Mobile Application Development Lab (ICT 3268)
Semester & Branch: VI Semester, CCE - B
Mini Project Synopsis

moneypal – UPI Client for Payments and More

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Abstract

The app mainly focuses on making online money transfer easier by using the direct mode of peer-to-peer bank transfers interface developed by the Government of India known as **Unified Payments Interface** (also known as **UPI**). The app will feature a home screen with all the contacts of the users that also use "**moneypal**". The user can pay money, request money, and also chat with them privately and securely. The user will be able to connect multiple bank accounts to their profile and will also be able to select the profile of a contact and send a desired amount of money to them.*

Users can generate and also scan a QR code for their profile to facilitate easy transfers within the app. The app will be secured using an encrypted pin which the user will be asked for before the home screen of the app is shown at every launch of the app. The user can also pay for recharging mobile services and other similar services and will also be able to quickly make payments to business accounts. Bank balance and transaction history will also be shown to the user on a dedicated screen to track expenses.

*Important Note:
All actions involving money transfer will be simulated and will **not** involve real bank accounts or real money.

Introduction

The app is named "**moneypal**"; composed of the words "money" and "pal" meaning "friend". As the name suggests, our app primarily aims to simplify the tedious and cumbersome process of making gross financial transactions. Usually, a transaction of any scale either requires cash, in the form of coins and notes or requires cheques for large amounts. Cash is tedious to handle and cheques require the recipient to go to a bank to get the amount.

The app will make this process of transferring money extremely easy by digitizing the authentication, verification, and processing aspects of a digital transfer.

Problem Statement

These are a few problems that our project app attempts to address:

- How will the app handle user and their sessions?
- How is money transferred and what is used to do facilitate a secure transaction?

- How is using an app easier than traditional methods?
- What more features does the app provide over the traditional methods?
- What is the scope of digital transfer and this app?

Objective

The primary objective of our project is to simplify payments. It will also feature nearby vendors so that the users can find nearby shops and seller quickly and also pay seamlessly. The app also features a QR code scanning and processing feature that will make connecting easy for the users to directly pay without any tedious and lengthy set of steps. Users can also request for money from others so that the exact amounts can be paid.

Proposed Methodology

For authentication and verification of users, the app has a custom API for OTP verification based on Firebase. The API will generate a unique, one-time-use 6 digit number that will act as the passkey whenever the user requests to log into the app.

As seen in the activity diagram below, if the user isn't already registered, the app will redirect them to a screen where they can fill in their details and signup for our service. Details of the users will be communicated using a custom API and will be stored within a database hosted on Firebase.

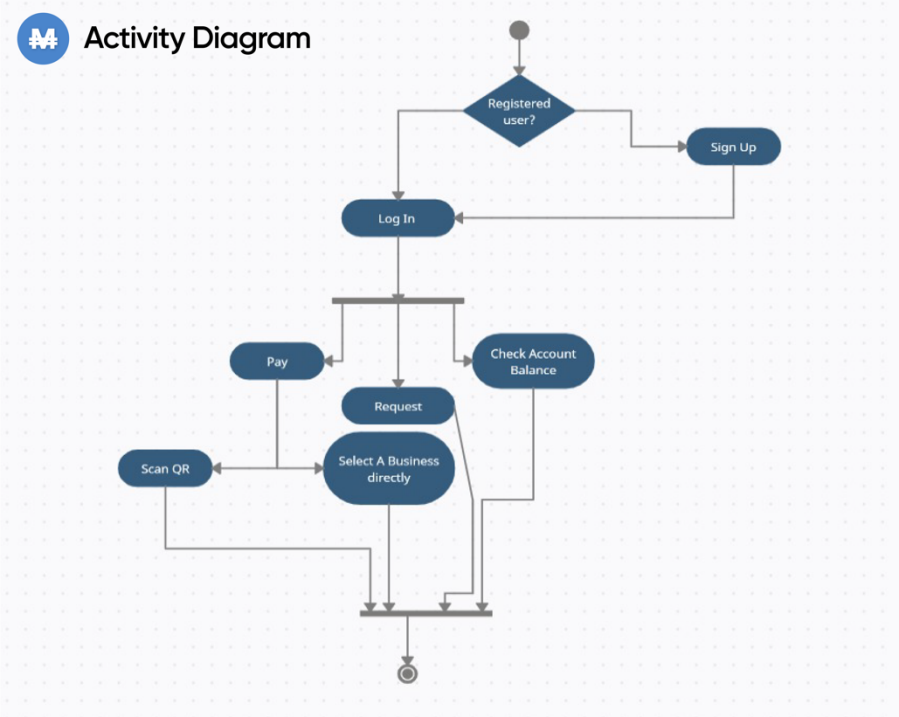

Fig. 1: Activity Diagram showing all possible paths for process flow

After signing into the app, the user will be taken to the home screen of the app where they'll be able to see their recent contacts and also, based on their location, nearby shops, and sellers. Location requests have two types– Fine and Coarse. The app will only request for Coarse User Location so which will help it determine nearby shops. Fine User Location will not be asked for preserving the privacy of the user.

Once the user clicks on any of the profiles, a screen with two options will be shown:

- Pay money to the user
- Request money from the user

Usecase Diagram

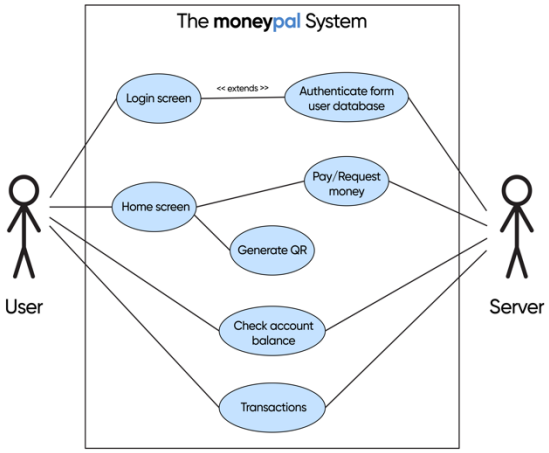

Fig. 2: Usecase Diagram

For paying money the user will be asked for their UPI PIN set for their selected bank account. Therefore, the user can send and receive money with a couple of clicks.

As seen in the usecase diagram, the user will also have an option to use their camera for scanning a custom generated QR code. QR codes will be generated using a custom algorithm that will encode the identifiable data of the user. This QR can then be scanned to directly enable the person scanning the code to directly send/request money to/from the person to whom the code belongs respectively.

The transactions can have two states– `success` or `failure`. There is no other states such as `processing` or `pending` to avoid retrying payments and preventing financial losses due to ambiguity.

Once the payment is complete, the user will be shown a screen with appropriate message and reason in case the transaction fails to complete.

Team & Individual Responsibilities

Reg. No.	Name	Roll Number	Batch
180953248	Shivanchal Agarwal	46	B5
180953292	Mayur Bhoi	56	B5

Mayur Bhoi

- Development of custom API for OTP and user data serving. Firebase compatibility and interface for the database and app.
- Design of the user interface and user experience of the app using Figma .
- Implementation of the QR code generation algorithm and screens for scanning and generating the QR codes.
- Implementation of OTP verification screens and Login/Signup screens.

Shivanchal Agarwal

- Implementation of the splashscreen and home screen.
- Implementation of the profile page that displays data fetched from servers using the custom API.
- Implementation of the paid/failed screens that appear after the transaction.
- Implementation of the GPS based nearby shop searching functionality.

The app is written in **Dart v2** using the **Flutter App Development Framework**.

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moneypal