

**MINI PROJECT**  
**(2021-22)**  
**“FEE COLLECTION APPLICATION”**  
**Project Mid Term Report**



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### **Declaration**

We hereby declare that the work which is being presented in the Mini Project “**FEE COLLECTION APPLICATION**”, in partial fulfillment of the requirements for Mini Project viva voce, is an authentic record of our own work carried by the team members under the supervision of our mentor Mr. Akash Kumar Choudhary.

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**Certificate**

This is to certify that the above statements made by the candidates are correct to the best of my/our knowledge and belief.

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## **About the Project**

Our android project “**Fee Collection Application**” is an android application that helps owners in collecting the fees like transport, tuitions, music classes etc. Like in traditional way of collecting fees and tracking the records on paper is very difficult to maintain and confusing. Basically this application is used to register candidate with all their credentials with a live photograph and an unique ID. After every month we can collect fees from individual by using their unique ID. This method saves paper as well as time and makes the process of collecting fees digital.

# **Motivation**

Before Covid I used to come to my college bus, but after Covid I hired a private bus, for which I had to do all the fee collection. Initially, when there were less children, when everything was fine, but the children kept on growing, it became difficult to calculate and maintain the entire fee collection on paper. Apart from maintaining the account, the most difficult task was to maintain the record of student having same name , bus stop ,course etc.

Suddenly one day the notebook I used to fee collection was lost somewhere(stolen), due to which I had to face a lot of loss. That day I decided that I will do all this work with the help of technology and save paper and lots of time. That's why I decided to make a App.

# **Requirements**

## **a). Software Requirements:**

- Technology Implemented: Android Mobile Application
- Languages/Technologies Used: Java, XML
- IDE Used: Android Studio
- Device: Android Mobile Phone
- GitHub: GitHub is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere. GitHub Repository: A GitHub repository can be used to store a development project. It can contain folders and any type of files (XML, Java Classes, Documents, Data, Images). A GitHub repository should also include a license file and a README file about the project. A GitHub repository can also be used to store ideas, or any resources that you want to share.
- Android Studio: Android Studio is a free source-code editor made by Google, JetBrains for Windows, Linux and macOS. [7] Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. Users can change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality. Android Studio is a free open source software which can be downloaded from [www.developer.android.com](http://www.developer.android.com)

## **b). Hardware Requirements:**

- Processor Required: Android kitkat(minimum)
- Operating System: Android
- RAM: 2GB
- Hardware Devices: Mobile Phone
- Minimum Space required: 50MB

## Acknowledgement

The satisfaction that accompanies the successful completion of this project would be incomplete without the mention of the people who made it possible, without whose constant guidance and encouragement would have made efforts go in vain. I consider myself privileged to express gratitude and respect towards all those who guided us through the completion of this project. I convey thanks to my project guide **Mr. Akash Kumar Choudhary** of Computer Science and Engineering Department for providing encouragement, constant support and guidance which was of a great help to complete this project successfully.

Last but not the least, we wish to thank our parents for financing our studies in this college as well as for constantly encouraging us to learn engineering. Their personal sacrifice in providing this opportunity to learn engineering is gratefully acknowledged.

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# Chapter 1

## Introduction

### Android Application Development

**Android development:** It refers to the development of android application which can be run in android devices like mobiles, TV, Tablets , Android wearables etc.

**Android Developers:** Full stack web developers have the ability to design complete android application. They work on the frontend, backend, database and debugging of android applications.

#### Front end:

1. Its all about what a user able to see.
2. It's may be buttons, images, layout, input field etc.
3. To design these components in android you need XML and Android programming. Therefore these programming are called front-end programming.

#### Back end:

1. Backend of anything is not visible to general user or administrator. It can be a piece of code or a program running on the server machine to serve the user need.
2. Suppose, a user requested to log in with his credentials from the personal computer (front end) and the data went to server to check the credentials. Now, the backend will check the credentials and decide whether a user to be allowed or not.
3. Database is also a part of backend.

Front end Languages: The front end portion is built by using some languages which are discussed below:

**XML:** XML stands for Extensible Markup Language. It is used to design the front end portion of android application using markup language. XML's primary function is to create formats for data that is used to encode information for documentation, database records, transactions and many other types of data. XML data may be used for creating different content types that are generated by building dissimilar types of content -- including web, print and mobile content -- that are based on the XML data.

**JavaScript:** JavaScript is a famous scripting language used to create the magic on the sites to make the site interactive for the user. It is used to enhancing the functionality of a website to running cool games and web-based software.

**Technology related to full stack development:** Work with text editors to use shortcuts and its facilities i.e. Visual studio, Atom, Sublime etc.

Make UI responsible using grid system.

Git and git commands like init, add, commit etc for version control and to work with team.

It also requires some design skill to make layout and look better.

Back end Languages: The front end portion is built by using some languages which are discussed below:

**Java:** As the most popular programming language for over 20 years, Java has a whole host of backend frameworks, but their reliability and versatility vary widely.

The development framework of Java allows it to develop applications with the option of scalability. It is possible because it allows the server side to run several instances at once. It makes it a great backend development technology. The syntax used in Java programming is very simple and easy to understand.

## **Pre-requisite**

Hands-on knowledge of Java, XML and Android Studio is essential before working on the concepts for making of android application. Make sure that you have the emulator installed and running before opening android application.

# Chapter 2

## Technologies Used

### Android Studio

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on [IntelliJ IDEA](#). On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

- A flexible Gradle-based build system
- A fast and feature-rich emulator
- A unified environment where you can develop for all Android devices
- Apply Changes to push code and resource changes to your running app without restarting your app
- Code templates and GitHub integration to help you build common app features and import sample code
- Extensive testing tools and frameworks
- Lint tools to catch performance, usability, version compatibility, and other problems
- C++ and NDK support
- Built-in support for [Google Cloud Platform](#), making it easy to integrate Google Cloud Messaging and App Engine

## **Project structure**

Each project in Android Studio contains one or more modules with source code files and resource files. Types of modules include:

- Android app modules
- Library modules
- Google App Engine modules

By default, Android Studio displays your project files in the Android project view, as shown in figure 1. This view is organized by modules to provide quick access to your project's key source files.

All the build files are visible at the top level under **Gradle Scripts** and each app module contains the following folders:

- **manifests:** Contains the AndroidManifest.xml file.
- **java:** Contains the Java source code files, including JUnit test code.
- **res:** Contains all non-code resources, such as XML layouts, UI strings, and bitmap images.

# Google Firebase Database

The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync data between your users in realtime.

Google Cloud Firestore is a fully-managed NoSQL document database for mobile and web app development. It's designed to easily store and sync app data at global scale, and it's now available in beta.

Key features of Cloud Firestore include:

- Documents and collections with powerful querying
- iOS, Android, and Web SDKs with offline data access
- Real-time data synchronization
- Automatic, multi-region data replication with strong consistency
- Node, Python, Go, and Java server SDKs

And of course, we've aimed for the simplicity and ease-of-use that is always top priority for Firebase, while still making sure that Cloud Firestore can scale to power even the largest apps.

## Optimized for app development

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Managing app data is still hard; you have to scale servers, handle intermittent connectivity, and deliver data with low latency.

We've optimized Cloud Firestore for app development, so you can focus on delivering value to your users and shipping better apps, faster. Cloud Firestore:

- **Synchronizes data between devices in real-time.** Our Android, iOS, and Javascript SDKs sync your app data almost instantly. This makes it incredibly easy to build reactive apps, automatically sync data across

devices, and build powerful collaborative features -- and if you don't need real-time sync, one-time reads are a first-class feature.

- **Uses collections and documents to structure and query data.** This data model is familiar and intuitive for many developers. It also allows for expressive queries. Queries scale with the size of your result set, not the size of your data set, so you'll get the same performance fetching 1 result from a set of 100, or 100,000,000.
- **Enables offline data access via a powerful, on-device database.** This local database means your app will function smoothly, even when your users lose connectivity. This offline mode is available on Web, iOS and Android.
- **Enables serverless development.** Cloud Firestore's client-side SDKs take care of the complex authentication and networking code you'd normally need to write yourself. Then, on the backend, we provide a powerful set of security rules so you can control access to your data. Security rules let you control which users can access which documents, and let you apply complex validation logic to your data as well. Combined, these features allow your mobile app to connect directly to your database.
- **Integrates with the rest of the Firebase platform.** You can easily configure Cloud Functions to run custom code whenever data is written, and our SDKs automatically integrate with Firebase Authentication, to help you get started quickly.



# XML

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. The World Wide Web Consortium's XML 1.0 Specification of 1998 and several other related specifications All of them free open standards—define XML.

The design goals of XML emphasize simplicity, generality, and usability across the Internet. It is a textual data format with strong support via Unicode for different human languages. Although the design of XML focuses on documents, the language is widely used for the representation of arbitrary data structures such as those used in web services.

Several schema systems exist to aid in the definition of XML-based languages, while programmers have developed many application programming interfaces (APIs) to aid the processing of XML data.

## The Difference Between XML and HTML:

XML and HTML were designed with different goals

- XML was designed to carry data - with focus on what data is
- HTML was designed to display data - with focus on how data looks
- XML tags are not predefined like HTML tags are

## XML Simplifies Things:

- It simplifies data sharing
- It simplifies data transport
- It simplifies platform changes
- It simplifies data availability

## **Most Important Features Of XML**

- 1) XML separates data from HTML. ...
- 2) XML simplifies data sharing. ...
- 3) XML simplifies data transport. ...
- 5) XML increases data availability. ...
- 6) XML can be used to create new internet languages.

## **Java**

Java is a programming language and computing platform first released by Sun Microsystems in 1995. It has evolved from humble beginnings to power a large share of today's digital world, by providing the reliable platform upon which many services and applications are built. New, innovative products and digital services designed for the future continue to rely on Java, as well.

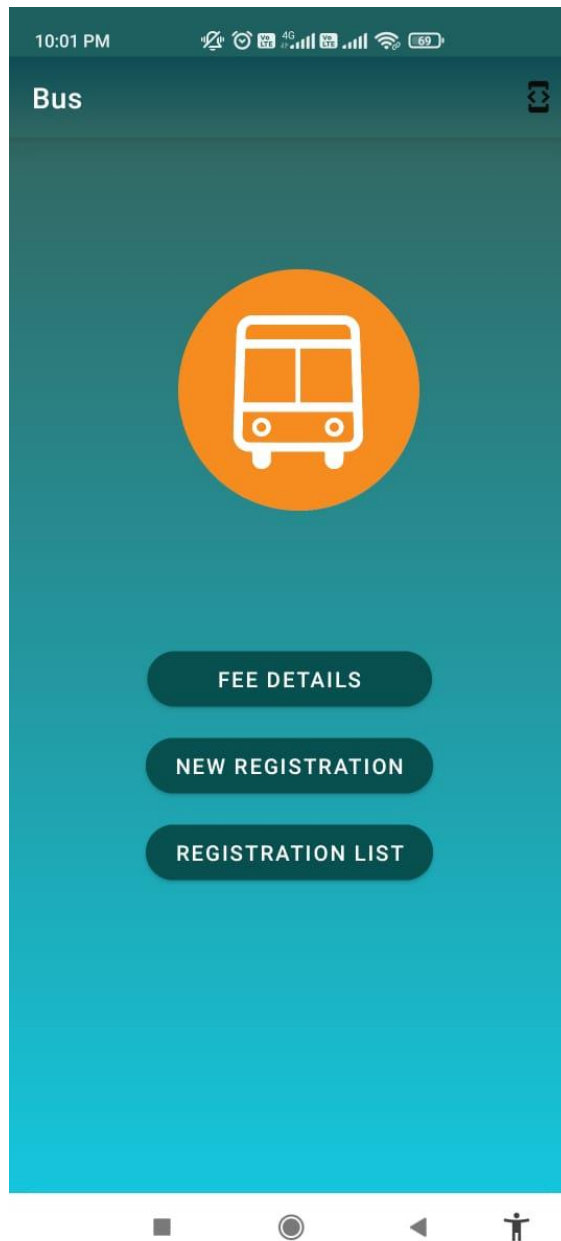
# Chapter 3

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### 1.Splash Screen



## 2.Main Dashboard



### 3.Registration Page

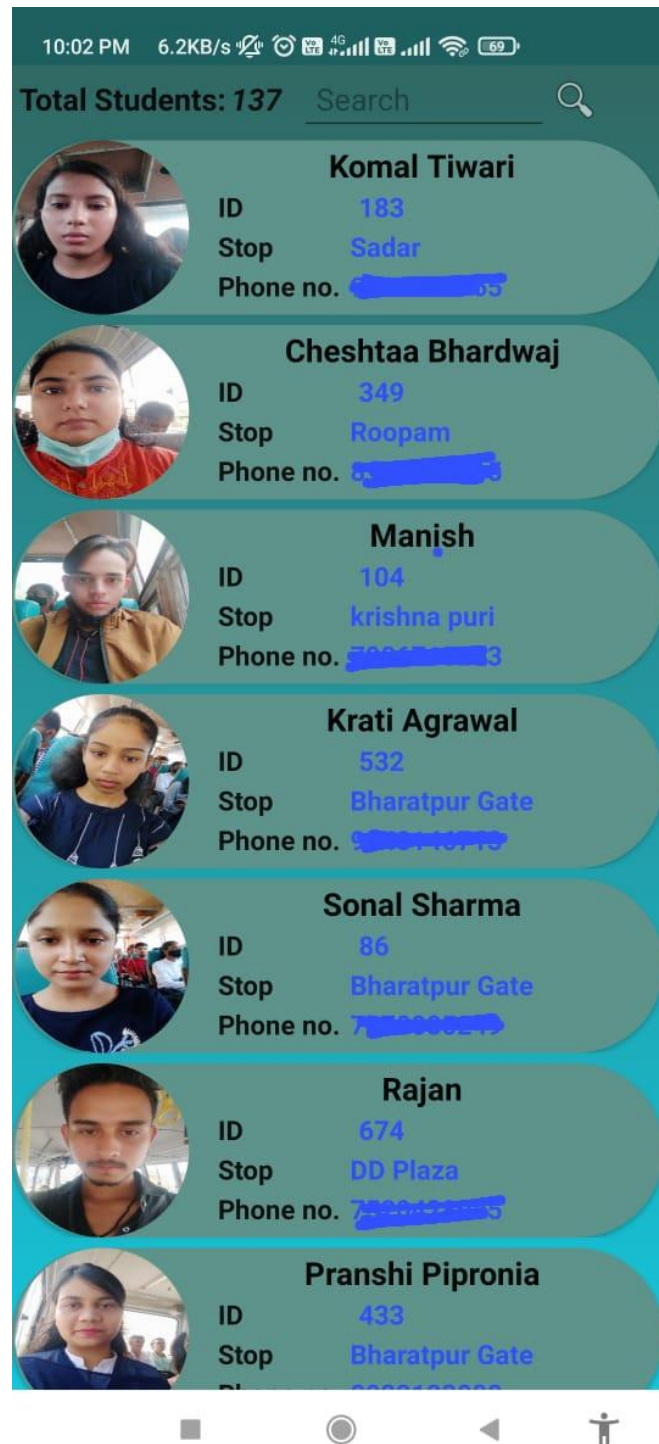


The screenshot shows a mobile application interface for student registration. At the top, a dark green status bar displays the time as 10:01 PM, a data speed of 0.2KB/s, and various connectivity icons including 4G, Wi-Fi, and battery level at 69%. Below the status bar, the title 'STUDENT REGISTRATION' is prominently displayed in red. The registration form consists of several labeled input fields: 'Name' with the placeholder 'Full Name', 'Course' with the placeholder 'Course', 'Year' with a dropdown menu currently set to '1', 'Bus Stop' with the placeholder 'Bus Stop', 'Phone' with the placeholder 'Contact Number', and 'Date' with the value '15/11/21'. At the bottom of the form, there is a dark green button with the text 'CAPTURE IMAGE' in white. The bottom of the screen shows the standard Android navigation bar with icons for back, home, and recent apps.

|                 |                |
|-----------------|----------------|
| <b>Name</b>     | Full Name      |
| <b>Course</b>   | Course         |
| <b>Year</b>     | 1              |
| <b>Bus Stop</b> | Bus Stop       |
| <b>Phone</b>    | Contact Number |
| <b>Date</b>     | 15/11/21       |

CAPTURE IMAGE

## 4.Registered Student List




## 5.Fee Section


10:02 PM 0.1KB/s 4G 69


Student: 137 Total Amount: 209900


Search by: id


id  
name  
stop  
Dues  
All


 **Komal Tiwari**  
183  
Sadar  
1600


 **Cheshtaa Bhardwaj**  
349  
Roopam  
1600

 **Manish**  
ID 104  
Stop krishna puri  
Fees: 1600

 **Krati Agrawal**  
ID 532  
Stop Bharatpur Gate  
Fees: 1600

 **Sonal Sharma**  
ID 86  
Stop Bharatpur Gate  
Fees: 1600

 **Rajan**  
ID 674  
Stop DD Plaza  
Fees: 1600

 **Pranshi Pipronia**  
ID 433  
Stop Bharatpur Gate

# Chapter 4

## Software Testing

Once source code has been generated, software must be tested to uncover as many errors as possible before delivery. It is very important to work the system successfully and achieve high quality of software. Testing include designing a series of test cases that have a high likelihood of finding errors by applying software-testing techniques. System testing makes logical assumptions that if all the parts of the system are correct, the goal will be successfully achieved. The system should be checked logically. Validations and cross checks should be there. Avoid duplications of record that cause redundancy of data. In other Words, Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. It is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.

The preliminary goal of implementation is to write source code and internal documentation so that conformance of the code to its specifications can be easily verified, and so that debugging, testing and modifications are eased. This goal can be achieved by making the source code as clear and straightforward as possible. Simplicity, clarity and elegance are the hallmark of good programs, obscurity, cleverness, and complexity are indications of inadequate design and misdirected thinking. Source code clarity is enhanced by structured coding techniques, by good coding style, by, appropriate supporting documents, by good internal comments, and by feature provided in modern programming languages. The implementation



team should be provided with a well-defined set of software requirement, an architectural design specification, and a detailed design description. Each team member must understand the objectives of implementation.

## 4.1 TERMINOLOGY

**Error** The term error is used in two ways. It refers to the difference between the actual output of software and the correct output, in this interpretation, error is essential a measure of the difference between actual and ideal. Error is also used to refer to human action that result in software containing a defect or fault.

**Fault** is a condition that causes to fail in performing its required function. A fault is a basic reason for software malfunction and is synonymous with the commonly used term Bug.

**Failure** is the inability of a system or component to perform a required function according to its specifications. A software failure occurs if the behavior of the software is the different from the specified behavior. Failure may be caused due to functional or performance reasons.

## 4.2 TYPES OF TESTING

**a. Unit Testing** The term unit testing comprises the sets of tests performed by an individual programmer prior to integration of the unit into a larger system. A program unit is usually small enough that the programmer who developed it can

test it in great detail, and certainly in greater detail than will be possible when the unit is integrated into an evolving software product. In the unit testing the programs are tested separately, independent of each other. Since the check is done at the program level, it is also called program teasing.

**b. Module Testing** A module and encapsulates related component. So can be tested without other system module.

**c. Subsystem Testing** Subsystem testing may be independently design and implemented common problems are sub-system interface mistake in this checking we concenton it. There are four categories of tests that a programmer will typically perform on a program unit.

i Functional test

ii Performance test

iii Stress test

iv Structure test

**Functional Test** Functional test cases involve exercising the code with Nominal input values for which expected results are known; as well as boundary values (minimum values, maximum values and values on and just outside the functional boundaries) and special values.

**Performance Test** Performance testing determines the amount of execution time spent in various parts of the unit, program throughput, response time, and device utilization by the program unit. A certain amount of avoid expending too much effort on fine-tuning of a program unit that contributes little to the overall performance of the entire system. Performance testing is most productive at the subsystem and system levels.

**Stress Test** Stress test are those designed to intentionally break the unit. A great deal can be learned about the strengths and limitations of a program by examining the manner in which a program unit breaks.

**Structure Test** Structure tests are concerned with exercising the internal logic of a program and traversing particular execution paths. Some authors refer collectively to functional performance and stress testing as “black box” testing. While structure testing is referred to as “white box” or “glass box” testing. The major activities in structural testing are deciding which path to exercise, deriving test data to exercise those paths, determining the test coverage criterion to be used, executing the test, and measuring the test coverage achieved when the test cases are exercised.

# Chapter 5

## Conclusion

We are doing our project with the coordination of our team members under the supervision of our mentor Mr. Akash Kumar Choudhary.

Our project repository is available at

[https://github.com/kuldeep506/Fee\\_Collection\\_Application](https://github.com/kuldeep506/Fee_Collection_Application)

# Chapter 6

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