

A MOBILE APPLICATION FOR GUEST REGISTER SYSTEM

BY

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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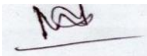
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APPROVAL

This Project/internship titled “**A Mobile Application for Guest Register System**”, submitted by Biswajit Ghosh, ID No: 152-15-5839 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 Thursday, December 4, 2021.

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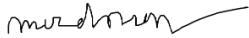
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We hereby declare that, this project has been done by us under the supervision of **Md. Riazur Ragman, Sr. Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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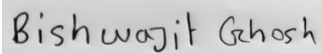
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Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

Humankind is growing so are our culture, community, residential area, apartment, buildings, etc. One of the most important basic needs among the five is the living place. As we are cultured, no longer live in the forest we do need a home to live in. Like all grown countries, especially over the populated country in the world, our county does have lots of buildings in the city as well as apartments having lots of buildings. All of them have one thing in common which is the entrance of the building and apartment where the security guards are located. The typical system of registering guests in our country is by using a register book. And with my project, I'm going to digitalize this system. From now the security guards can use an android application to store all necessary information about the guest and afterward data can be easily found and filtered as well.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This is an Android-based project's report which will contain all the methods, background study, procedure, planning, and all the structures we followed to develop my Android Application "OtithiKhata". I tried and gave my best to reach the ultimate success.

All of us either live in our own flat/ home which is under a building or even under an apartment. All Apartments/ Buildings have an entrance gate which has a register section, where all the information of the guest/ external people gets stored. Through this project, I am going to work with that specific sector. I'm going to develop an android application by which the gateman can store all necessary information of the guest/ external people on the cloud. No more typical notebooks and no more worries about data stolen. Data filtering will also be easier through my application. On the other hand, security is also the main sector of this project. If all data can be safely stored then there are fewer risks in security. We can always look after them based on the data.

1.2 Motivation

People are getting modern and the generation is getting digitalized. The main motive behind my project is to digitalize an old fashion which is the guest register book of every apartment or building. Till now most of the gatemen of apartments are using register books and pens for data entry which is not convenient at all. That's the place I got motivated to make an android application to digitalize this process.

1.3 Objective

My objective is to design a user friendly Interface and develop an Android app that will that will be connected with a real-time database. Overall, my objective is to digitalized the guest entry system.

1.4 Expected Outcome

A user-friendly Android application that can:

- i. Can Store Guest Data
- ii. Can show List
- iii. Can show Individual Entry Information
- iv. Can show building wise data
- v. Can show flat wise data.

1.5 Project Management and Finance

I myself has managed the whole project and tried all our best to get a beneficial output and hopefully we did.

I used Android Studio to develop our app and Firebase Realtime database, storage to store our String data. Both of these platforms are free. Untill now no need any extra financial support. But in the future I might need some.

1.6 Report Layout

This project report has seven chapters. The name of the first chapter is Introduction. Where I wrote about the Introduction, Objective, Motivation, Expected outcomes and project management & finance.

In our 2nd chapter named 'Background Study' I will be writing about Related work, Comparative Analysis, and Challenges of the project.

In the 3rd chapter 'Requirement Specification' we will be writing about Requirement Collection and Analysis, Software requirements, Hardware requirements, and Use case model.

In the next chapter that means the 4th I will be writing about our application full front-end and back-end design including the database structure.

After that, on the 5th chapter I will be writing about 'Implementation and Testing'. Where there will be discussion about Implementation technology, Implementation and testing.

Then the 6th chapter named 'Impact of Society' where I will be discussing our Project's Impact on Society and some Ethical Aspects.

My last chapter (7th) will be about 'Discussion and Conclusion' where I will be discussing our Project's Future Scopes, Further Development, Some more Challenges along with their solutions.

CHAPTER 2

BACKGROUND STUDY

2.1 Related Works

'OtithiKhata' application mainly stores and show guest data of any colony. We found some similar Web Applications to our Android application:

Sign In Guest Book is an Android application that stores guest data. This app needs to login or register first to use. The user Interface of the app is not so well. However, it matches our project theme. [1]

Visitor Management is another android application which matches my project theme. On this application people can store visitors information as well as show and edit them. [2]

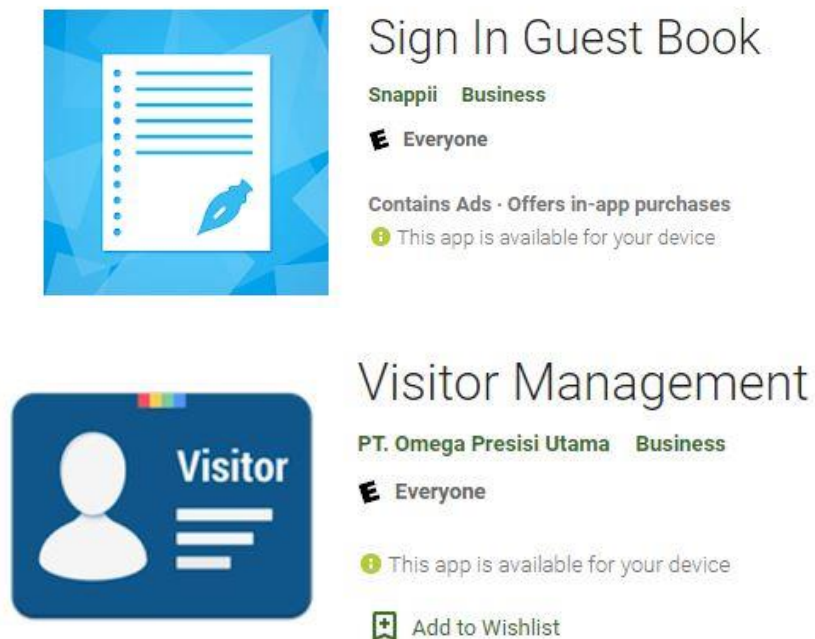


Figure 2.1: Related Web Applications

2.2 Comparative Analysis

Here my main motive is to develop an application that will store the information of guests who will come to the apartment/ building. In this case, the main theme of that application, shown in figure 2.1 is the same as mine.

But there are some differences as well. The main difference here is, my application is made by targeting society/ apartments which do have more than one buildings and can filter data by building and flat.

Moreover, I will try to keep our application as simple and light as possible so that people can use it easily and properly. Our application will have four main options. Entry, listing, Individual View, and Building Flat wise view.

2.3 Challenges

The most challenging part of this project is to manage the database. As I will be using the firebase real-time database and there is no query or tables in this database I have to design the database tree carefully so that all data can be distributed according to the plan.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Requirement Collection and Analysis

There are three types of requirements we need to list for our project which is given below:

3.2 Software Requirements:

- ❖ **Android Studio as IDE:** Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. [3] This is one of the fastest developing tools for building market-leading apps and accelerating performance. It has an intelligent code editor, real-time profile, emulator, and flexible build system.
- ❖ **Android Virtual Device:** Android Virtual Device (AVD) is the emulator that runs in Android Studio. We need to install Android Virtual Device into our Android Studio in order to run our application. Besides we can also use our smartphone by connecting it with our PC/ Laptop to run our app. To do that we will need to turn on Developer mode and USB debugging on and connect our Android Phone with pc using a USB cable.
- ❖ **Firestore Database:** I need to have a Database where our necessary data like text, images will be stored. For this we will be using Firestore Database. Firestore is a platform developed by Google for creating mobile and web applications. It is an original independent company founded in 2011. [4] And the Realtime Database of Firestore is a cloud-hosted NoSQL database that lets you store and sync data between your users in real-time.
- ❖ **Adobe Photoshop Illustrator:** I will be using Adobe Illustrator and Photoshop to design our Logos, Icons, Banners etc. Before starting implementation of our design through xml code this is a great way to see how it will look like in Illustrator by designing the section page one by one. Therefore, I will also do that before implementation.

3.3 Hardware Requirements:

Desktop/ Laptop that has

- ❖ 4 GB RAM at least, 8 GB is a good fit.
- ❖ 2 GB of available disk space at least, 4 GB Recommended.
- ❖ Microsoft Windows 7/8/10 (32- or 64-bit). The Android Emulator supports 64-bit Windows only.

Android Smartphone that has:

- ❖ 2 GB RAM at least
- ❖ 100 MB Hard Disk at least
- ❖ 1.0 GHz Processor at least

3.4 Use Case model

A use case is a methodology to identify and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. The method creates a document that describes all the steps taken by a user to complete an activity. [5]

The following figure 3.1 shows my application OtithiKhata's use case design. There are mainly two sectors for use case modeling which are the Admin and the User. The admin who are mainly the gateman can add data from the register option. On the other hand, users who are on the committee can View, Search and Filter data which includes visitors information along with flat data.

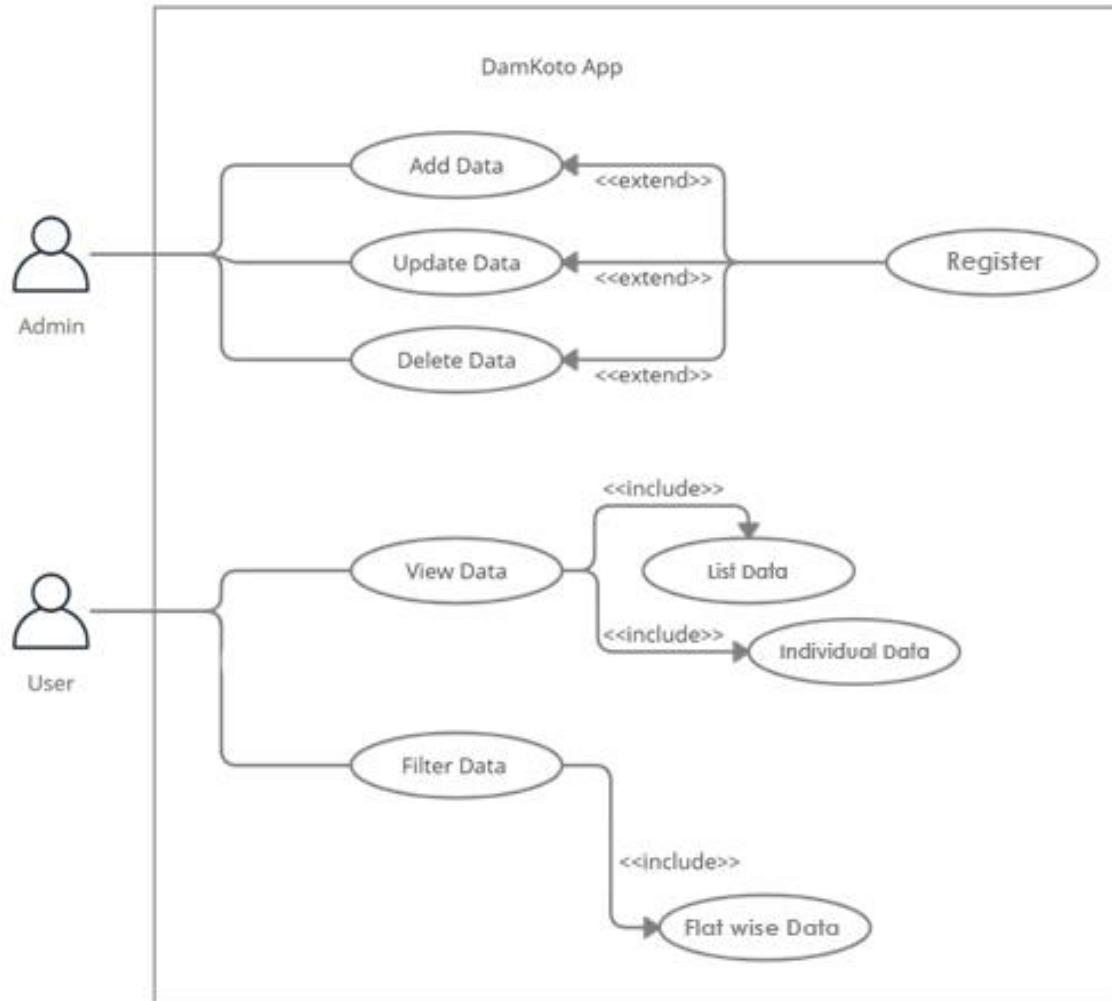


Figure 3.1: Use Case Mode

TABLE 3.1: USE CASE FOR ADD, UPDATE, DELETE DATA

Use Case Name	Add, Update, Delete Data
Use Case Details	The actor can add text data of a particular gadget from the admin panel section.
Pre-condition	Run Application and go to Register section
Actor	Admin

TABLE 3.2: USE CASE FOR VIEW, FILTER DATA

Use Case Name	View List/ Individual, Filter data
Use Case Details	Can view data as list as well as individual and filter flat wise data in another section.
Pre-condition	Launch the app
Actor	User

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

Front-end is design everything that the user sees on a mobile app including the design of the app. In another way, it can be said that the front end of the mobile app is what the user experiences. From there the term came up which is User experience (UX). Now the front-end is where the user experiences and interacts with these things.

4.2 User Interface Design

Now for experiencing things as a user (UX) there should be a User Interface (UI) which we need to design in Illustrator first and then need to implement over our Android Studio. So, the User Interface of our app 'Otithi Khata' is shown below:

4.3 Launching Icon

This Figure 4.1 shows our launching icon.

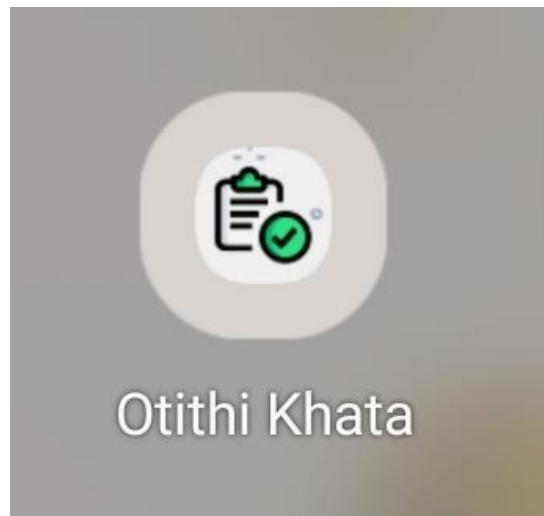


Figure 4.1: Launching icon

4.4 Splash Screen

Whenever someone opens our app and splash screen for about 1.5s will be displayed which looks like this

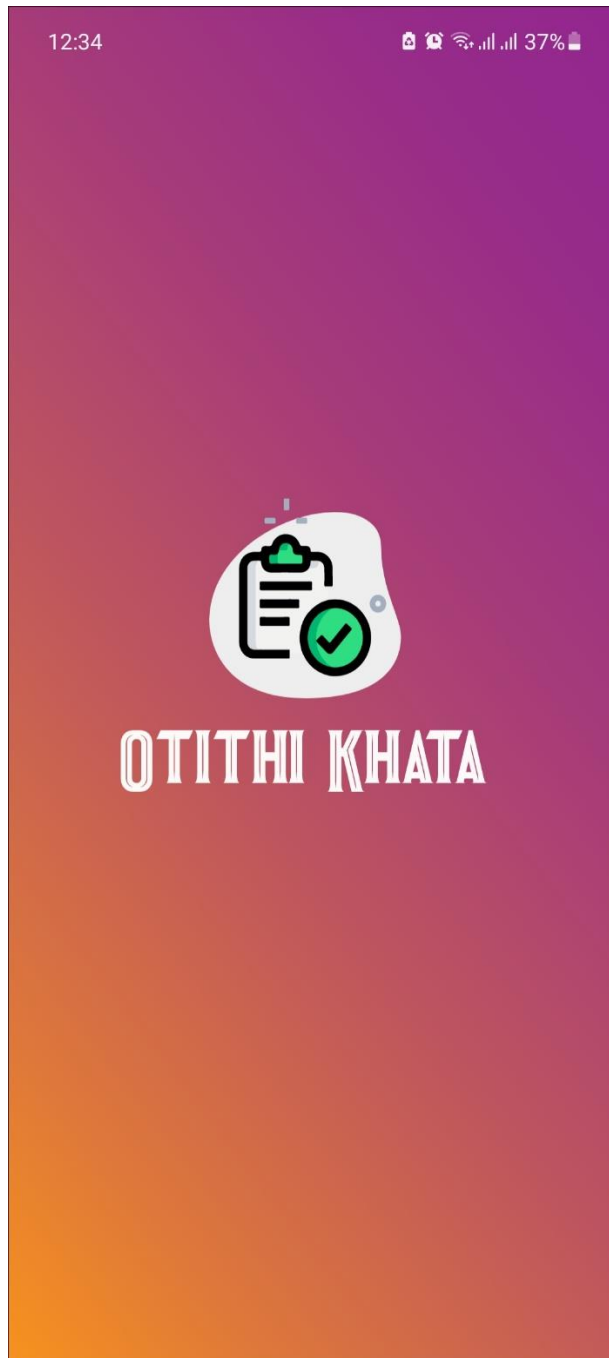
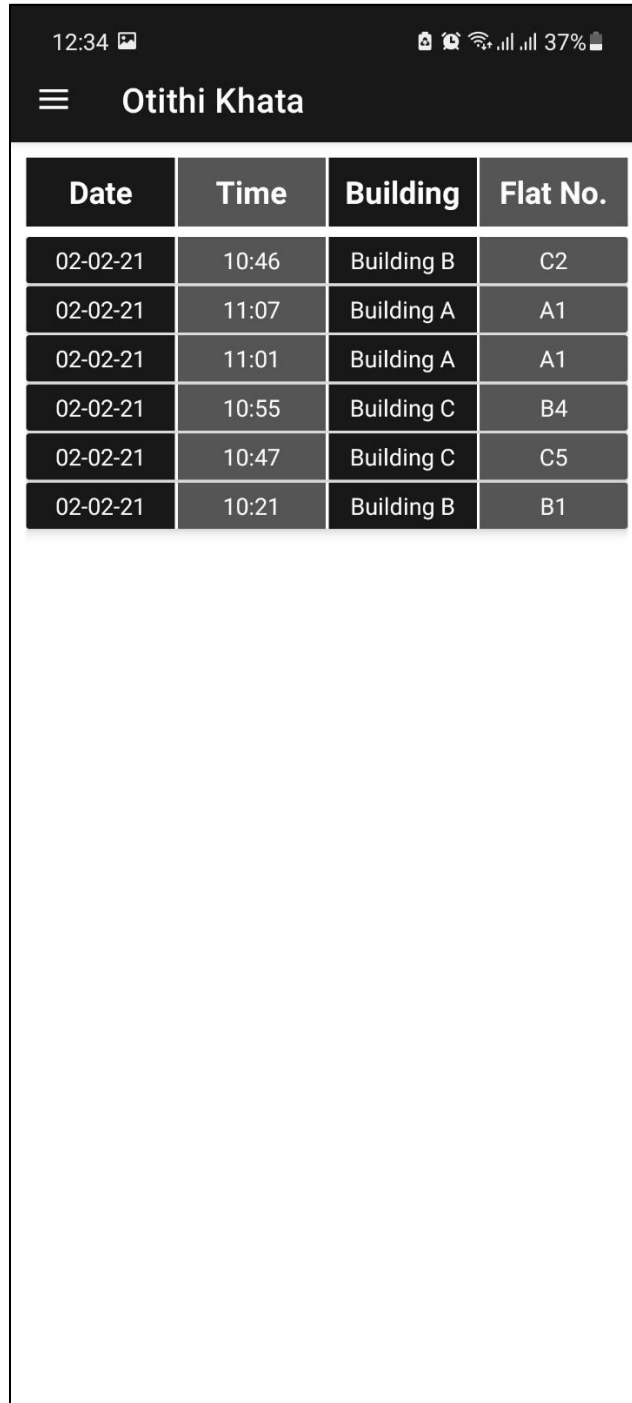


Figure 4.2: Splash screen

4.5 Home Page

After the Splash Screen, our very first page which is the home page comes up. Here in figure 4.3 shows our home page.



The screenshot shows a mobile application interface for 'Otithi Khata'. At the top, there is a status bar with the time 12:34 and a battery level of 37%. Below the status bar is a dark header with a hamburger menu icon and the text 'Otithi Khata'. The main content area features a table with four columns: Date, Time, Building, and Flat No. The table contains six rows of data, all dated 02-02-21.

Date	Time	Building	Flat No.
02-02-21	10:46	Building B	C2
02-02-21	11:07	Building A	A1
02-02-21	11:01	Building A	A1
02-02-21	10:55	Building C	B4
02-02-21	10:47	Building C	C5
02-02-21	10:21	Building B	B1

Figure 4.3: Home page

4.6 Navigation Drawer

On an Android app there are Navigation drawers by which we can switch to different sections of the app. So, this figure 4.4 shows our app's navigation drawer.

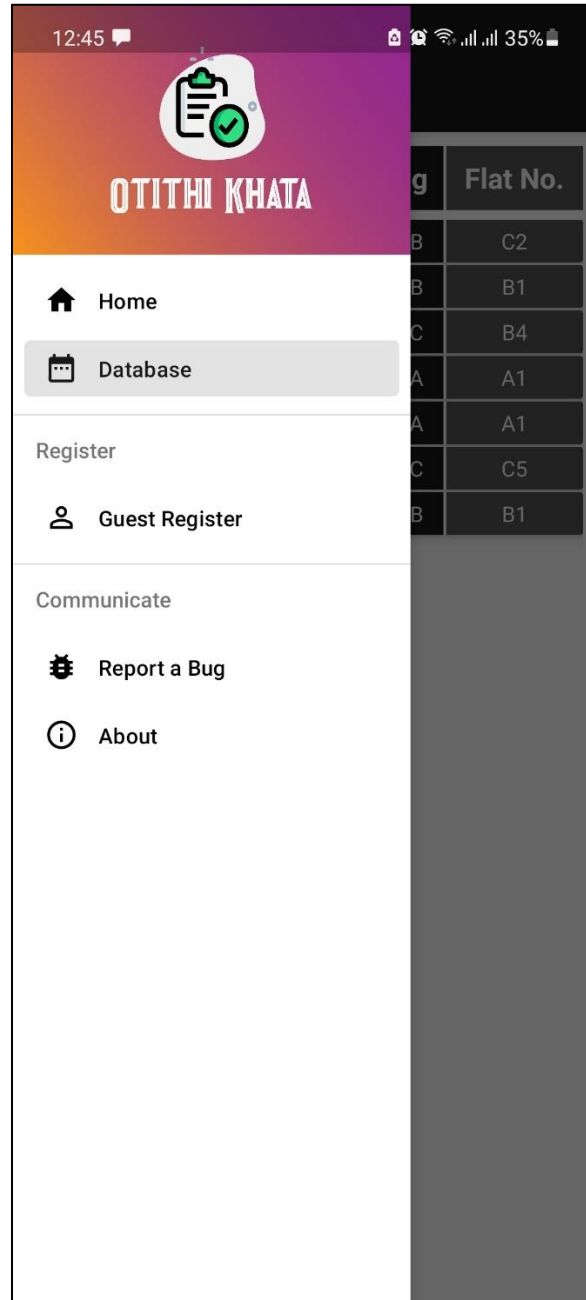


Figure 4.4: Navigation Drawer

4.7 Individual Guest Information

Each data you see on the first page (Home Page) is clickable. And whenever someone click on any row all data about that specific row will be showed like figure 4.5

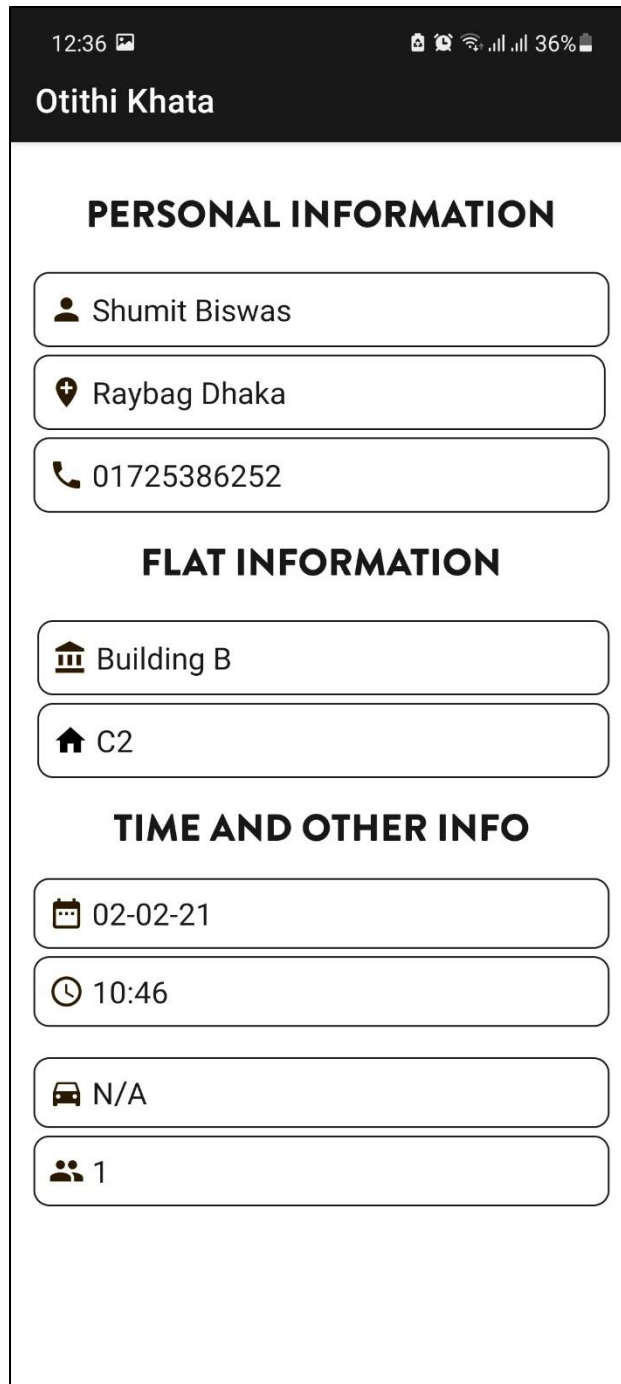


Figure 4.5: Individual Guest Information

4.8 Building and Flat wise Data inside the Full Database section

On the app there is a section named Full Database on which data can be filtered with Building and flat number which is shown on figure 4.6

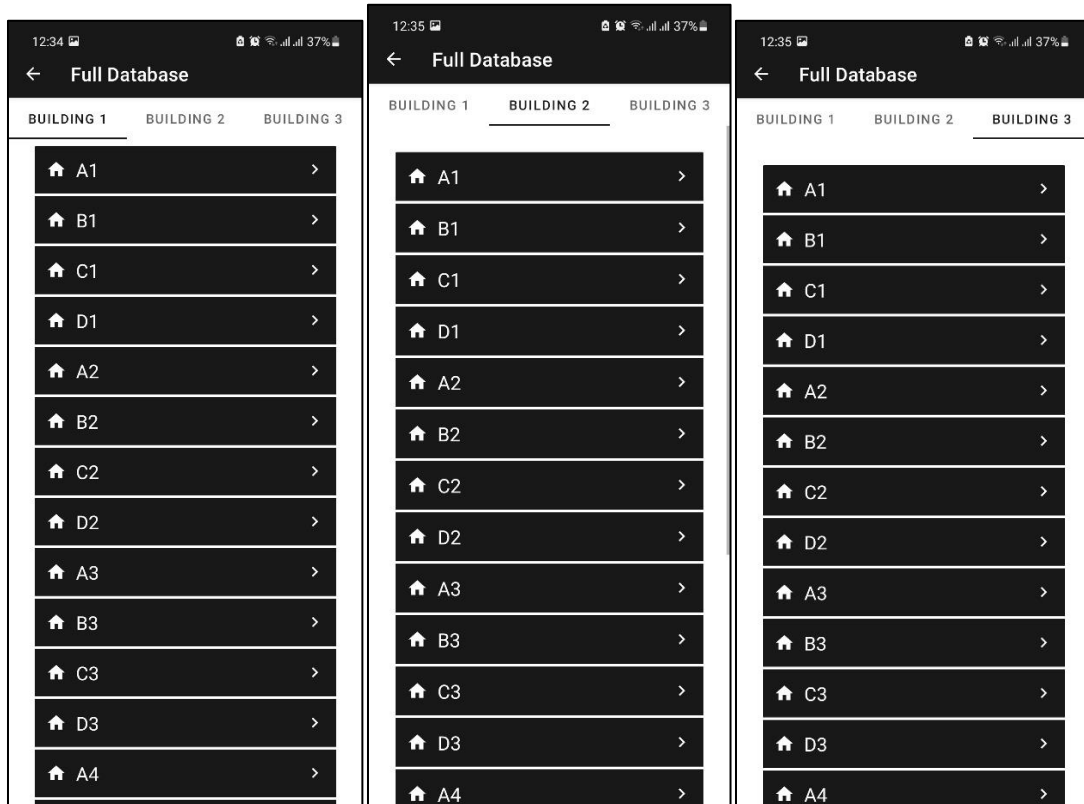


Figure 4.6: Flat numbers inside all building (Full Database)

4.9 Guest Register

This is one of the most Important section of the app Which is the Guest Register. From this section data will be stored by the Gateman. Section shown in figure 4.7

12:35 [notification icon] [lock icon] [wifi icon] [signal icon] 36% [battery icon]

← Guest Register

Guest Information

[person icon] Name

[phone icon] Contact No.

[location pin icon] Address

[calendar icon] Date

[clock icon] Time

[building icon] Building ▾

[house icon] Flat ▾

[people icon] Number of Guests

[car icon] Car Number

INSERT

UPDATE

CLEAR

Figure 4.7: Guest Register

4.10 Bug Report

Figure 4.8 shows the bug reporting section. From this section people who will be using the app can report any bug they may found.

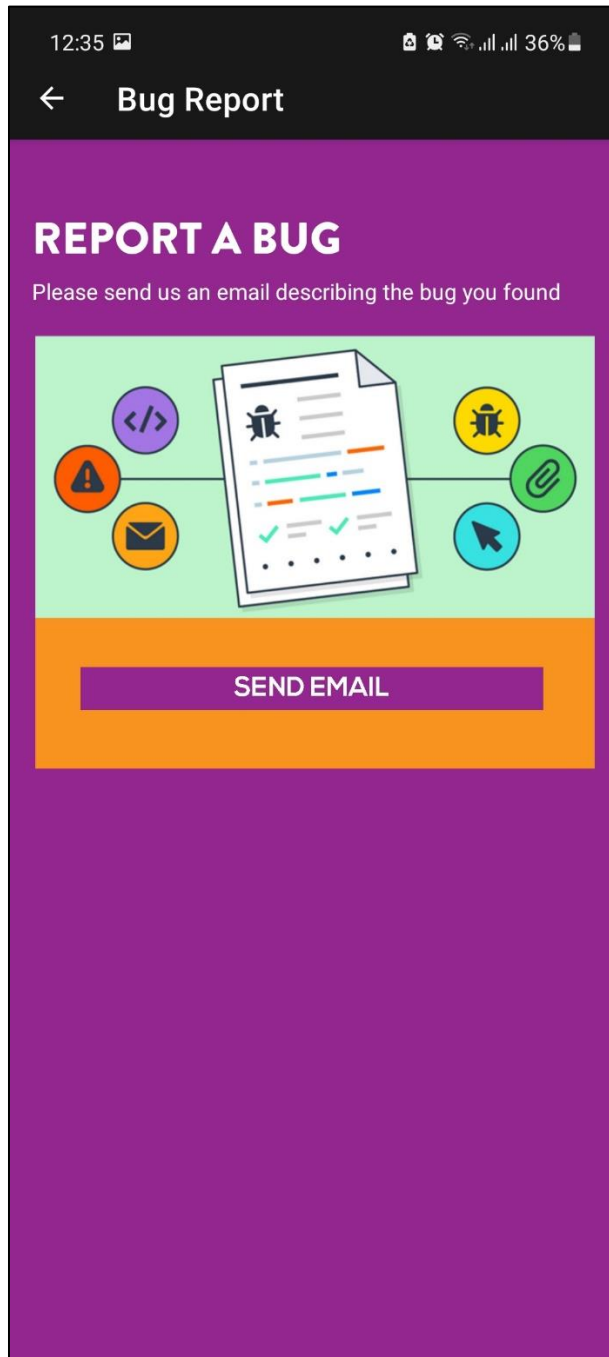


Figure 4.8: Bug Report

4.11 About

Lastly figure 4.9 shows out About section on which basic info about the app along with the team information is given.

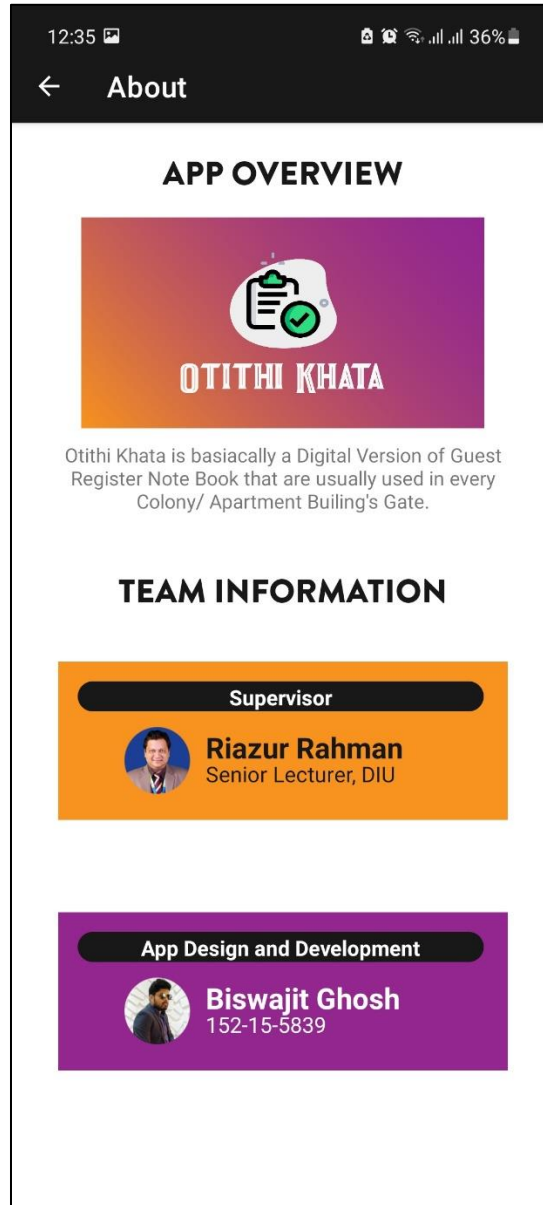


Figure 4.9: About Page

4.12 Back-end Design

In an android app, the back-end is the important part that is responsible for data storage, security, and business logic. An app backend is much like a server for mobile apps, as it stores and sorts the important information that the end user does not see. [6]

Our App data is stored in the firebase database. The following figures shows my application firebase real-time database structure.

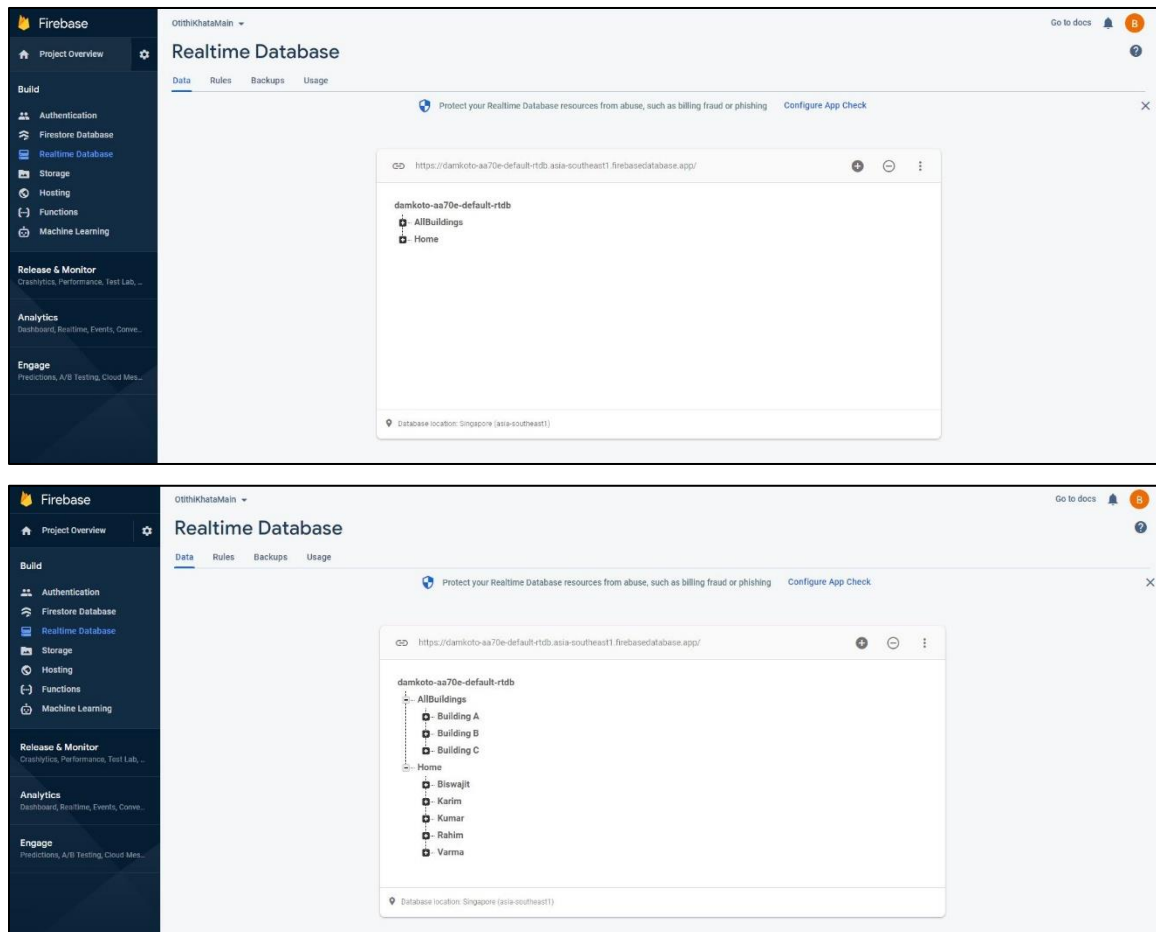


Figure 4.10: Firebase Real-time Database

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation Technology

On our application these have been used:

- Programming Language: Java
- Android Studio Version: 3.5
- Markup Language for design: XML

5.2 App Implementation

I followed these Steps to Develop the app

- First of all, I studied related apps. Gathers Idea
- Then, I designed the Logo, and all other necessary Designs in Adobe Illustrator.
- After that I created a Project on Android Studio. And Designed the Navigation Drawer first.
- After that, I started to implement the design via XML coding.
- Then, I designed the Database on Firebase. How it would be, what will be the variable and their type.
- Then I implemented all Pages, Fragments, Model classes, Adapters with JAVA.
- After finishing the app development I started testing it with test data. I found bugs and I fixed them.

5.3 App testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the software product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. [7] Like so I started to test my application once it is fully done and ready to use.

5.4 Bug Fixing

While testing the app I found lots of bugs. Like ‘Your app stopped working’, ‘Your app no responding’, Wrong data alignments, null pointer exception, etc. I fixed all of these one by one. Besides I also fixed some of the designs and colors as well.

CHAPTER 6

SOCIAL ASPECTS

6.1 Impact on Society

Living is one of our basic needs. And now a days beautiful and safe living is what we all want the most. As my application is all about maintaining the data of a colony/ apartment/ building, so it can be said that, my application will play a vital role in our society. Specially in security purpose. With the help of my application people can easily store tons of guest data which will be useful when it is needed. It can also be valuable on data related survey of any kind of data science project.

6.2 Ethical Aspect

The data that will be uploaded on the application's database will be done by the security guard and will be under control of the owner/ in-charge of the colony. Therefore, there is no chance of having fake data or any privacy issues.

6.3 Risk factor

Initially there is no risk factor in my project app. I'm basically digitalizing an old fashion via my android app. So there is no risk until the database get hacked by any hacker.

CHAPTER 7

CONCLUSION & FUTURE OF THIS PROJECT

7.1 Conclusion

I tried to make my application as user friendly as possible. I also tried to make the application lite weight so that it can run on almost any android device. If I can add some more function into the app in future then I think this will be an amazing helpful app for every colony.

7.2 Future Scopes

People and population both are growing, so are the colonies. As a result, in future there will be more residential areas, more colonies. So, it can be said that, the field or future scope of this type of application is huge. For making easy access to data as well as security.

7.3 Further Development

In future I will try to implement another version of application for the flat owners so that the flat owner can see all the details of his guest via his/ her account. Also, the figure print option can be implemented to make this more secure.

7.4 Future Challenges

In future the most and biggest challenge in our application will occur if we try to implement the figure print option. Because not all of the all of the smartphones have finger print sensor built-in. Not even the most of the smartphones have this. Therefore, we need to add extra hardware support maybe a finger print sensor module to our project.

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