UNIVERSITY OF NOTTINGHAM
SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING
JAV Web Based Programming – H63JAV
Java Programming Project

EasyAccounting App

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Manual

System requirement:
Android v.5.0 or higher

Getting started
This EasyAccounting app is designed for people who would like to record their daily costs easily. It can help users have a clear understanding of their daily consumption including the types and amount of income and expenditure.
The main menu of the application is shown below. The total amount of the expenditure of today will be displayed in the top. All the records of today will be displayed in a list. By swiping the list, user could check other date's records.

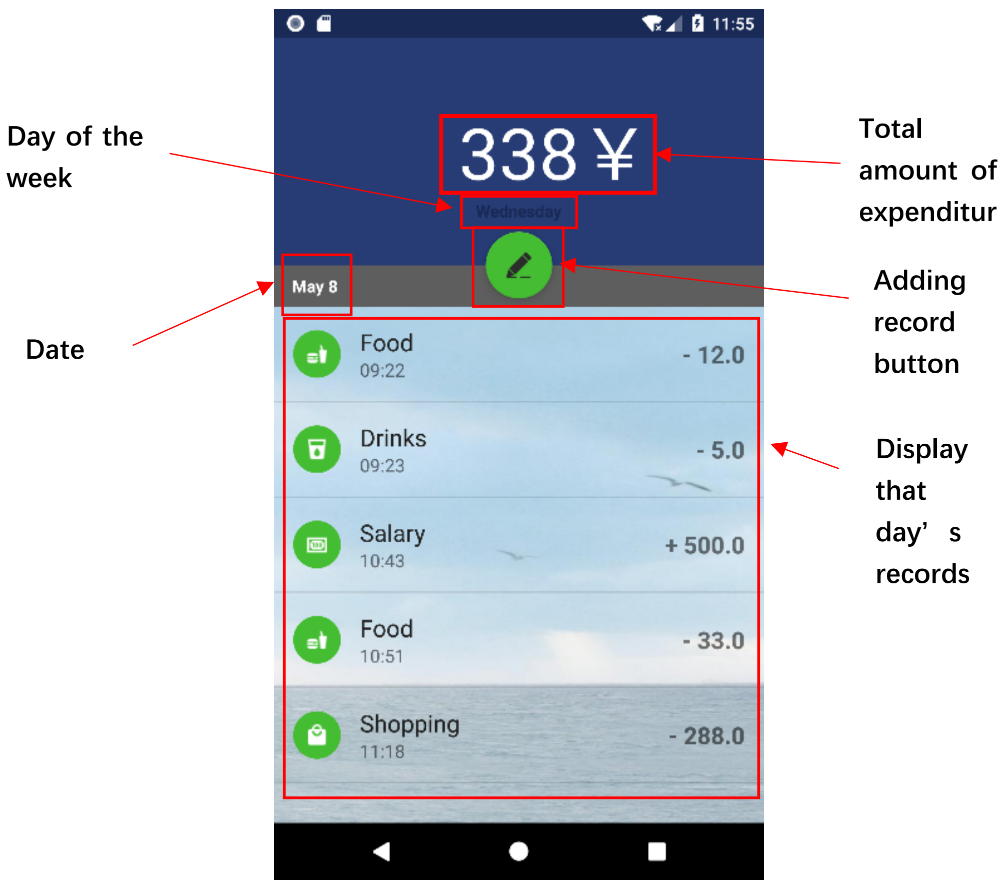


Figure1 Main menu

For a specific record, the type of expenditure of income, time and amount would be displayed.

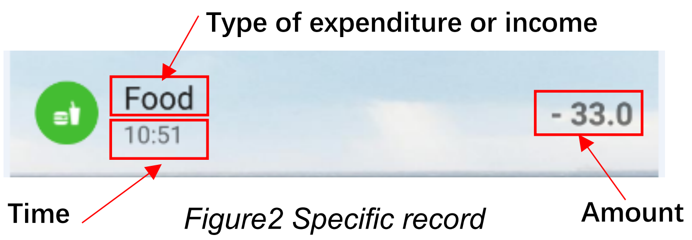


Figure2 Specific record

Add a record

To add a record, user can click the adding record button in the main menu. Then, the interface is shown below. User could choose the type of expenditure or income in the type list. Then, type the amount through keyboard. User could switch to income or expenditure by clicking switching button. Finally, click the finish button, the interface will return to main menu.

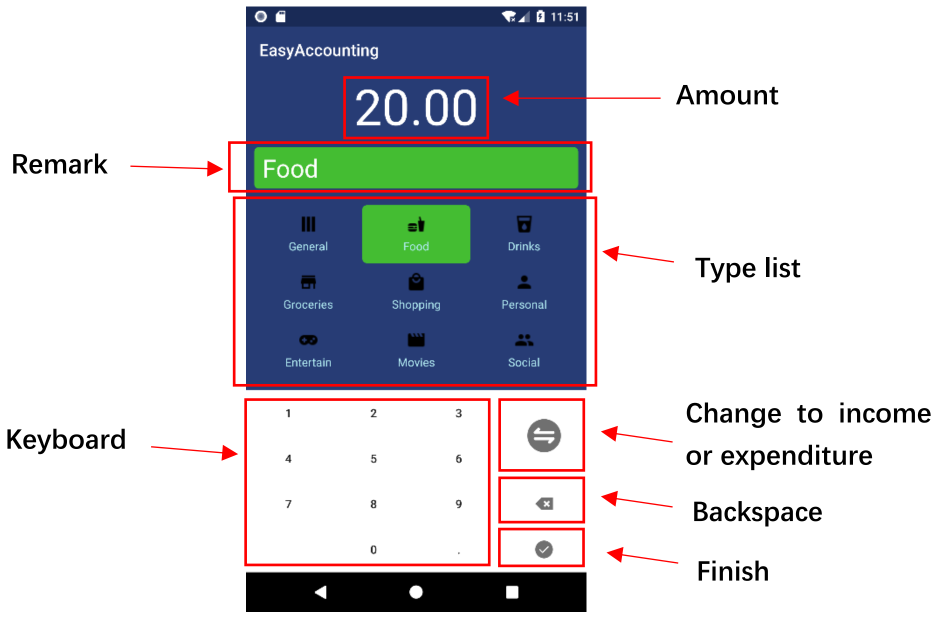


Figure3 Adding record interface

Edit or Remove a record

User could edit or remove a record by long clicking the record in the list. Then, a dialog will show up for user to choose removing or editing the record.

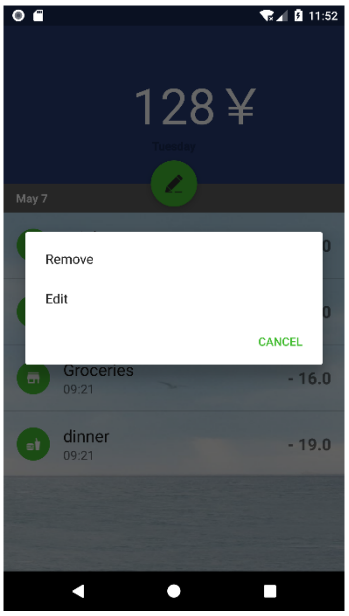
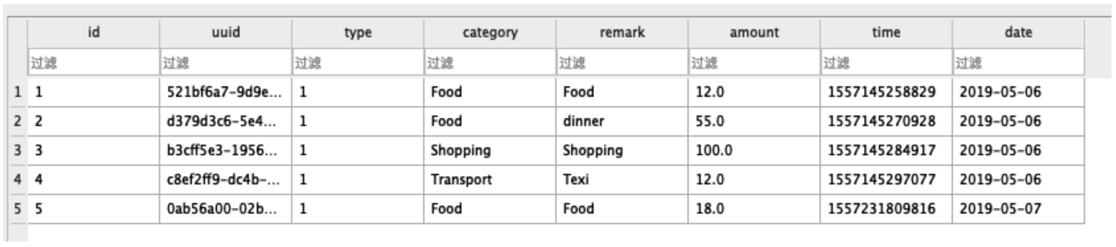


Figure4 Dialog for choosing removing or editing

Testing and Discussions

The testing could mainly be divided into unit testing and module testing. In the unit testing, the application could function properly and run smoothly. For the module testing, the database module, main menu module, and adding record module could function well separately.

The project could approximately meet the design goals. Firstly, it provides a friendly user interface which enable user to add a record conveniently. In the “adding records” page, a variety of consumption types are listed such as food, drinks, shopping. The user only need to choose the type in the list and type in the amount by keyboard and finally press the “finish” button. The whole process may only take about 10 seconds to add a new record.
Secondly, the app provides a convenient method to edit or delete the record. By long pressing the item, a dialog box will show up. The user could choose to edit that record or delete that record.
Thirdly, the app is based on SQLite database. All the records are stored in SQLite database and when the program ends, the data does not disappear. A part of database is displayed below.



	id	uuid	type	category	remark	amount	time	date
	过滤	过滤	过滤	过滤	过滤	过滤	过滤	过滤
1	1	521bf6a7-9d9e...	1	Food	Food	12.0	1557145258829	2019-05-06
2	2	d379d3c6-5e4...	1	Food	dinner	55.0	1557145270928	2019-05-06
3	3	b3cff5e3-1956...	1	Shopping	Shopping	100.0	1557145284917	2019-05-06
4	4	c8ef2ff9-dc4b-...	1	Transport	Texi	12.0	1557145297077	2019-05-06
5	5	0ab56a00-02b...	1	Food	Food	18.0	1557231809816	2019-05-07

Figure5 Database

In addition, an open source Android UI component named Ticker is introduced into the project. It can realize displaying scrolling text which is used to display the total amount in the top of main menu. When the amount is changed, the scrolling text will show up.
In the main menu, all the records of that day are displayed in a listview. This listview is integrated in a fragment and the fragment is integrated in a viewpager. User could check other days’ record by swiping the list. Once a new record is added, the reload() method within viewpager is called first which would traverse all the fragments. Then, the reload() method within fragment is called to update the listview thus the new list with new added records is displayed.
Besides, a GlobalUtil class is included in the program whose job is to manage resources used in the program. With the help of this class, there is no need to initialize database helper every time once the data in the database is accessed.

Graphics

Class Diagram

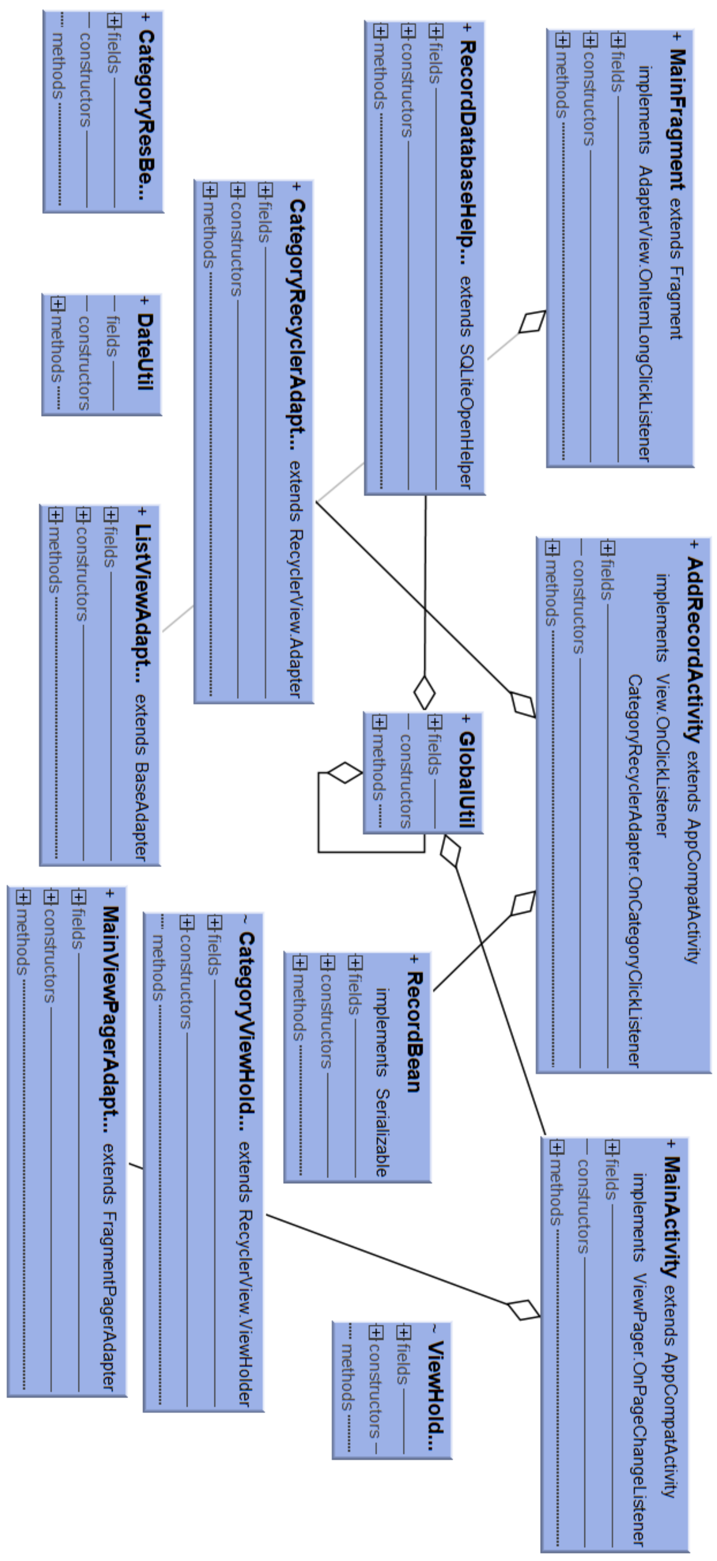
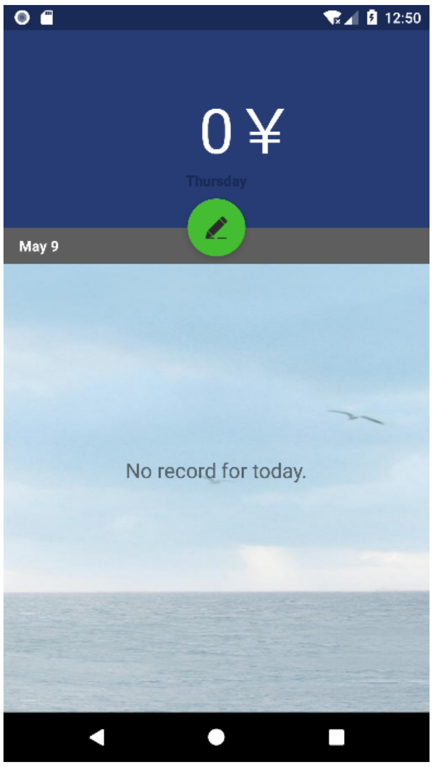
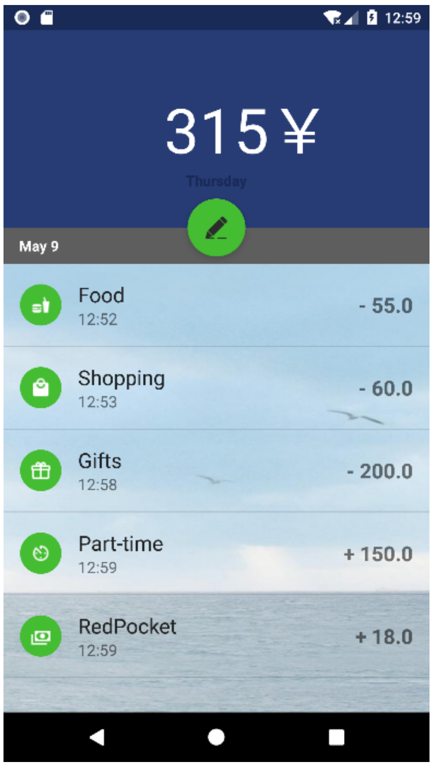

+ MainFragment extends Fragment implements AdapterView.OnItemLongClickListener
+ RecordDatabaseHelp... extends SQLiteOpenHelper
+ CategoryResBe...
+ CategoryRecyclerAdapt... extends RecyclerView.Adapter
+ DateUtil
+ AddRecordActivity extends AppCompatActivity implements View.OnClickListener CategoryRecyclerAdapter.OnCategoryClickListener
+ GlobalUtil
+ ListViewAdapt... extends BaseAdapter
+ RecordBean implements Serializable
~ CategoryViewHold... extends RecyclerView.ViewHolder
+ MainViewPagerAdapt... extends FragmentPagerAdapter
+ MainActivity extends AppCompatActivity implements ViewPager.OnPageChangeListener
~ ViewHold...
fields
constructors
methods

Figure6 Class Diagram

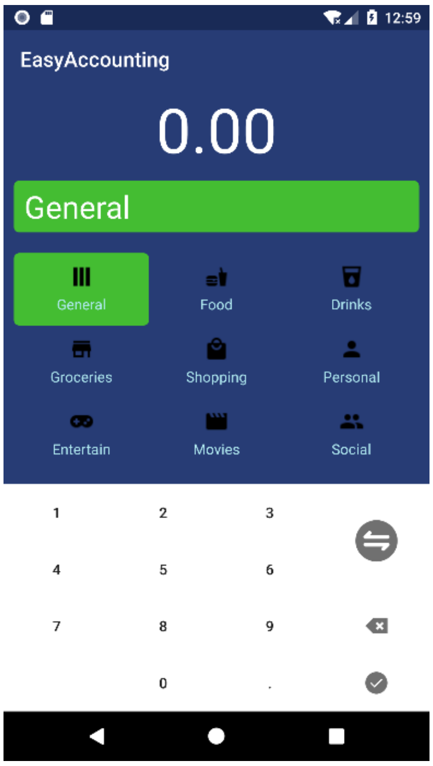
GUI Design





Food 12:52	- 55.0
Shopping 12:53	- 60.0
Gifts 12:58	- 200.0
Part-time 12:59	+ 150.0
RedPocket 12:59	+ 18.0

Figure7. Main menu *Figure8. Main menu with records*



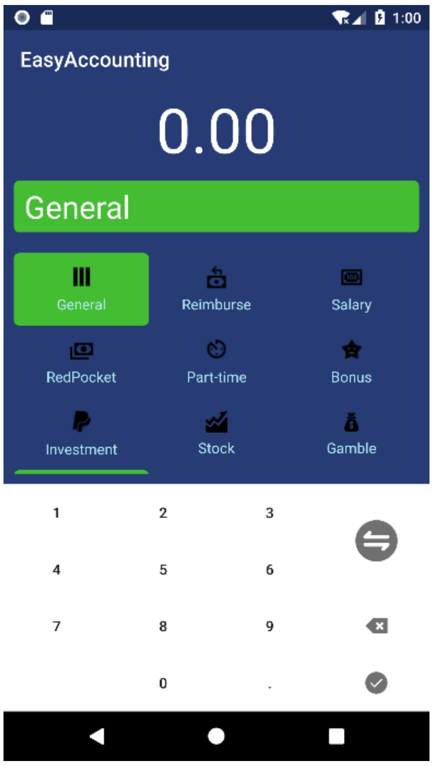


Figure9. Adding records for expenditure Figure10. Adding records for income

Pseudo code

This program will allow the user to add record, edit record and delete record for every day's consumption.

MainActivity.java

```
Function onCreate(){

    Set OnClickListener for adding record button
    If (adding record button is clicked)
        addRecordActivity started

    Initialize viewpager, amountText
    DateText ← DateUtil.java
end
}
```

AddRecordActivity.java

```
Function handleDot(){
    Set OnclickListener

    If (userput does not contain '.')
        Add '.' to userInput
End
}

Function handleTypeChange(){
    Set OnClickListener

    If (type equals expense)
        type←income
    else
        type←expense
    end if
End
}

Function handleBackspace(){
    Set OnClickListener

    userInput←userInput.length -1
    update AmountText
End
}

Function handleDone(){
    Set OnClickListener

    Change userInput to double
    record←userInput
    databaseHelper←record
    reload viewpager

End
}

Function updateAmountText(){
    If userInput contains ‘.’
        If no digit after ‘.’
            amountText←userInput+”00”
        if 1 digit after ‘.’
            amountText←userInput+”0”
        else
            amountText←userInput
    if userInput does not contain ‘.’
        if no input
            amountText←”0.00”
        else
            amountText←userInput+”.00”
End
}
```

RecordDatabaseHelper.java

```
Function onCreat(SQLiteDatabase){
    Create database with id, uuid, type, category, remark, amount, time, date

end
}

Function addRecord(Recordbean){
    Create instance of database
    Create ContentValues to pass data to database
    ContentValues ← Recordbean.getUuid
    ContentValues ← Recordbean.getType
    ContentValues ← Recordbean.getCategory
    ContentValues ← Recordbean.getRemark
    ContentValues ← Recordbean.getAmount
    ContentValues ← Recordbean.getDate
    ContentValues ← Recordbean.getTime

    Database ← ContentValues
end
}

Function removeRecord(uuid){
    Delete data according to uuid

end
}

Function editRecord(uuid,RecordBean){
    Delete data according to uuid
    Set uuid to Recordbean
    Call function addRecord

end
}

Function readRecords(date){
    Create linkedlist for RecordBean
    Query the database according to date

    Do
        Obtain data from database to recordBean
        linkedlist ← recordBean
    While (there is next record)
Return linkedlist
end
}
```

MainFragment.java

```
Constructor MainFragment(date){
    Get data from database according to date
end
}

Function onCreateView(Layoutinflater){
    Set layout for fragment
end
}


Function reload(){

    Get data from database
    If (listviewAdpater is null)
        Create new ListViewAdapter

    ListViewAdapter ← records
    If (the number of records larger than 0)
        Set "No record for today" invisible
end
}


Function getTotalCost(){
    Total cost += record.getAmount()

end
}

Function onItemLongClick(){
    If (long clicked)
        Show dialog to choose to remove or edit

end
}


Function showDialog(index){
    If (remove is chosen)
        Get uuid
        Databasehelp.remove(uuid)
        Reload
        Update the total cost
    Else if (edit is chosen)
        AddRecordActivity started
end
}
```

MainViewPagerAdapter.java

```
Function initFragment(){
    Dates ← databaseHelper

    Initialize the fragment ← Dates

end
}

Function getLastIndex(){
    Return the size of fragments -1
}
```