DEAKIN UNIVERSITY

Project Proposal

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Project Name:	**Financial Management Assistant**
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Contents

Overview

This is an app about data storage called financial management assistant, which can help users quickly and carefully record every expense and check the daily income and expenditure. The app also has features that make it easier for users to use, including the ability to search, generate histograms, print PDF files, send feedback, and send/receive notifications.

Product Purpose

Target audience

1. Users who have their financial plans hope to use the APP to help them better manage th eir property.
2. Users' financial income and expenditure are not balanced. They hope to improve their property management ability through the APP, so they can reasonably use their property.
3. Users who want to get a local file of their balance sheet and use it to do more offline op erations.

Reasoning of how your project demonstrates creativity

The function of APP is very comprehensive. It not only has the function of traditional bookkeeping software but also has the innovation in function.

1. The search function for bills is the core function of APP. The APP can search by keyword and date statement. These two methods make it easy for users to search for the records they want to find.

2. In the visualization of bills, we innovatively added functions. This APP can present the user's income and expenditure situation in the form of a histogram, which can help users have a more intuitive understanding of their income and expenditure situation and enable users to reasonably adjust their consumption.

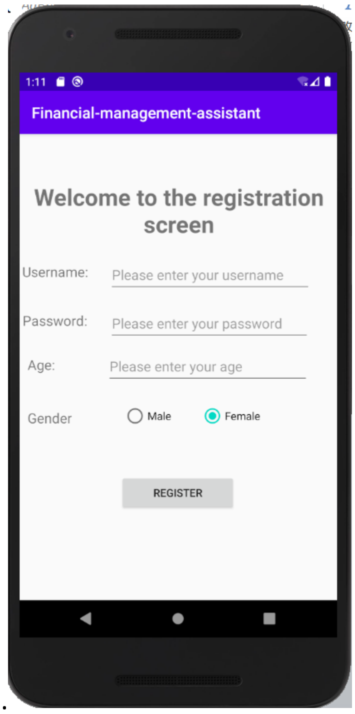
3. In terms of bill handling, we innovatively added functions. Using this APP, users can save their bills locally as a PDF file. This feature allows users to use their bills more flexibly and use their billing information in an environment independent of the APP.

Features

Register:

New users need to register by setting their username, password, age, and gender.

Log in use the username and password.



Financial-management-assistant

Welcome to the registration screen

Username: Please enter your username

Password: Please enter your password

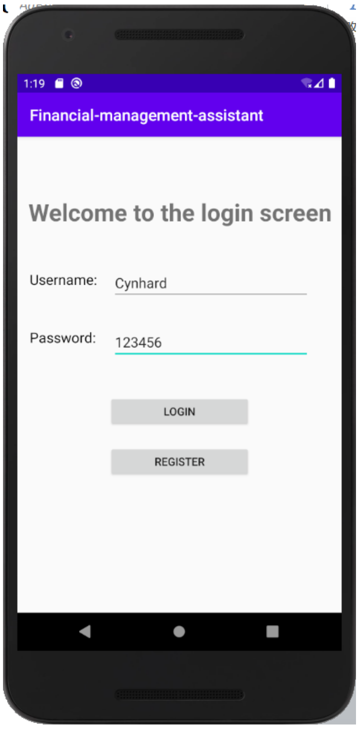
Age: Please enter your age

Gender ○ Male ● Female

Login:

After registration, enter the user name and password to complete the login at the login interface.

Users can use this APP after logging in.



Financial-management-assistant

Welcome to the login screen

Username: Cynhard

Password: 123456

Add bill records:

Select Add records in the menu below to enter the corresponding page.

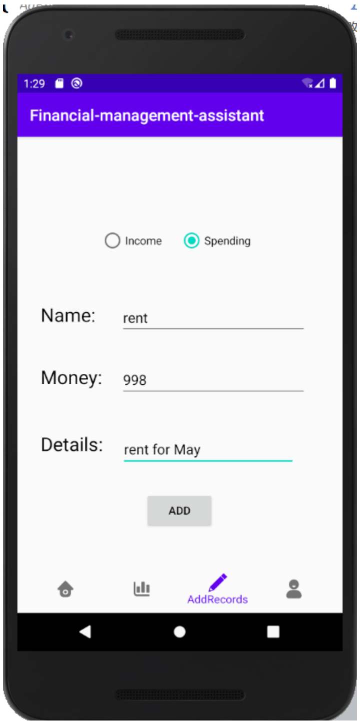
Choose the type of bill (income or expense).

Enter the bill name.

Enter the bill amount.

Enter billing details.

Click ADD to add the bill.



○ Income ● Spending

Name: rent

Money: 998

Details: rent for May

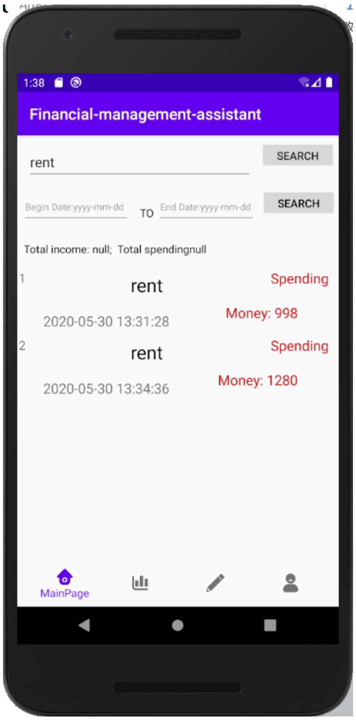
Search by keywords:

Search by entering keywords in the search bar at the top of the main page.

The search results are displayed in the RecyclerView below.

Click on the item of Recycler View to view the bill details.

Users can update or delete the bill.



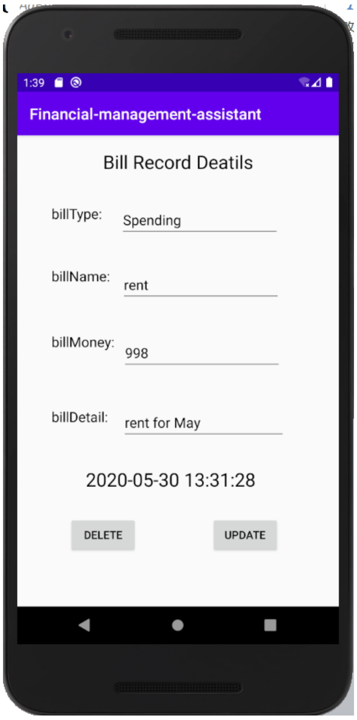
rent

Begin Date:yyyy-mm-dd TO End Date:yyyy-mm-dd

Total income: null; Total spendingnull

1 rent Spending
2020-05-30 13:31:28 Money: 998

2 rent Spending
2020-05-30 13:34:36 Money: 1280



Bill Record Deatils

billType: Spending

billName: rent

billMoney: 998

billDetail: rent for May

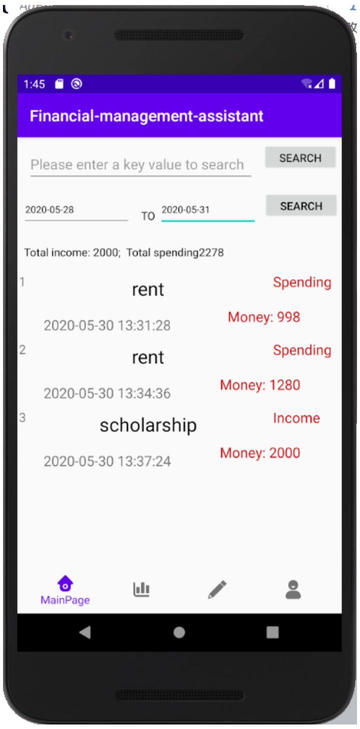
2020-05-30 13:31:28

Search by date:

Enter start and end dates in the search bar at the top of the main page to search.

The search results are displayed below.

Click the Recycler View item to view the bill details, and you can update or delete the bill.



Please enter a key value to search

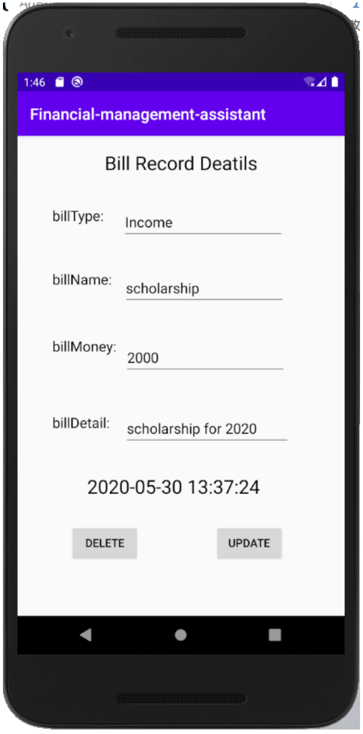
2020-05-28 TO 2020-05-31

Total income: 2000; Total spending2278

1 rent Spending
2020-05-30 13:31:28 Money: 998

2 rent Spending
2020-05-30 13:34:36 Money: 1280

3 scholarship Income
2020-05-30 13:37:24 Money: 2000



Bill Record Deatils

billType: Income

billName: scholarship

billMoney: 2000

billDetail: scholarship for 2020

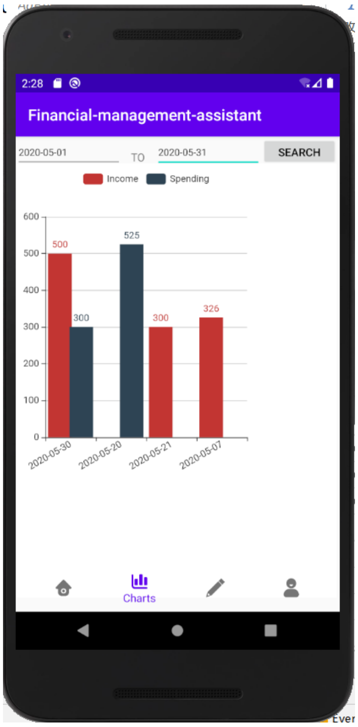
2020-05-30 13:37:24

Show a bar chart of the bill:

Click Chart in the menu and enter start and end dates.

Click search to display the bar graph in the WebView below.

The bar chart shows the type and amount of bills paid during this period.



2:28

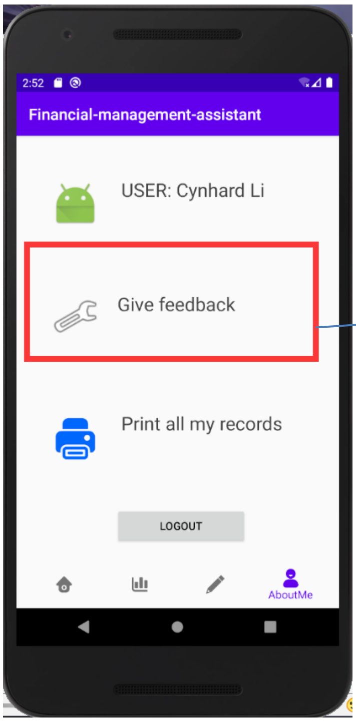
Financial-management-assistant

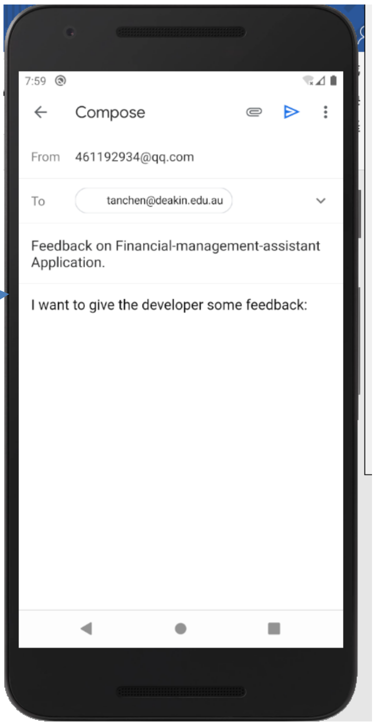
2020-05-01 TO 2020-05-31 SEARCH

Give developer feedback (using email):

Click on AboutMe in the menu below.

Click Give feedback to send a feedback to the developer via email.





From 461192934@qq.com

To tanchen@deakin.edu.au

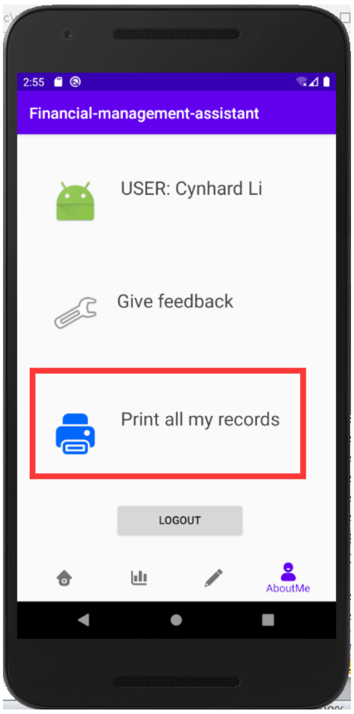
Feedback on Financial-management-assistant Application.

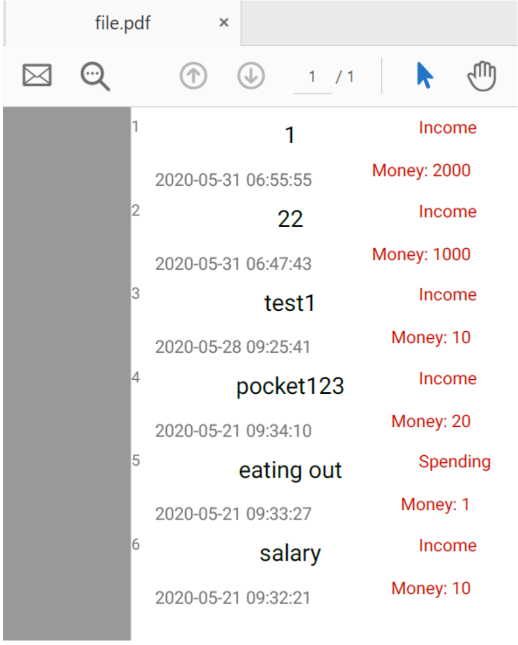
I want to give the developer some feedback:

Print all records in pdf file and store it in SDcard:

Click on AboutMe in the menu below.

Click Print all my records to save the bill as a PDF to SDcard.



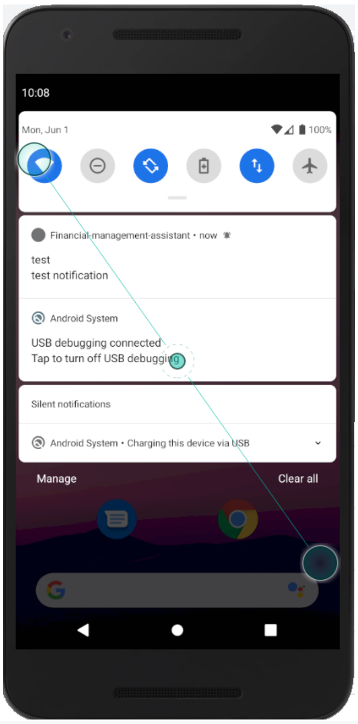


```
1        1                  Income
2020-05-31 06:55:55     Money: 2000
2        22                 Income
2020-05-31 06:47:43     Money: 1000
3        test1              Income
2020-05-28 09:25:41       Money: 10
4        pocket123          Income
2020-05-21 09:34:10       Money: 20
5        eating out        Spending
2020-05-21 09:33:27        Money: 1
6        salary             Income
2020-05-21 09:32:21       Money: 10
```

Notification pushed by Firebase console:

After using firebase cloudMessaging, in the firebase console, developers can set the content and theme they want to push, and they can choose the period and time of the push to remind users of some events related to this app.

In the app, we set a reminder in the firebase console to remind every user to record the bill of the week.



10:08

Mon, Jun 1 100%

Financial-management-assistant • now

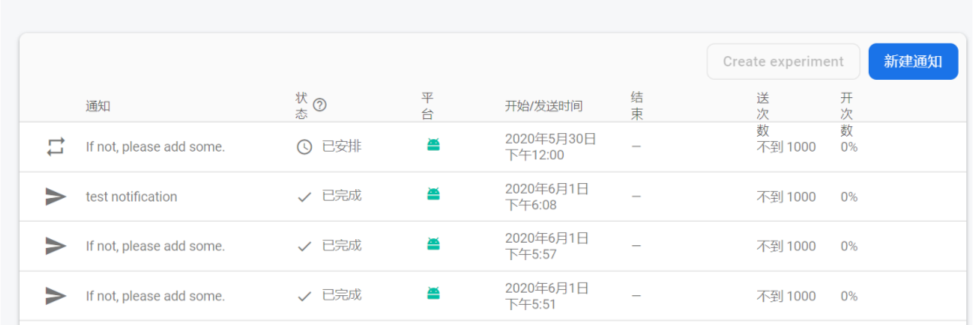
test
test notification

Android System

USB debugging connected
Tap to turn off USB debugging

Silent notifications

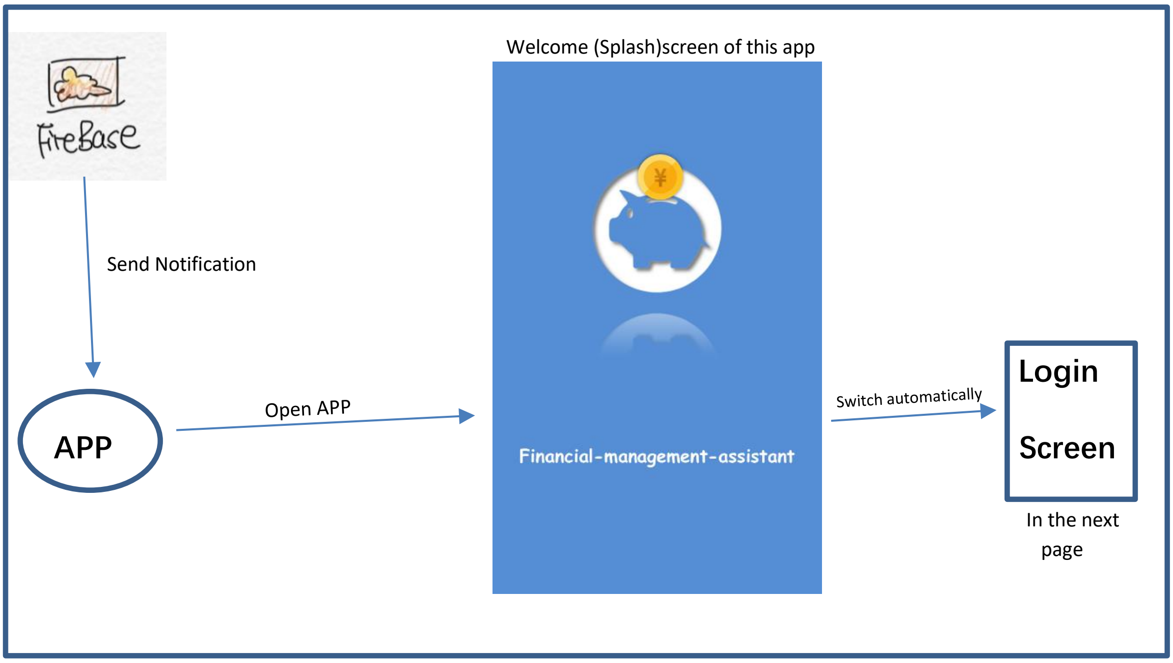
Android System • Charging this device via USB

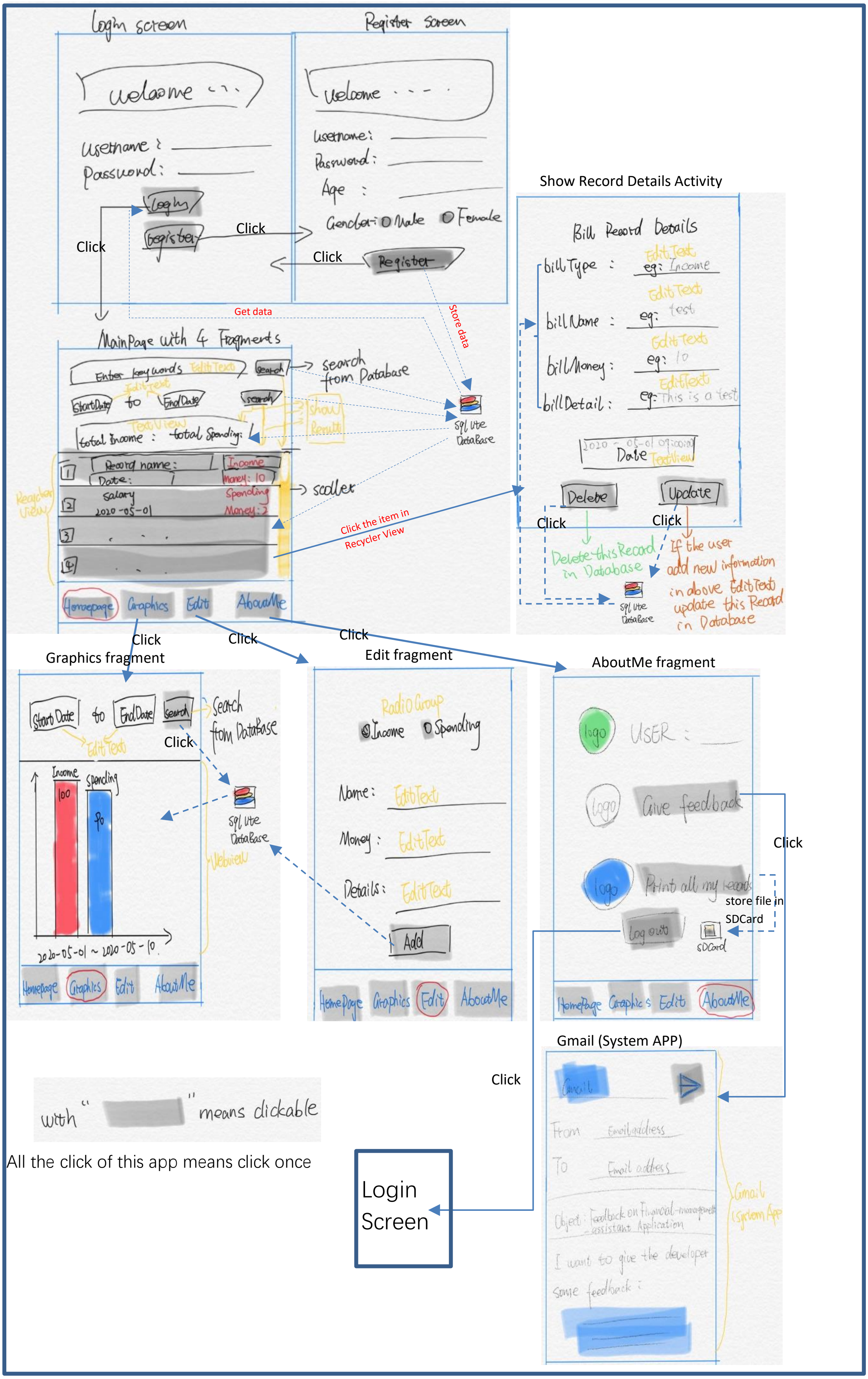


	通知	状态	平台	开始/发送时间	结束	送次数	开次数
	If not, please add some.	已安排		2020年5月30日 下午12:00	–	不到 1000	0%
	test notification	✓ 已完成		2020年6月1日 下午6:08	–	不到 1000	0%
	If not, please add some.	✓ 已完成		2020年6月1日 下午5:57	–	不到 1000	0%
	If not, please add some.	✓ 已完成		2020年6月1日 下午5:51	–	不到 1000	0%

Tips: The screenshots above were added after the completion of the project, in order to better show the features of the APP.

Design


FireBase
Send Notification
APP
Open APP
Welcome (Splash)screen of this app
¥
Financial-management-assistant
Switch automatically
Login
Screen
In the next
page



All the click of this app means click once

Data

Runtime Variables

1. All the Edit Text values. (Username, password, bill name, bill type, and bill date, etc.)
2. User information and the user bill record information get from the Edit Text will store in the RAM as the parameter to search and insert to the SQL database.
3. Recycler View for showing the bill item: it is a container to show the result gets from the database because the content of it would be changed by the search function.
4. WebView for showing the bar charts (actually it is an HTML webpage, the data for creating the bar chart is a JSON file data converted by the database content): it can be changed by the date and after we closed the app the content would disappear until using the date to search again it will have new content.

Permanent Storage Data

Data in SQL lite:

1. User table (id, username, password, age, gender): for the login and register function. This information for the users' input, and the app store all of them in the database
2. User Bill table (id, username, type, name, money, bill Details, bill Date): for the function for the user bill information. This information for the users' input, and the app store all of them in the database

Shared Preference:

1. There is a checkbox for asking the user if remember the username and password. The shared preference would store the checkbox status.
2. If the checkbox is checked then the username and the password would be store in the shared preference.

API/Class Structure

The features using the **advanced concepts** are:

1. **SQL lite** (API:android.database.sqlite.SQLiteDatabase, android.database.Cursor)
2. **Notification form firebase console** (**cloud Message and the service**, API: android.app.Notification, com.google.firebase.messaging.FirebaseMessagingService)
3. **Splash screen** (android.os.Handler, android.content.Intent)
4. **Bottom Navigation** (com.google.android.material.bottomnavigation.BottomNavigationView)
5. **WebService** (WebView contain the html file create by json file data and .js file, API: android.webkit.WebView)
6. **Giving feedback** (using system email app, API: android.content.Intent)

7. **Print the app content into pdf file**(android.graphics.pdf.PdfDocument).

Class Structure and the API in each class:

This app would include 15 classes.

Database & firebase service:

1. **Class DatabaseHelper**

   API: android.database.sqlite.SQLiteDatabase;
   android.database.sqlite.SQLiteOpenHelper;

   Function: onCreate {Create two table, one for store user information, another for store user bill information.}

2. **Class MyFirebaseMessagingService**

   API: android.app.Notification;
   com.google.firebase.messaging.FirebaseMessagingService;

   Function: onMessageReceived {if the notification from firebase not null, then using Notification.Builder to build a notification service to manage the notification.

3. **Class UserService**

   API: android.database.Cursor;
   android.database.sqlite.SQLiteDatabase

   Function: login {Compare the input information with information of database}
   Register {Add a user formation into the database}
   checkUserExist {Check whether the username exist in the database}
   getDateString {get the device date}
   addRecord {Add the user bill information into database}
   showAllCharge {get all the record of the user bill table in database}
   showDateCharge {get all the record of the user bill in the input date period}
   getAllDateRecordsMoney {get the total income and spending in the input date}
   getAllRecordsMoney {get the total income and spending}
   showBillItem {get a bill by id}
   deleteItem {delete a bill item in database}
   updateItem {update the information of a bill in the database}
   keySearchItem {get the bill records in the database by keyword of the item}
   chartsData {get the data with json file format to draw a bar chart in html webpage}

Entity classes:

1. **Class User**

   Function: get/set Username/Password/Age/Sex

2. **Class userBill**

   Function: get/set Id/Username/Type/Name/Money/Bill Details/Date

Screen:

1. **Class welcomeActivity (splash screen)**

   API: android.os.Handler;
   android.content.Intent;

Function: onCreate {show the layout of this activity and using the handler to switch it to the MainActivity automatically}

2. **Class MainActivity (Login activity)**
   API: android.content.Intent;
   android.content.SharedPreferences;
   com.example.fma.Service.UserService;

   Function: findViews {using shared preference to store the username and password; compare the username and password with the data in the database do an authentication}

3. **Class RegisterActivity:**
   API: android.content.Intent;
   android.content.SharedPreferences;

   Function: onCreate {get the user information from the screen and store them in the database}

4. **Class MainPageActivity**
   API: androidx.fragment.app.Fragment;
   androidx.fragment.app.FragmentTransaction;
   com.google.android.material.bottomnavigation.BottomNavigationView;

   Function: onCreate {create bottom navigation and set a listener to it to switch the fragment}
   switchFragment {using the index to transaction to switch the fragments}

5. **Class showRecordsFragment**
   API: androidx.fragment.app.Fragment;
   androidx.recyclerview.widget.RecyclerView;
   com.example.fma.Service.UserService;

   Function: getTheRecordItem {set function the button to get the database on the date and keywords from user bill table; set the adapter and other data to the recycler view}

6. **Class echartsFragment**
   API: android.webkit.WebView;

   Function: barChartWebView {get the JSON format data from the database and use it to an html file to get the bar chart; set the html file in the WebView}

7. **addRecordFragment**
   API: com.example.fma.Service.UserService;
   androidx.fragment.app.Fragment;

   Function: insertRecord {set the layout and implement the insert the edit text content into the database}

8. **aboutMeFragment**

API: android.content.Intent;
android.graphics.pdf.PdfDocument;
java.io.FileOutputStream;
java.io.IOException;

Function: feedback {use the android email API intent action to jump to the system email app to send a feedback email}
printRecords {get the content of records and use PdfDocument to store it in a pdf file then using FileOutputStream to store in the SDCard}

9. **showRecordDetailActivity**
   API: com.example.fma.Service.UserService;

   Function: showOneBillItem {get the user bill by the id from the user bill table; show the user bill content in the EditText so that the user could change it and then update the information in the database, there is also a delete button for user delete this item}

10. **RecyclerAdapter**
    This class is for setting up the recycler view. Including the content, layout, and click action.