By doing this, you have been lagging behind in your work. This application will help you lock your apps for specific applications before working and you will not be able to access your applications until that time. This application is helpful to your work.

You can restrict in your applications without your permission. We often give smart phones to our children, but we do not think that phone can be very important data or any other harmful device for kids, we can lock them up to a specific time. While we are studying, we can't focus on our reading while reading that we waste time on Facebook, Instagram, WhatsApp, games etc. Through this App Lock we can lock our apps up to a specific time. Then we will not be harmed by reading and in that time we will not be able to enter those apps.

We often waste our time in social media applications, this application will play an important role in our time being wasted. Through this application, I can block my site which is very harmful for us.

App locker "Stay focused", app is very efficient in work because it is small size and also consumes less battery so that your phone perform smoothly. App Locker can lock any social app, ecommerce app, contacts and many other apps in your phone.

2.2 Related Work

When we search with the App Locker on Google Play Store, many apps are available in Google Play Store. But our application differs from all other applications. We found some Android apps like our application theme in Google Play Store. But we're adding a lot of new features here, which is not in any other application. We're adding a specific time where we will not be able to enter that application for a while and we will not be able to change it at that time. We're discussing this Android application below.

2.3 Our Project Work

We want to build an Android application for our final year project. We create an Android application where users can use this app to select the applications that they want to lock. A social network application such as Facebook, Twitter, LinkedIn, Gmail, and WhatsApp can be locked with pattern lock, finger lock, and password lock. When a user tries to access these applications, the user requests to set the set passcode, so that apps can be kept safe and private, which is helpful for our people. We can tie these applications for a while and before that time we can't open that lock. This will not do any harm to our work.

2.4 Comparative Studies

In our Android application, we try to solve all problems, errors and limitations. After all, our Android app is a static application. It works without internet connection. Our Android app is so user-friendly than other related Android apps. Because it can make our life more beautiful. This is very important and a lot of things. We waste our leaf many times, through social interaction, with the help of this app, we can save us a lot of time. So we hope that users can easily enjoy the application using our Android application and the Android app will be helpful for the situation.

2.5 Challenges

At the point when an engineer needs to think in an unexpected way, the designer dependably needs to confront diverse sorts of difficulties, rivalries, rivalries and hindrances. Like this circumstance, there are different difficulties, challenges, challenges and impediments in our task. Our undertaking is useful to individuals in our general public. Be that as it may, now we as a whole add to Facebook, what applications, Viber, IMO, Instagram, snap-talk and numerous other web based life applications. So it will be somewhat harder to do this in our nation.

We regularly squander our time in internet based life applications, this application will assume a vital job presently being squandered. Through this application, I can obstruct my site which is extremely destructive for us. Furthermore, we are endeavoring to give the client 100% fulfillment. On the off chance that we confront any issues identified with the security of a catch or our application, we are endeavoring to take care of this issue and tackle such issues.

We are 100% endeavoring to build up this venture. So we trust that one day client will be sent as a client's most loved application because of easy to understand and supportive work. Presently, this is our fundamental objective. Presently, to achieve our central goal, these things can be trying for us.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Waterfall Model

The waterfall model is a relatively linear sequential design approach for certain areas of engineering design. The Waterfall Model was first Process Model to be introduced. It is also referred to as a linear-sequential life cycle model. It is very simple to understand and use [7].

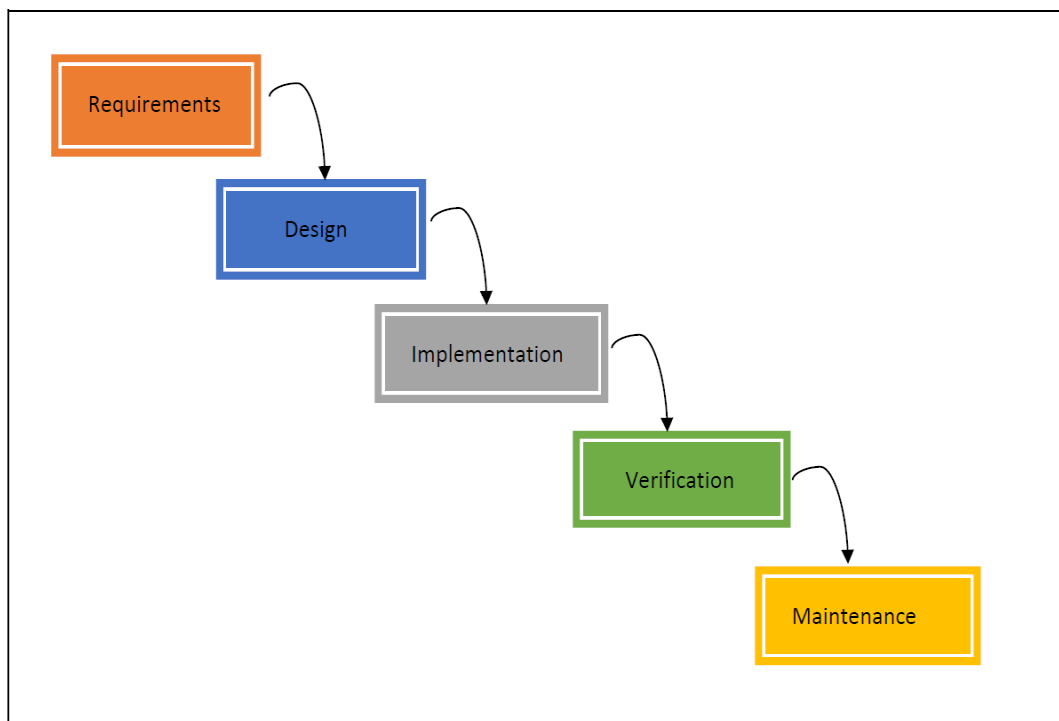


Figure 3.1: Waterfall Model of the system

In the figure 3.2, we are also trying to draw a level of Waterfall Model as flowing steadily downwards through the phase of Conception, Initiation, Analysis, Design, Construction, Testing and Maintenance of our system. In figure: 3.2 represent the Waterfall Model of our project's system.

3.2 Requirement Collection and Analysis

Requirements investigation is likewise called as necessities designing which is the way toward deciding client desires for another framework. These highlights, called requirements, must be quantifiable, important and detailed.

Requirements investigation includes visit correspondence with framework clients to decide particular element desires, goals of contention or ambiguity in requirements as requested by the different clients or gatherings of clients, shirking of highlight creep and documentation of all parts of the undertaking advancement process from beginning to end. For the undertaking improvement process, there are two kinds of necessities. One is the practical requirement and another is the non-utilitarian necessity.

3.3 Use Case Modeling and Description

A use case is a list of actions or event steps typically defining the interactions between a role and a system to achieve a goal. Here a role is known in the Unified Modeling Language as an actor. Use case analysis is an important and valuable requirement analysis technique that has been widely used in modern software engineering. There are many ways to write a use case in text, from use case brief, casual, outline, to fully dressed etc. and with varied templates [3].

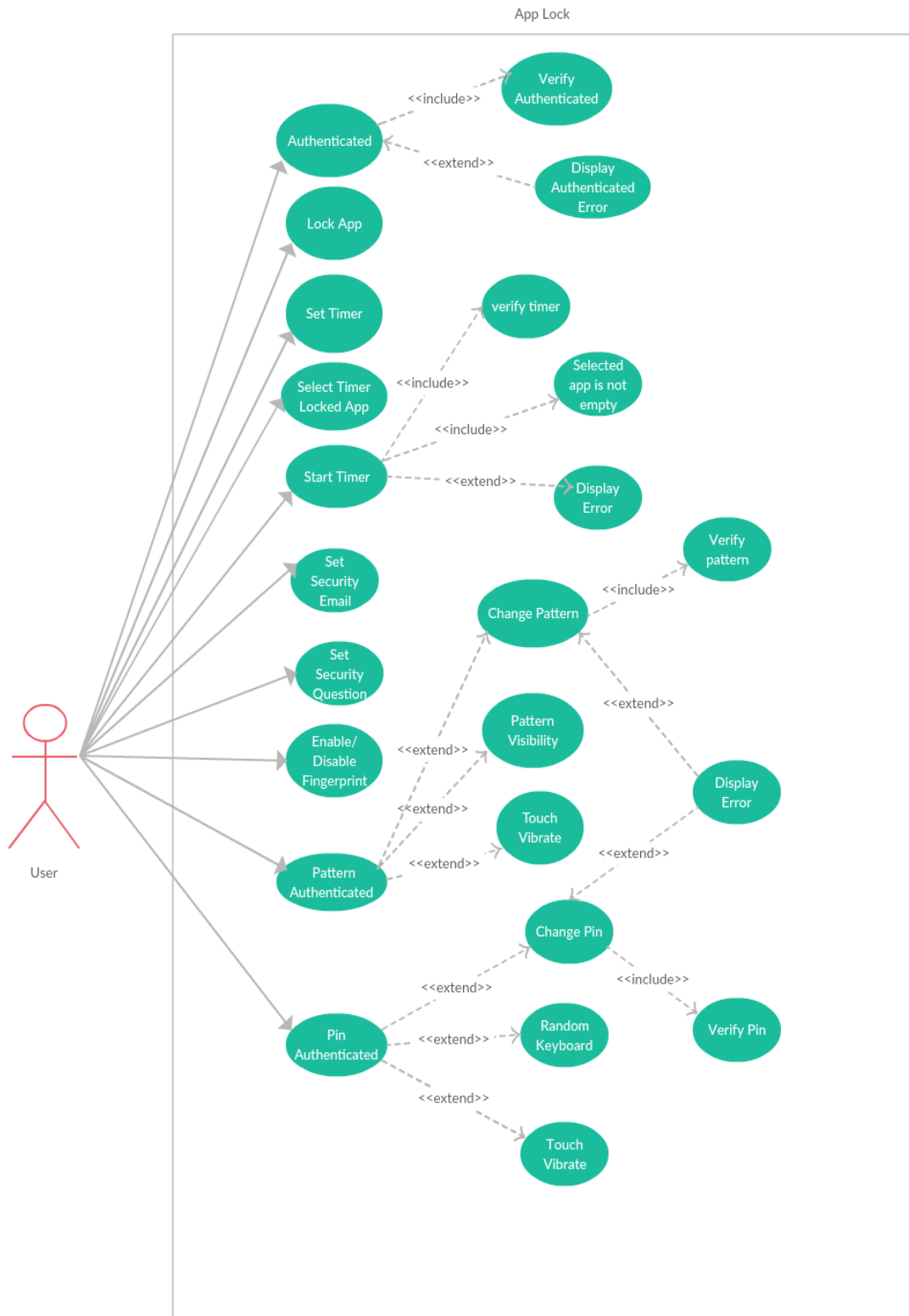


Figure 3.2: Use Case of the system

In Figure: 3.2 represent the use case of our project's system.

3.4 UML Class Diagram

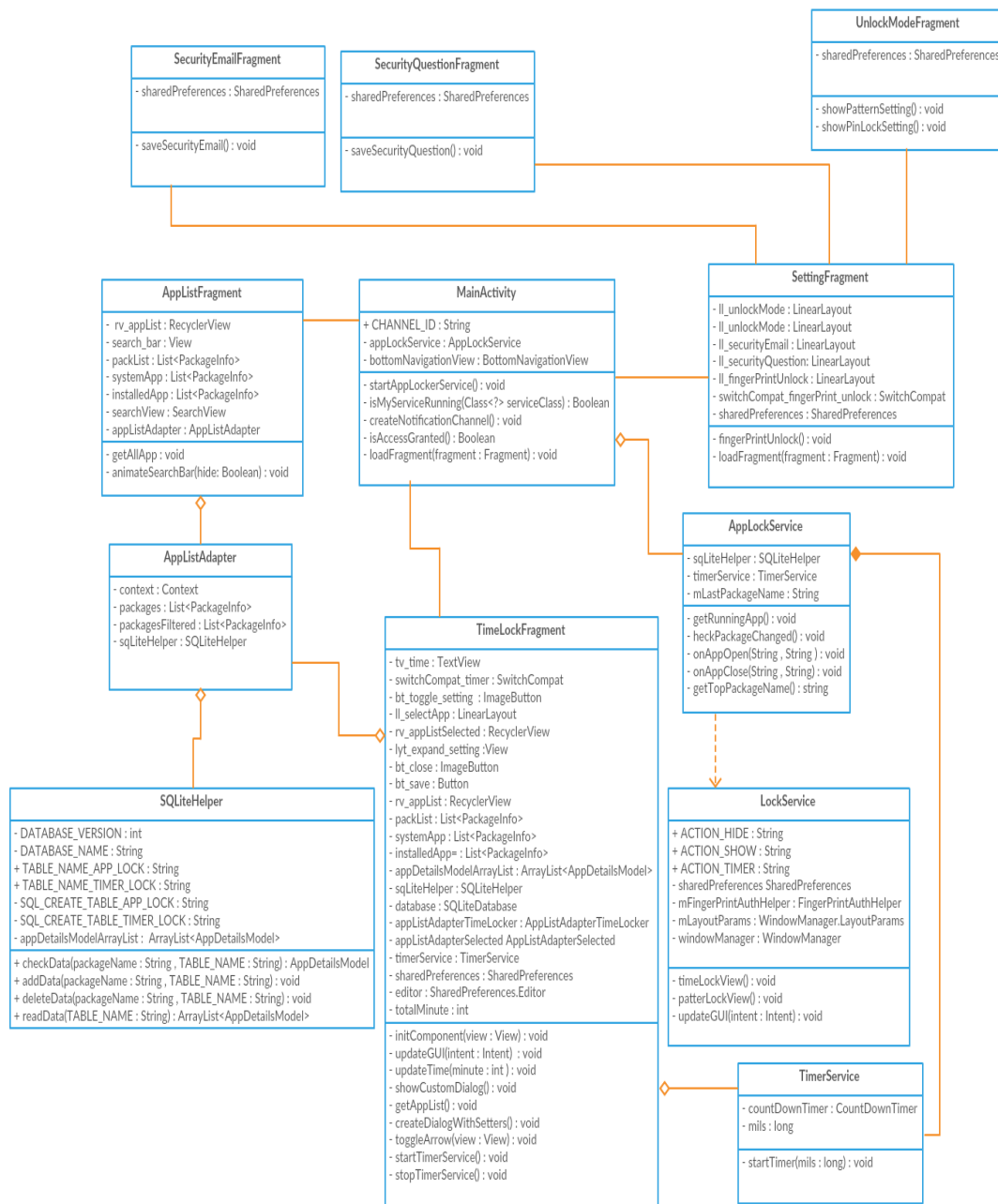


Figure 3.3: UML Class Diagram

A class diagram Unified Modeling Language (UML) is a static structure diagram that describes the structure of a system that show system classes. In the figure 3.3, we are trying to draw a level of UML class Diagram for our system. UML also show attributes, operations and the relationships with objects.

3.5 Design Requirements

The design requirements for our project will be creating deference between other projects. Because, at first we were simulated some projects and also found out some problem of these project. We try to make our project user friendly. We also try to provide all things to our project which are necessary for a user to using our application easily.

- In our android application, we design a normal front page so that any user can easily understand our application.
- In our App we have given 3 types of security Systems (Passcode Lock, Pattern Lock & Fingerprint Lock).
- We have gave an option to reset the security type if anyone forgets the passcode or pattern. But to avail this user must have to register a backup email in the settings option.

We are trying to build our as complex free. We think about user when we design our application. Because of this reason, our android application is so user friendly.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

The front-end is everything involved with what the user sees, including design and some languages. The front-end design is the user interface design what the user can see when he/she opens the application or websites. That means the most important things of a project is front-end designing. Usually most of the users expect a simple User Interface or Graphical User Interface from the developer, when he/she wants to open any application or website. If the front-end design is so complex, the application fails to attract of the user.

Therefore, we tried to design our application front-end as simple as possible. We also tried to easily accessible graphical user interface for the user. But it is really so tough matter when anyone design a graphical user interface for providing these types of facility for the user. But we tried our best for a simple design of our application. Hope, our application is so user friendly and the user can easily access to our application. We attach our android application's front-end design as follows:

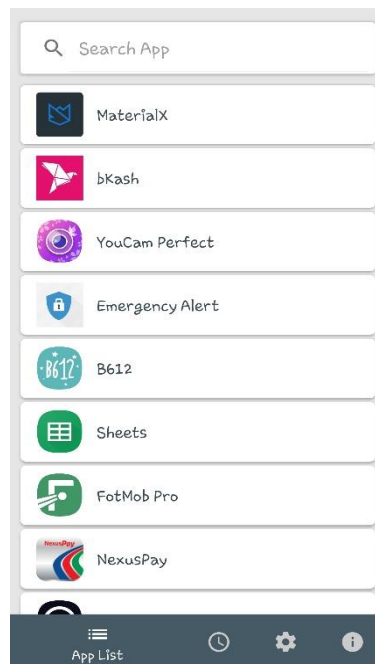


Figure 4.1: A Screenshot of Home Page UI

In figure 4.1, it shows the list of application that install on user mobile phone. The user can lock the specific application by clicking on them. User can also search the specific application by searching on the top bar and navigate menu from 'Bottom Navigation'. Before accessing this home page user must authenticate with pattern or pin. If user install the 'AppLocker' application for the first-time user need to register new pattern for authenticate. Pattern Lock is a security measure that protects devices from unauthorized user. Our pattern lock took at least 4 moves and the breakdown of the combinations is 389112(approximate).

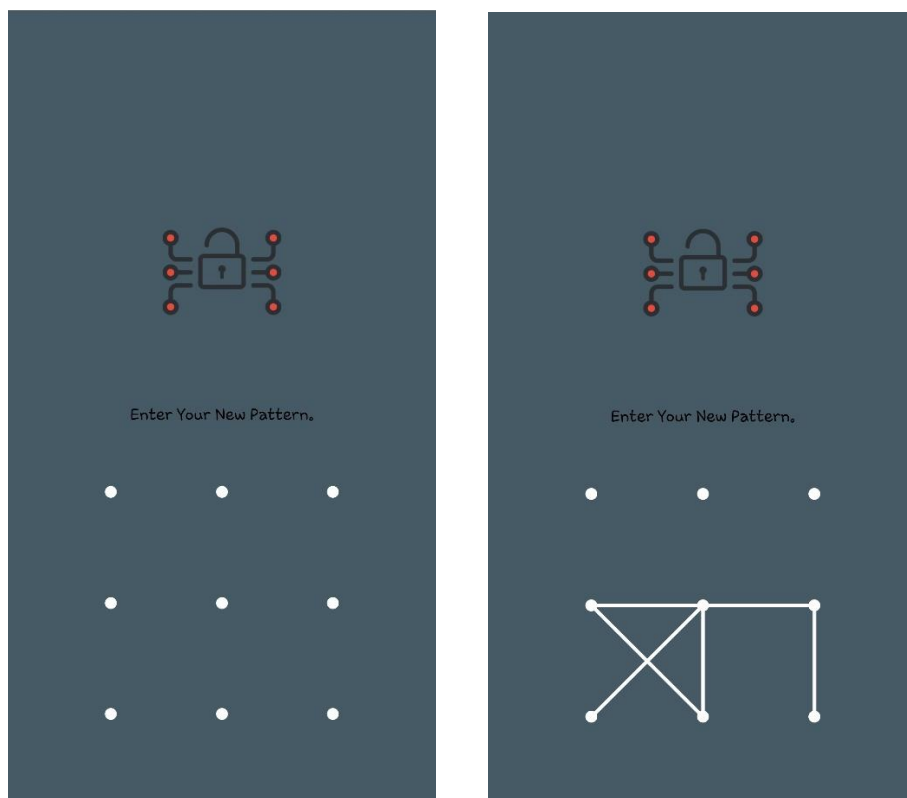


Figure 4.2: A Screenshot of Register with new Pattern.

In Figure 4.2 its shows a Pattern lock for register for the first time. For security the Pattern lock took at least 4 moves. After entering new pattern, it will ask for confirm the pattern. If the pattern Does not match with new pattern the pattern color will change into red (Figure 4.3). If the pattern match with new pattern than it will take user to home page that contain list of application of user phone (Figure 4.1).

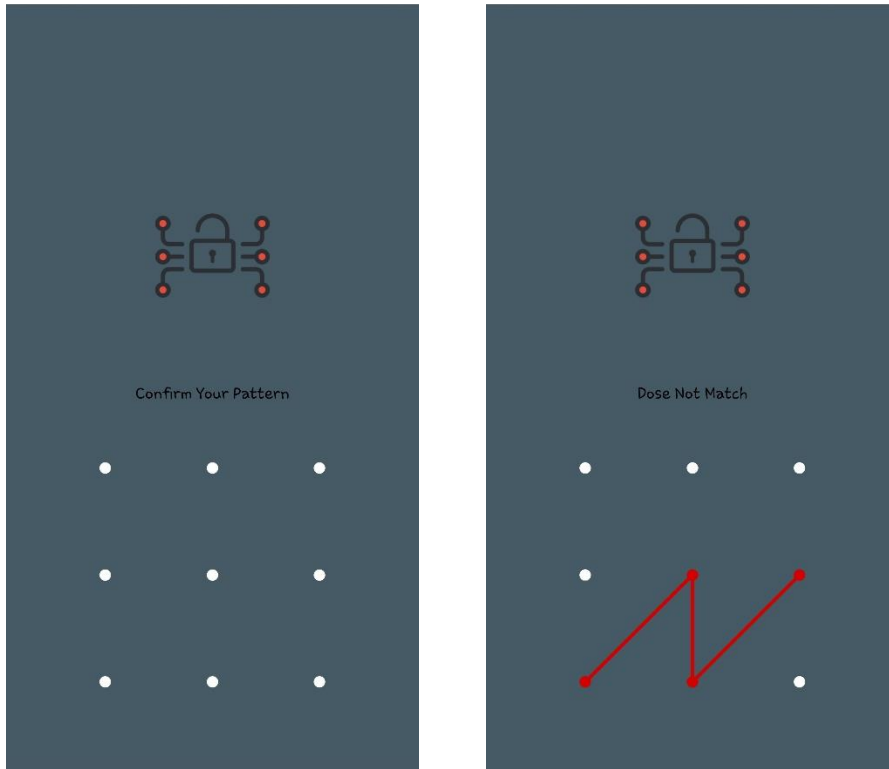


Figure 4.3: A Screenshot of Confirm Pattern.

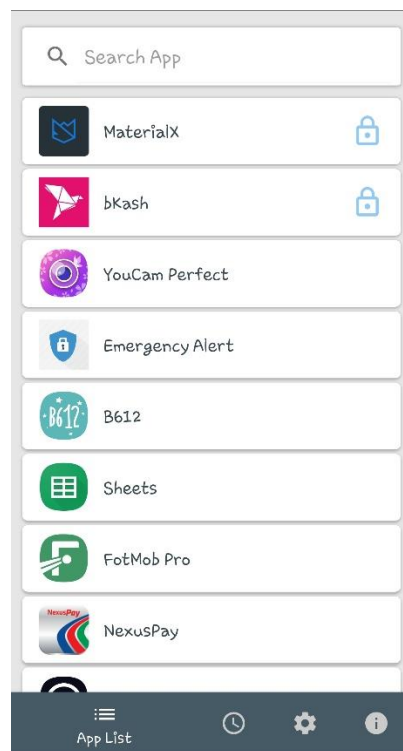


Figure 4.4: A Screenshot of Locking App.

After clicking on the listed app, a lock icon will appear on right side that means that specific application is locked (Figure 4.4). Again, clicking on the locked application, the lock icon will disappear from the right side that means that specific application is not locked anymore.

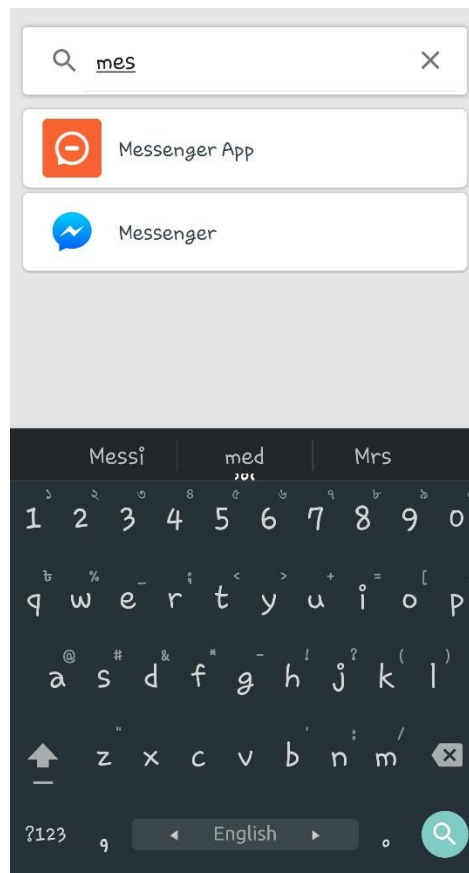


Figure 4.5: A Screenshot of Searching App.

User can also search specific application from searching bar on the top (Figure 4.5). It uses 'Filter Search' to find the match.

We also implement 'Time Lock' that lock the specific application for certain time. User just need to add timer and select app that user want to lock.

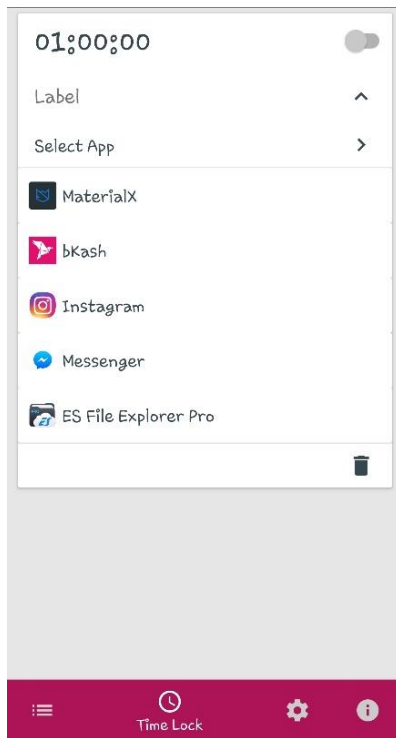


Figure 4.6: A Screenshot of Time Lock.

In Figure 4.6 it shows the time locker. User can set time by clicking on the 'Time' and select application by clicking 'Select App'.

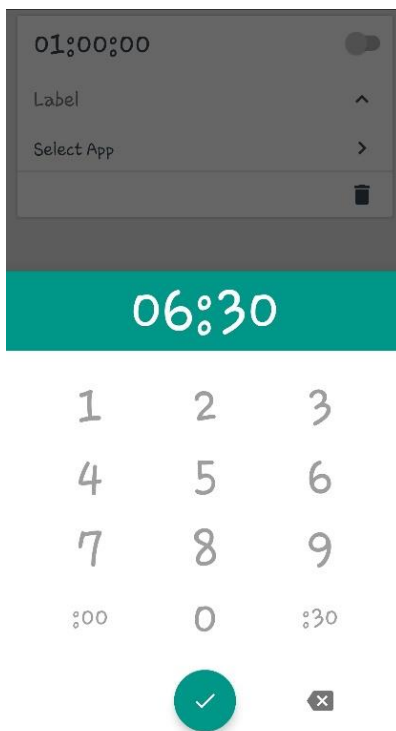


Figure 4.7: A Screenshot of Set Timer.

User can add Time by clicking on the time. A popup window will appear for adding hour and minute (Figure 4.7). Time limitation maximum 24 hours and minimum 1 minute.

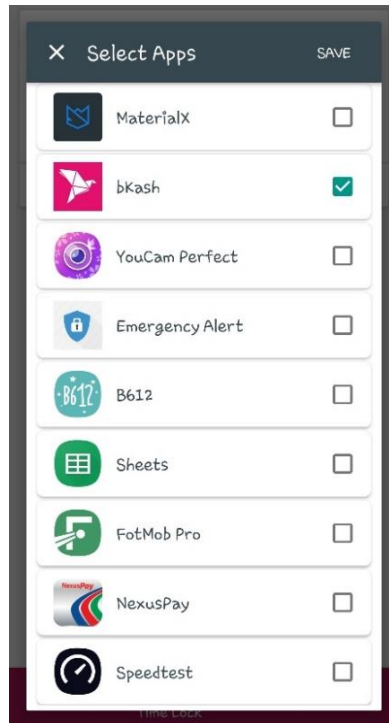


Figure 4.8: A Screenshot of Select App.

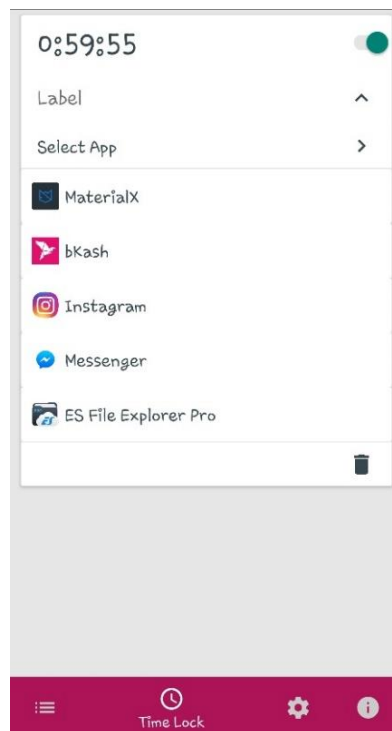


Figure 4.9: A Screenshot of Turing on the timer.

User can add multiple application from 'Select App' (Figure 4.8). This selected app for time locker. After turning on the button the countdown timer is start. If user start the timer user can't stop it (Figure 4.9).

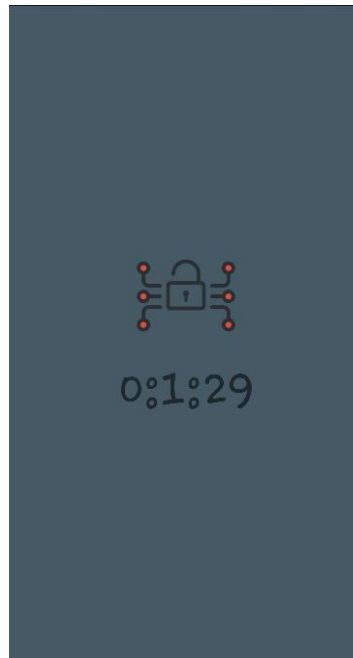


Figure 4.10: A Screenshot of Time Lock.

In Figure 4.10 when user add a time locker and the timer is running and want to open time locker application, this UI will appeared on the top and show the reminder time.

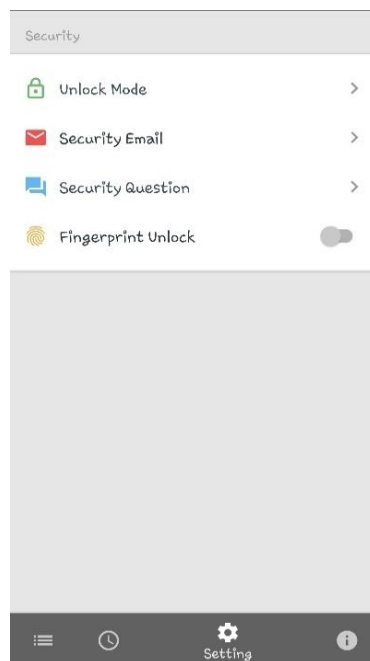


Figure 4.11: A Screenshot of Setting.

In Figure 4.11 we add some security setting that you can configure you own pattern, pin, recovery, fingerprint and many more.

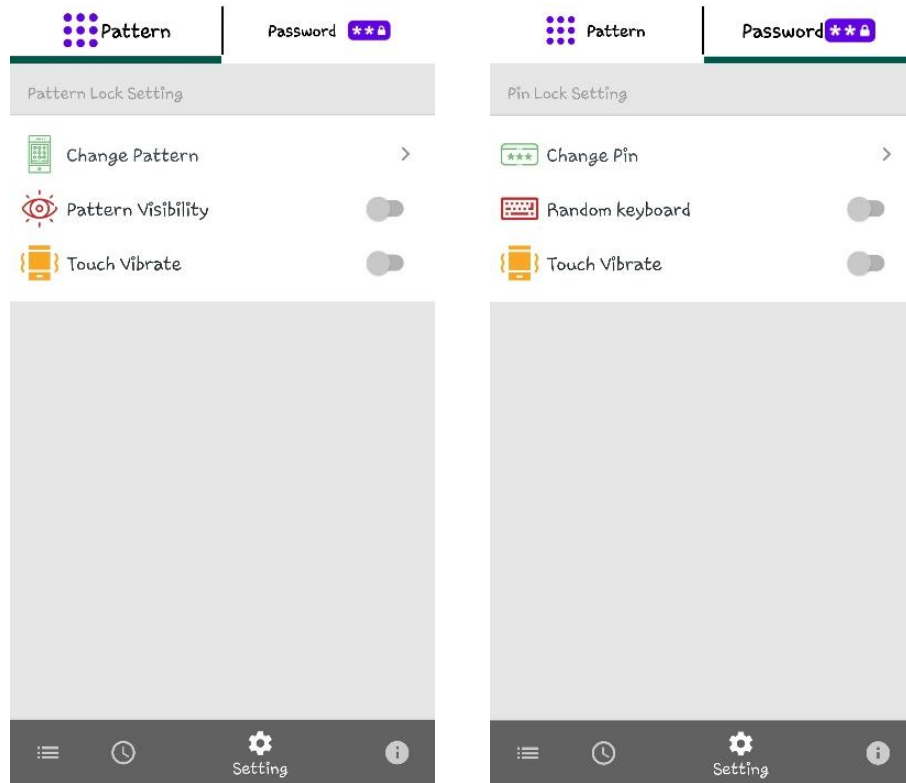


Figure 4.12: A Screenshot of Unlock Mode.

In Unlock Mode (Figure 4.12). User can see two type of unlock mode

- Pattern Lock
- Password Lock

In Pattern lock user can change pattern (Figure 5.0). User can enable or disable Pattern Visibility that means when user draw a pattern is visible or not and also control touch vibrate.

In Password lock user can change user pin. Pin Lock provide 4-digit pin. There are 10,000 possible combinations that the digits 0-9 can be arranged to form a 4-digit pin code. User can enable or disable random keyboard & touch vibrate.

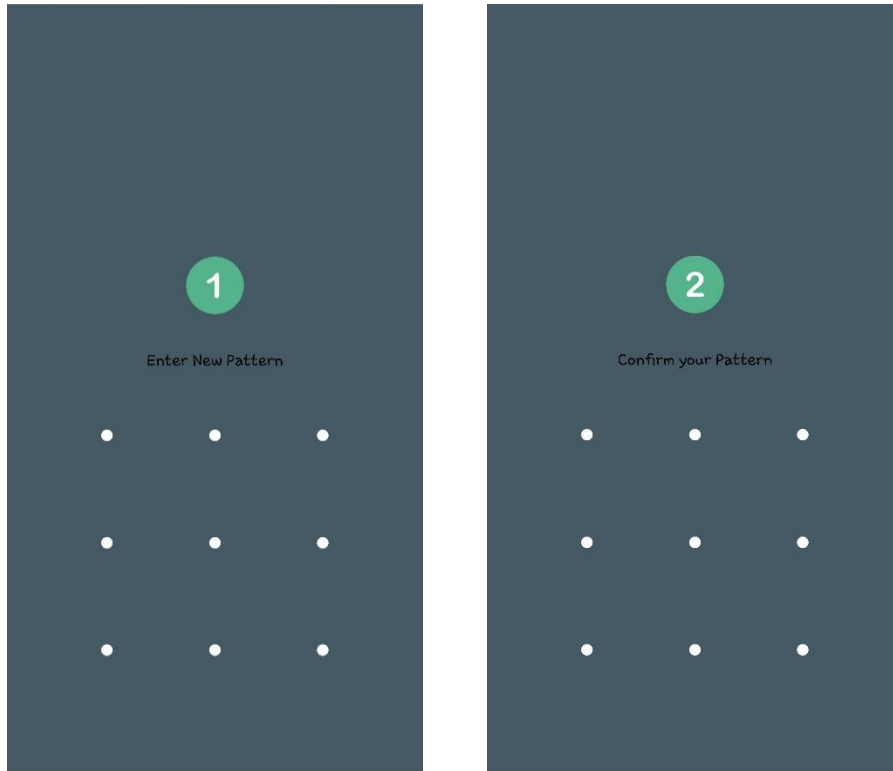


Figure 4.13: A Screenshot of Change Pattern.

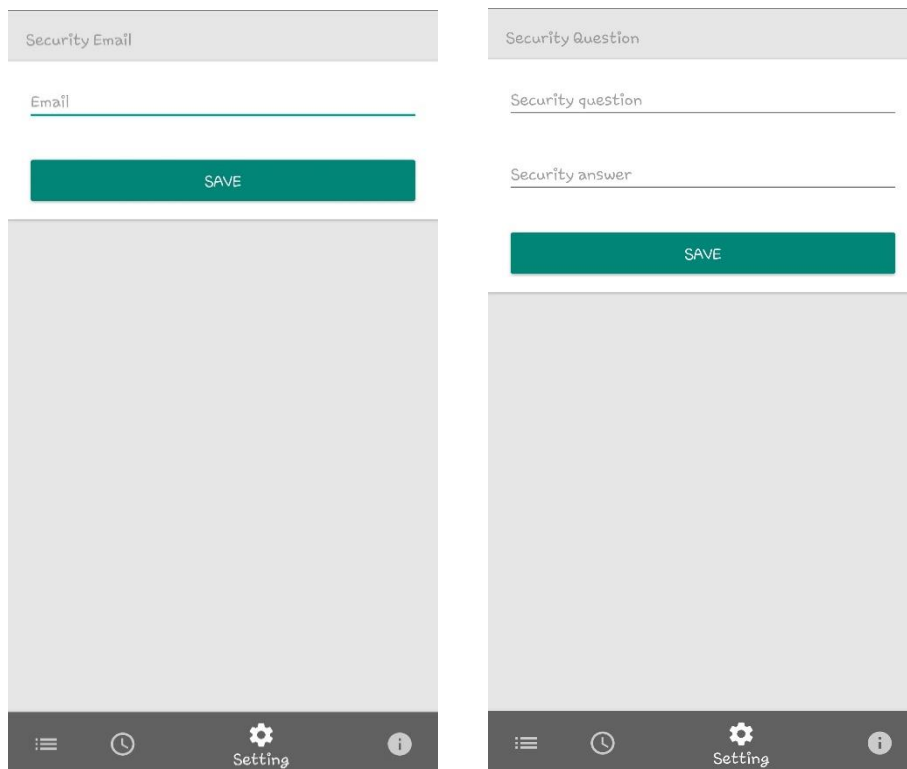


Figure 4.14: A Screenshot of Security Email and Question.

User can add Email or Question for security (Figure 4.14). If user forget the pattern or pin than can reset it from recovery email or answering the security question.

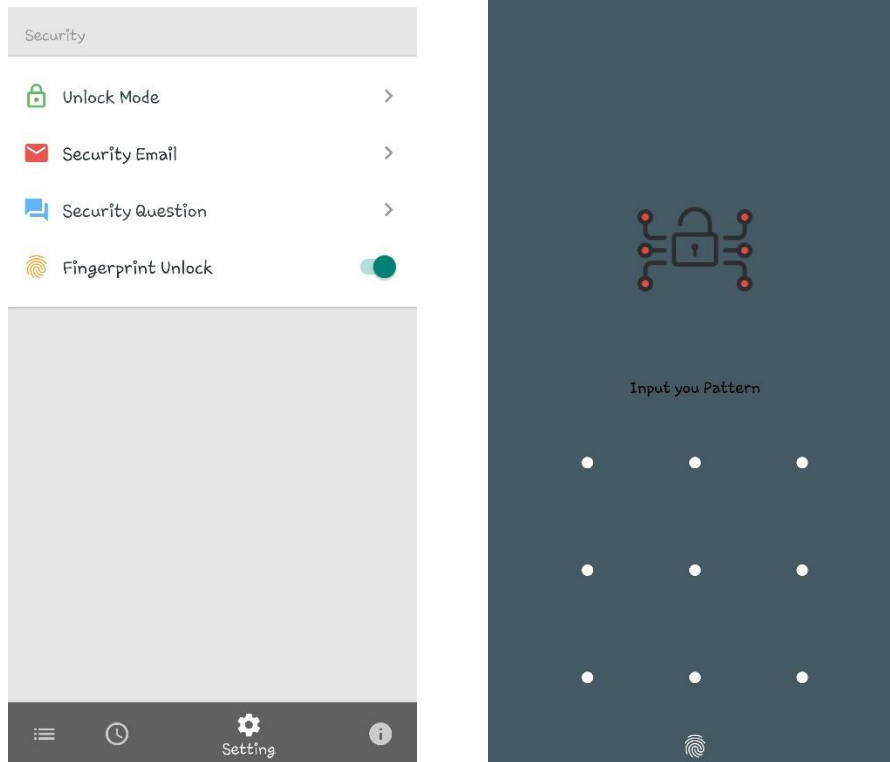


Figure 4.15: A Screenshot of Fingerprint lock mode.

User can enable or disable the 'Fingerprint Unlock'. Fingerprint lock is the most secure and faster to unlock application (Figure: 4.15).

4.2 Back-end Design

Back end development refers to the server side of an application and everything that communicates between the database and the application. App Locker is completely offline application but there still need database to store locked application package name. Application contain package name that is unique to identify an application. We use MY SQLite Database that store App Locker Data.

TABLE 4.1: A TABLE OF ERD.

LockedApp			TimerLockedApp		
PK	PackageName	Varchar(255)	PK	PackageName	Varchar(255)
	IsLocked	Boolean(10)		IsLocked	Boolean(10)

In our application there are one database that contain two table (Figure 4.16), the Locked App table use for the user locked specific application that store selected application 'Package Name' where it is primary key. The Package Name is the best way to identify an application easily and 'Is Locked' contain Boolean value. Where our application checked the locked application is locked or unlocked. Same things also happen on the 'Timer Locked App' table.

4.3 Interaction Design and UX

Interaction Design is an important component within the giant umbrella of User Experience (UX) design. Interaction design is specifically a discipline which examines the interaction between a system and its user via an interface and User experience (UX) design is the process of creating products that provide meaningful and personally relevant experiences. It might likewise consolidate configuration concentrated on how data ought to be introduced inside such a framework to empower the client to best comprehend that data however this is regularly viewed as the different order of "data structure" as well.

In our application, some features can interact with the user and application. We added an email option by which any user can send mail to us. If any user faces any problems, lacks or drawback, they can send mail to us for solving these kinds of problems. For

User Experience (UX) design we have tried our best for designing a simple and easily mobile application. We have tried to give some fantastic and well experience by using our application. We keep our application too simple and also easily for better experience, feelings and performance for the user of using our application. Hope our systems is secured and helpful for the user.

4.4 Implementation Requirements

To implement our android application project, we used different types of tools, attributes and components which are helped us to develop our android application project successfully. In Implementation requirements area, we discuss all those tools, attributes and components that we have used to develop our android application project and making attractive to the user.

4.4.1 Android Studio

Android Studio is the official integrated development environment (IDE) developed by Google's for Android operating system, built on JetBrains IntelliJ IDEA software and designed specifically for Android application development. There are a lot of features of android studio like gradle based build support, Android-specific refactoring and quick fixes, Android monitor tools to catch performance, usability, version compatibility and other problems, App-signing capabilities, Template-based wizards to create common Android designs and components, Android Virtual Device (Emulator) to run and debug apps in the Android studio. The best feature of android is supporting a number of programming languages. All this reason we utilize the Android Studio as our application integrated development environment (IDE). We use Android Studio 3.2.1 Stable Version [5], [6].

4.4.1.1 Basic Android Overview

Android is a comprehensive platform, which means it is a complete software stack for a mobile device. It provides all the tools frameworks for developing mobile application simply, quickly and easily. We design our application with Extensible Markup Language (XML), connection with database server with Java Language in Android Studio. Android is also open source platform where developer can make any types of user interface which the developer needs to design his/her application. The developer

can write any programming language for his/her application in android studio. So, developer can easily develop different types of mobile application by use it for user interaction.

4.4.2 The Emulator

An emulator is an Android Virtual Device (AVD) that represents a specific android device for emulating any types of android application or project. The developer can use an Android emulator as a target platform to run and test his/her Android applications on his/her Personal Computer (PC). By Using Android emulators is optional. We run our application in both our personal device and Android emulator too. The emulator runs the same code base as actual device. The emulator is so pretty for emulating android projects.

4.4.3 Android SDK

Android development starts with Android SDK (Software Development Kit). Android SDK is a set of collection of development tools used to develop and build of any kind of android application for android platform. That means Android SDK is essential tools for both developing and building any android application. We use Android SDK for both developing our android application and also testing our android application when need to run for seeing output.

4.4.4 DB Browser for SQLite

DB Browser for SQLite is a high caliber, visual, open source instrument to make, structure, and alter database records perfect with SQLite. It is for clients and engineers needing to make databases, seek, and alter information. It utilizes a recognizable spreadsheet-like interface, and you don't have to learn muddled SQL directions.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Application

The implementation phase is where developer build the app based on the criteria. How the Application will look & how it will work is developed in this phase. After completing every step developer runs a simulation of the App to see if it works or not. Developer implement many methods to fulfill the requirements. The three most important classes on the Android platform are Context, Activity and Intent. While there are other, more advanced, components developers can implement, these three components form the building blocks for each and every Android application [9].

5.2 Application Design

We have tried to make our Application user friendly. That's why our Application design is very simple. User will be able to use this app without any problem. Our Application's design is based on a few options. These are given below:

- Easy to use Home Screen.
- In the Settings option user will have the independence to modify the settings of the app.
- Option for 3 types of Lock System.
 - Passcode Lock
 - Pattern Lock
 - Fingerprint Lock
- User can set a backup Email Address. For extra security purpose. If user forgets his Password, one Mail will be sent to this email account containing a link for resetting the password.
- There will be some security questions also.
- Another Option is to set a timer and lock apps. After time ends, user will be able to use the locked apps.

5.3 Testing the Application

TABLE 5.1: TEST CASE FOR PROJECT ON APP LOCKER.

Test Case	Test Input	Expected Output	Actual Output	Result	Tested On
1.Install Application	Tested on various Android version: <ul style="list-style-type: none"> • Lollipop (5.5-5.0.2) • Marshmallow(6.0) • Nougat (7.0-7.1) • Oreo (8.0-8.1) • Pie (9.0) 	Successfully Install all those versions.	Install Successful	Passed	10/11/2018
2. Setting up Pattern & Password	Gave Pattern and Password.	Confirm Pattern & Password.	Starts after confirming our Pattern & Password.	Passed	10/11/2018
3. Selecting App for Lock	Selected the Apps which we wanted to Lock.	To Lock The Apps.	App Locked Successfully.	Passed	10/11/2018
4. Try to Open Locked Apps	Clicked on the Apps we locked on our App.	To see if the App opens or not.	The Apps didn't Open.	Passed	10/11/2018
5. Set Timer	Set a timer on the selected Apps.	Time Showed.	Didn't open before time ends.	Passed	10/11/2018

5.4 Test Results and Reports

We need to test the app to check whether the App is running correctly or not. For the testing we followed a formal way. We tested every functions of our Apps in different smartphones, in different days. All of the test results are positive. In the 'Table: 5.1' we have shown the test procedures with the results.

We find our expected results for our application. The test result was quite successful. The user satisfies to using our application. Our expectation will be that user can easily use and understand our application as a better user interface.

CHAPTER 6

CONCLUSION AND FURTHER SCOPE

6.1 Discussion and Conclusion

Our android based Smartphone application has been successfully executed. We have finally completed our application work. For executing our application, we have tested the application with various types of smartphones, our application worked successfully in every aspects.

Our application design is very user friendly. The user interface is very simple. User can use our application without facing any problem. We tried our best to complete all requirements. We hope that people will use our application and will get the best result.

6.2 Limitations of Our Application

We know every application have some drawbacks, our application has also some limitations. We will overcome those limitations in future. Some of the main limitations of our application are given below:

- We can implement this App in our own device, we can't lock Apps from any other device.
- While switching application you have to type password every time, because we don't have feature to make applications unlocked until you lock your device.
- You will get undesirable lock screen while using the applications that you have locked [4].

6.3 Scope for Future Developments

We are developing our application in present time. If we find any scope for developing in future, we want to develop and change something of our application. Our future developments scopes are given below:

- In future, we will try to make this application for all platforms in smart phones. (Android & IOS)
- We will try to add some other services to our App.

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