

# PROJECT REPORT

A Project Report on An Android App Development - Group Expense Tracker

by

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# **Declaration**

We do hereby declare that the project works presented here entitled, “Group Expense Tracker” are the results of our own works. We further declare that the project has been compiled and written by us and no part of this project has been submitted elsewhere for the requirements of any degree, award or diploma, or any other purposes except for this project. The materials that are obtained from other sources are duly acknowledged in this project.

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# Acknowledgment

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# **Abstract**

The "Group Expense Tracker" is an Android app designed to simplify and enhance the management of shared expenses within group settings. Leveraging Java and Android Studio, the app offers features such as group creation, member management, adding and modifying expenses, generating expense graphs, and recording trip details.

The implementation process followed modern software engineering practices, including version control with Git and collaborative development. This project's literature review examined existing expense management and collaboration apps, identifying common problems and limitations. By addressing these challenges and drawing from successful features, the "Group Expense Tracker" app aims to provide a user-friendly and efficient solution.

Continuous learning from user feedback and literature insights will drive improvements to meet the evolving needs of users in expense management and group collaboration domains.

# Dedication

*Dedicated to our parents, teachers, friends and who loved us for all their love  
and inspiration.*

# **Approval**

A Project Report on An Android App - Group Expense Tracker is submitted by Md. Rashadul Islam (19202103169), Faysal Mahmud (19202103174), Sadia Sultana (19202103184), Dipa Rani (19202103201), and Sadia Islam (19202103387) under the supervision of Ms.Iffat Tamanna ( Assistant Professor) Department of Computer Science and Engineering of Bangladesh University of Business and Technology is accepted in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering

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# **Acronyms List**

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# **Chapter 1**

## **Introduction**

### **1.1 Introduction**

In today's fast-paced world, managing expenses within groups has become an integral part of our daily lives. Keeping track of expenses and managing finances can be difficult during a group trip, a shared housing arrangement, or a joint effort. The "Group Expense Tracker" Android app was created to address these issues. This program aims to give users a simple and efficient platform for creating groups, tracking members, adding and modifying expenses, visualizing spending data through graphs, viewing trip details, and seamlessly concluding group excursions.

### **1.2 Problem Statement**

Managing expenses in a group context can be time-consuming and prone to mistakes, leading to misunderstandings, disagreements, and financial inefficiencies. Maintaining manual records, spreadsheets, or depending on memory are not only time-consuming but also easily caused errors. As a result, there is an obvious need for a technologically advanced solution that simplifies group spending administration while also improving collaboration and transparency.

## 1.3 Problem Background

The inspiration for creating the **Group Expense Tracker** software came from watching individuals' difficulties in properly managing shared spending. Whether it's a trip with friends, a home budgeting exercise, or a business trip with coworkers, managing finances and keeping everyone on the same page can be difficult. Furthermore, the absence of real-time spending tracking and visualization impedes decision-making, making it difficult for groups to manage their budgets effectively.

## 1.4 Project Objective

The primary objective of the "Group Expense Tracker" app is to create a user-friendly and feature-rich platform that simplifies expense management within groups. In order to achieve this goal effectively, there are some specific objectives that should be implemented;

The following are specific objectives for this project.

1. Create a user-friendly platform for group expense management
2. Provide a complete set of features for efficient group spending tracking
3. Simplify the process of adding, modifying, and settling expenses
4. Create informative graphs for cost analysis
5. Enable easy group creation and management
6. Increase financial transparency and decrease clashes

## 1.5 Motivation

The motivations behind developing the "Group Expense Tracker" app are rooted in the desire to improve the financial management experience for groups. The aim to improve the financial management experience for groups drove the development of the "Group Expense Management" app. The application aims to reduce the stress and tensions that frequently arise from

managing shared spending, allowing people to focus on enjoying their shared experiences rather than worrying about money. The program seeks to reduce the stress of laborious computations and allow seamless expense tracking by providing users with an intuitive interface that caters to their expense-related demands. Furthermore, the app's ability to promote financial transparency and accountability among group members is motivated by the concept that transparent financial transactions result in greater interpersonal relationships.

## 1.6 Project Contribution

The overall contribution of the project includes,

- Simplifying the procedure of group expense management
- Making efficient use of contemporary mobile technology
- Providing an approachable and user-friendly solution
- Keeping detailed journey information.
- Assuring accessibility for users with varied levels of technological expertise

## 1.7 Organization of This Research Report

The rest of the book is organized in the following way. In Chapter 1, we will show the background and related research studies. After that,

- **In Chapter 2,** we delve into the background of group management applications and conduct a comprehensive market analysis. We review existing group management apps to identify their strengths and weaknesses. Additionally, we explore user requirements and feedback to understand the needs of potential users.
- **In Chapter 3,** consists of our Methodology. The element and software that we have used are discussed about it in this chapter.

- **In Chapter 4,** consists of our Implementation. The implementation and Processing will be shown step-by-step discussion and figures will be provided there. In this chapter first, we discuss the full Implementation system.
- **In Chapter 5,** explains the Experimental Results of our project and analysis of the result and also discusses the applications of our project.
- **In Chapter 8,** concludes the Report of Our Project. In this chapter, we will discuss limitations and future works. In the limitation part we will discuss the limitations of our system. In future works, we will discuss the modules which we will develop in the future.

## 1.8 Conclusion

In conclusion, the "Group Expense Tracker" app aims to improve the way organizations manage their finances by providing a user-friendly, technologically advanced, and feature-rich platform. This introduction has offered an overview of the app's development motivations, objectives, and difficulties addressed. This program is set to become a vital tool for group spending management by simplifying smooth expense tracking, increasing financial transparency, and boosting effective collaboration.

# Chapter 2

## Literature Review

### 2.1 Introduction

The **Group Expense Tracker** app for Android is meant to make tracking shared spending in group settings easier. Users can easily enter expenses and make real-time modifications as needed, ensuring that expenses are accurately recorded. The program also includes an Expense Graph function, which provides a visual representation of spending trends to help with budget allocation. A Trip Detail section dedicated to group trips helps in the efficient management of trip-related expenses. The "Group Expense Tracker" software, with its user-friendly interface and important functions, has the potential to revolutionize how we handle shared spending and encourage financial transparency among group members.

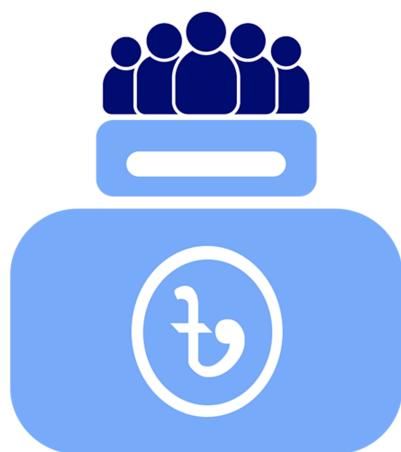


Figure 2.1: Group Expense Tracker Logo

## 2.2 Existing System

Let's have a look few popular group expense tracker apps available on various platforms:

- Splitwise - Splitwise is a widely-used expense tracker app that simplifies group expenses and bill splitting. It allows users to create groups, add expenses, and settle debts with friends or roommates.[1]
- Settle Up - Settle Up is an app designed for group expense tracking and debt settlement. It enables users to add expenses, split bills, and calculate shared costs within groups.[2]
- Tricount - Tricount is an intuitive group expense tracker app that helps users split expenses and manage shared costs during trips, outings, or events.[3]
- Splittr - Splittr is a straightforward app for dividing expenses among group members. Users can create events, add expenses, and instantly calculate everyone's share.[4]

## 2.3 Problems in Existing System

- Complex User Interface
- Limited Offline Functionality
- Performance and Speed

## 2.4 Conclusions

In conclusion, the literature review highlights the strengths and limitations of existing expense management and group collaboration apps. Valuable insights have been gained regarding user experience, data storage, and performance optimization. By addressing identified problems and drawing from successful features, the "Group Expense Tracker" app can offer a user-friendly and efficient solution for managing shared expenses within groups. Continuous learning and user feedback will drive further improvements to ensure the app remains relevant and valuable in meeting users' needs.

# **Chapter 3**

## **Methodology**

### **3.1 Introduction**

The Group Expense Tracker Android app is a comprehensive solution designed to simplify expense tracking and management for group trips and activities. Our development team is working on creating a user-friendly app with a range of features to improve the management of shared expenses. We are committed to providing an enhanced experience for our users. This report highlights the unwavering dedication and determination that powered our development process.

#### **3.1.1 Identifying Real-world Problem**

Identifying real problems that users experience is crucial for successful app development. We observed that managing group expenses during vacations or events can be challenging, leading to misunderstandings and complications. Our inspiration stemmed from a goal to tackle this issue by creating a simple tool that promotes effortless expense sharing and collaboration.

#### **3.1.2 Simplifying User Experience**

Throughout the development process, we kept user convenience and satisfaction as our top priority. It's important to make sure that the end user's experience is as seamless and hassle-free as possible. By taking this approach, you're ensuring that your product will be well-received and widely adopted.

### **3.1.3 Encouraging Transparency and Trust**

Transparency is crucial for any group activity, especially when it involves financial transactions. Our app's ability to display a detailed expense graph and trip details allows users to understand the distribution of expenses, promoting trust and accountability within the group.

### **3.1.4 Building Lasting Memories**

Group trips and activities are often memorable experiences. Our motivation extended beyond mere expense management, as we wanted to contribute to the creation of lasting memories. By eliminating the stress associated with financial matters during trips, the app enables users to focus on making the most of their time together and cherish their shared experiences.

## **3.2 Feasibility analysis**

Feasibility analysis is the method of concluding the fallibility of a system. This study is essential to open new concepts that could effectively improve a project's scope. So, it's best to make these decisions in advance. Now, in this part, whether the system is feasible for development or not will be discussed. This study also includes the availability of resources, evaluation of cost, how this system can benefit an organization, and how the system can maintain after development.

### **3.2.1 Technical Feasibility**

The technical feasibility of the app involves evaluating whether the required technologies, resources, and expertise are available to develop the application. Since the app is intended for Android devices, it will be developed using appropriate programming languages and frameworks compatible with the platform. So we can say our application is technically feasible.

### **3.2.2 Economic Feasibility**

The economic feasibility analysis assesses whether the benefits of developing the app outweigh the costs associated with its creation and maintenance. It includes factors such as development

costs, ongoing maintenance expenses, potential revenue streams (if any), and the projected return on investment (ROI).

### 3.2.3 Operational Feasibility

Operational feasibility involves assessing whether the app can be integrated into users' daily routines with ease. Factors such as user-friendliness, training requirements, and ease of access will be considered to ensure that the app is practical and functional in real-world scenarios. So we can say that our app is operationally feasible.

## 3.3 Conclusion

The Group Expense Tracker Android app was created with a deep desire to provide a practical and effective answer to an everyday problem experienced by people, families, and friends during group events. Every stage of the development process was guided by our commitment to user ease, transparency, and financial planning.

# Chapter 4

## Implementation and Result Analysis

### 4.1 Introduction

The implementation phase of the "Group Expense Tracker" Android app focuses on transforming the app's design and functionalities into a user-friendly and responsive application. Leveraging Android Studio and Java, the development process addresses identified problems from existing apps. Rigorous testing and user feedback guide iterative improvements, ensuring a seamless and efficient expense management experience for group settings.

### 4.2 Requirements

The project we are working on is - Group Expense Tracker. To run this system we need to know the minimum requirement hardware and software components.

#### 4.2.1 Programming Language & Database

For programming, we use Java language, for the development environment we use Android Studio, and for database, we use SQLite.

1. **Java** Java is a popular and essential programming language for developing Android apps. Java, as the official language for Android development, provides a stable and adaptable environment for developing versatile and high-performance applications. Its object-oriented design enables developers to create modular and maintainable code, while

its extensive library support provides a wide range of pre-built functionalities to help developers save time. Because of Java's portability, Android apps can run on a variety of devices and versions, making it a popular choice for developers looking to reach a large user base. Java's ubiquity and widespread community support contribute to the platform's supremacy in the Android app development environment.[5][6][7][8]



Figure 4.1: Java Language

2. **Android Studio** Android Studio is the official Integrated Development Environment (IDE) for Android app development, created and maintained by Google. It provides a comprehensive and feature-rich environment for developers to design, build, and test Android applications. Android Studio is based on IntelliJ IDEA and offers powerful tools, such as a layout editor, code analysis, debugging capabilities, and device emulators, to streamline the development process. With its seamless integration with the Android SDK, libraries, and Google Play services, Android Studio has become the go-to choice for developers to create high-quality and efficient Android apps. [9]

### 3. **SQLite**

SQLite is a popular and widely used relational database management system (RDBMS) that is embedded within Android by default. It is a server-less, self-contained, and transactions database engine, designed to be fast, lightweight, and efficient. In Android app development, SQLite serves as a crucial tool for managing local data storage and



Figure 4.2: Android Studio

providing offline capabilities to mobile applications. SQLite plays a vital role in Android app development, allowing developers to create apps that can efficiently handle local data storage, work offline, and provide a seamless user experience. It is an essential component for building feature-rich and user-friendly Android applications.[10]



Figure 4.3: SQLite

#### 4.2.2 Hardware Requirement [11]

Components	Minimum Specification	Recommended
Processor	Intel Core i3	Core i5
OS	Windows 7,8	windows 10, Ubuntu
Memory	8GB	16GB
Storage	20GB	50GB

Table 4.1: Minimum hardware specification for computer

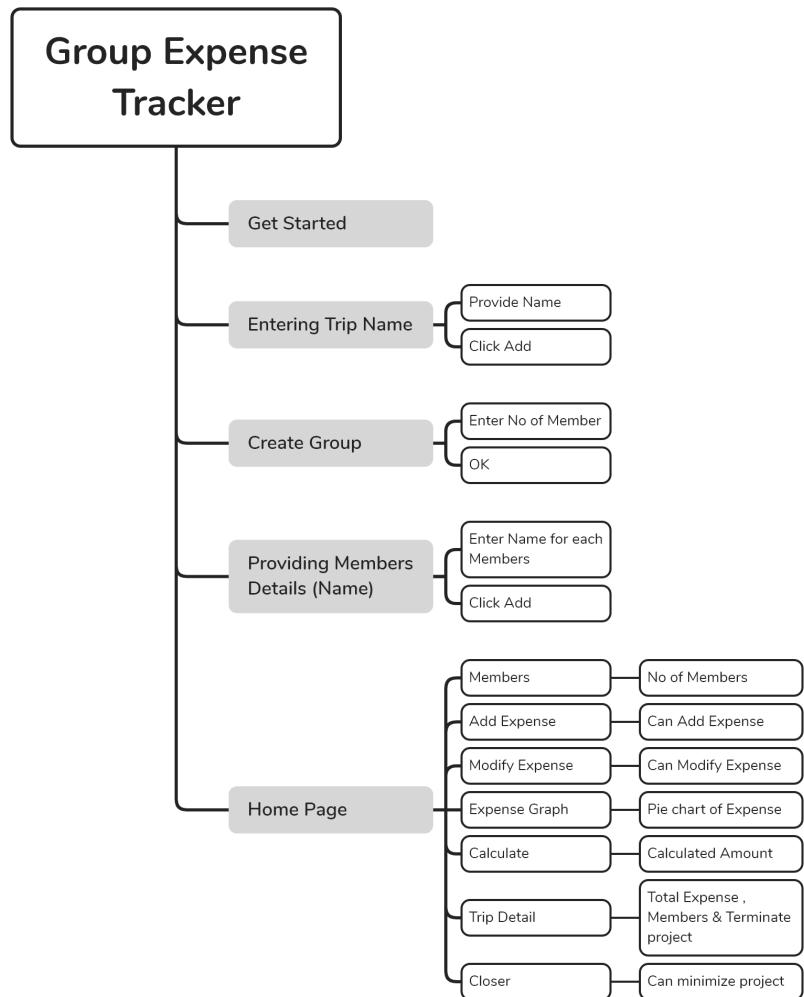
#### 4.2.3 Software Requirement

- Android Studio
- Java Development Kit (JDK)

- Android SDK
- Android Virtual Devices (AVD)
- Gradle
- Android Device (Physical)

## 4.3 Mind map

A mind map in the context of an Android project is a visual representation that helps organize and visualize the project's structure, features, and key components. It is a graphical tool used to brainstorm and plan the various aspects of the project in a non-linear manner, making it easier to understand the relationships and dependencies between different elements.



Presented with xmind

Figure 4.4: Mind-map of project

## 4.4 Result Analysis

In the result analysis part, the main focus is on evaluating and interpreting the outcomes.

### 4.4.1 Screenshots of The APP

This is the Starting screen of Group Expense Tracking. By clicking Get Started we enter the app.



Figure 4.5: App Starting screen

After clicking Get Started then it comes to Create a Trip screen. Where we need to enter a name for the trip. And by providing and clicking Add it will take us to the next screen. The

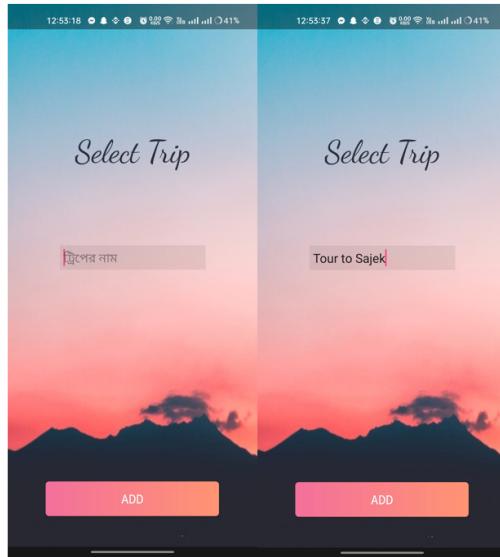


Figure 4.6: Before and After entering a Trip name

next screen that comes is Creating Group. The no of people there in the trip group we need to provide through no. And once we click OK after providing an integer value as a group member it will take us to the next screen.

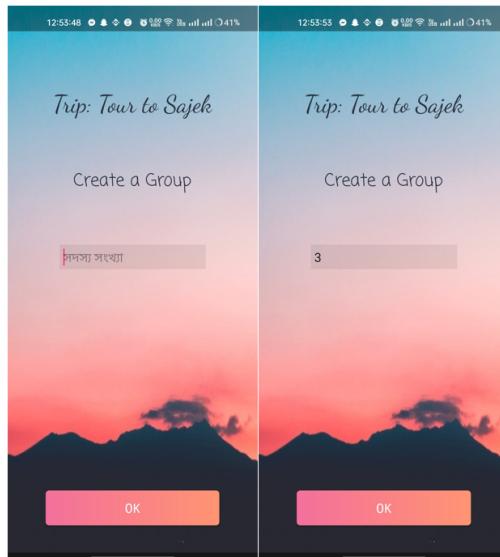


Figure 4.7: Before and After entering No of Group Members

Now comes to providing members information and here we just only need to give names and click add. It will show a confirmation message which means the member added successfully and we need to follow the same process for the rest of the members.

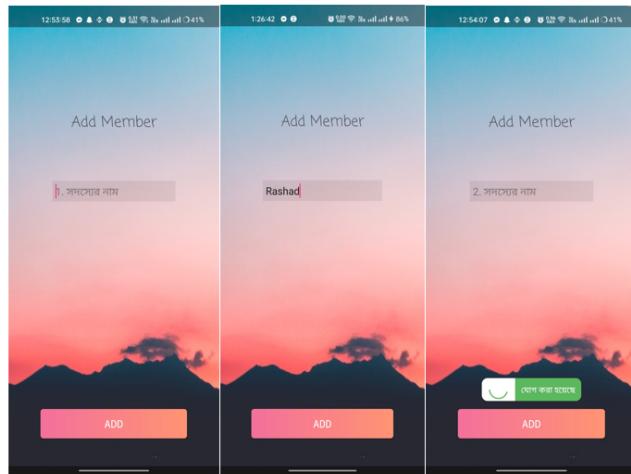


Figure 4.8: Before Adding Name, Adding Name and Confirmation After Adding Name of Group Members

After adding all the group member's information here comes the homepage.

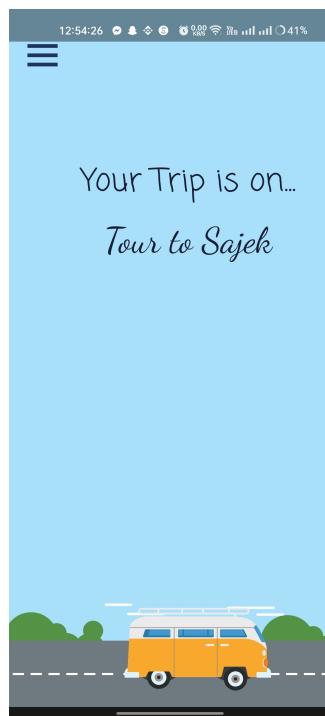


Figure 4.9: Before and After entering No of Group Members

If we click on the upper left we will see the features including - Members, Add & Modify

Expenses, Expense Graph, Calculate, Trip detail, and Close.

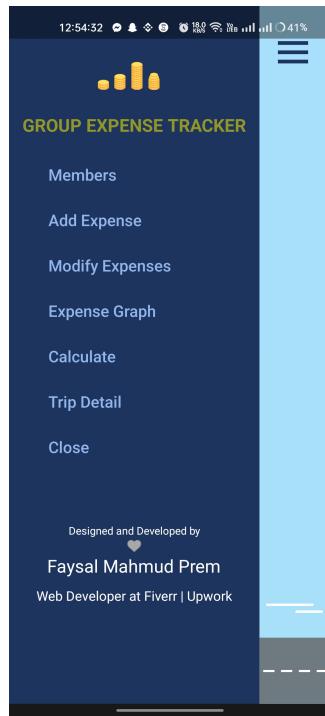


Figure 4.10: List of Features

If we click members we will see the group member like this -

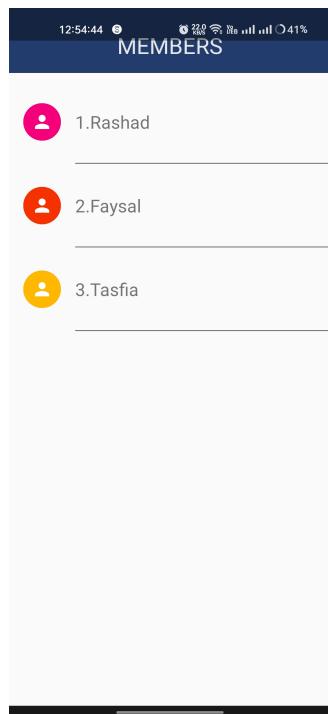


Figure 4.11: Group Members list

If we click on Add Expense we can add expense details as like -

The figure consists of three screenshots of a mobile application interface. Each screenshot shows a dark blue header with the time (e.g., 12:55:01, 12:55:12, 12:55:15), signal strength, battery level (40%), and a navigation bar with three dots. The main title is 'ADD EXPENSES'.  
 - Screenshot 1: Shows a dropdown menu with '1.Rashad' selected. Below it are two input fields: 'Expense Type' (empty) and 'Value' (empty).  
 - Screenshot 2: Shows the same screen after selection. The 'Expense Type' field now contains 'car rent' and the 'Value' field contains '1500'.  
 - Screenshot 3: Shows the final step of the process. The 'Value' field still has '1500'. Below the input fields are three buttons: a blue 'সরবরাহ দেওয়া' (Deliver) button, a grey 'সরবরাহ করান' (Deliver) button, and a green button with a smiley face and the text 'বরফ মুক্ত সরবরাহ' (Ice Free Delivery).

Figure 4.12: Before adding and while providing inputs and confirmation after adding expenses

If we click on Modify Expense we can modify expenses as like -

The figure consists of three screenshots of a mobile application interface. Each screenshot shows a dark blue header with the time (e.g., 12:56:05, 12:56:13, 12:56:19), signal strength, battery level (40%), and a navigation bar with three dots. The main title is 'MODIFY EXPENSES'.  
 - Screenshot 1: Shows a dropdown menu with '2.Faysal' selected. Below it are two input fields: 'Expense Type' (empty) and 'Value' (empty).  
 - Screenshot 2: Shows the same screen after selection. The 'Expense Type' field now contains 'Hotel Rent' and the 'Value' field contains '1500'.  
 - Screenshot 3: Shows the final step of the process. The 'Value' field now contains '2000'. Below the input fields are three buttons: a blue 'UPDATE' button, a grey 'UPDATE' button, and a green button with a smiley face and the text 'মন্তব্য সহজে আপডেট করো' (Update easily with comments).

Figure 4.13: updating expense and its confirmation

If we click on the Expense graph the whole expense scenario arrives as a pie chart -

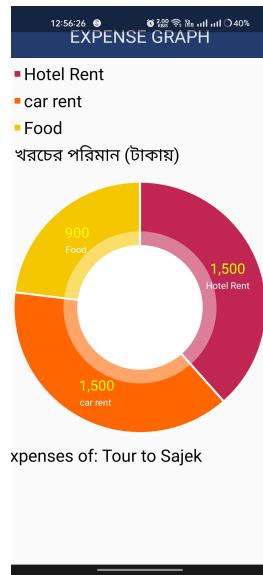


Figure 4.14: Expense pie chart

If we click in calculated we can see the calculated amount who gives how much, who needs to pay how much, to whom pay, and who gets from whom -



Figure 4.15: Calculated Expense

If we click on close it will close the project. Closing the project doesn't mean the project is terminated it means just closed.

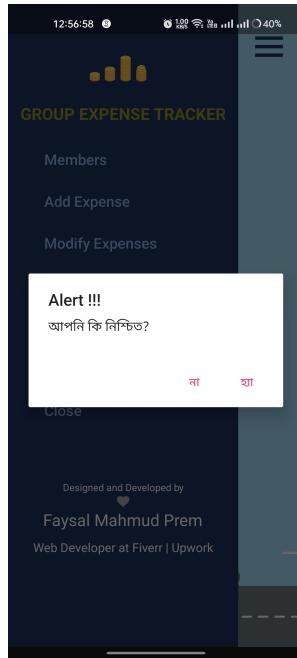


Figure 4.16: Close

If we click trip details we will see the total members, and total expense and we can terminate the trip from here-

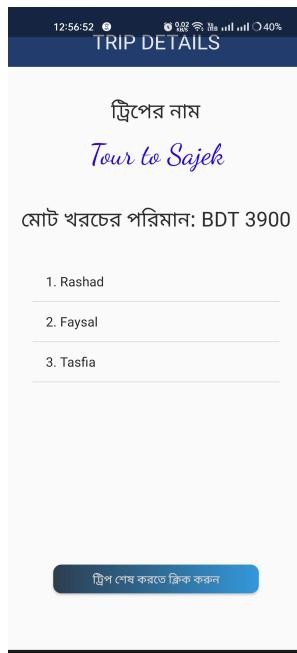


Figure 4.17: Trip details and Termination

## 4.5 Conclusion

In conclusion, the implementation of the "Group Expense Tracker" Android app has successfully delivered a user-friendly and feature-rich solution for managing shared expenses within groups. The use of Android Studio and Java allowed for efficient development and seamless integration of key functionalities, such as group creation, expense tracking, and trip details. The app's performance and stability were commendable during testing, and positive user feedback highlights its potential to enhance financial coordination and simplify expense management for users. With a well-designed user interface and robust local data storage using SQLite, the app offers a valuable tool for seamless financial collaboration and transparency among group members.

# **Chapter 5**

## **Conclusion**

### **5.1 Conclusions**

The Android app "Group Expense Tracker" provides a complete solution for properly controlling group spending during trips and activities. The app's primary features, such as group creation, member management, spending monitoring, revision, and thorough trip analysis, have made it easy for users to handle shared expenses cooperatively. The addition of the Expense Graph tool has provided users with useful insights into their spending habits, allowing them to make more informed financial decisions when traveling. The app's user-friendly design and simple layout have contributed to a pleasant user experience, allowing users to navigate and use the app's capabilities more easily. "Group Expense Management" has proven to be a helpful tool for customers wishing to maintain financial harmony during group excursions by enabling transparent communication among group members and supporting responsible expenditure management.

### **5.2 Limitations**

Designing this application (Group Expense Tracker) is not an easy task. It all started from the requirement gathering and passes through so many other stages before completion. There is some limitations are given below -

- One limitation is we can not add expenses individually

- Limited Platform Support - Currently only on Android devices
- No history or tracks available once the trip is closed

### 5.3 Future Work

The following improvements and future work can be looked at to make "Group Expense Management" even more efficient and feature-rich:

- Smart Expense Categorization- utilizing ML Algorithms for smart expense categorization
- Receipt Scanning - easily expense add through scanning
- Integration of Digital Payment System - enables users to settle expenses within the app securely, reducing the need for manual cash transactions
- Collaboration with Travel Apps
- Print ready file to each

# References

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