

Billing application based on Android

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Graduated student team project

Introduction

In this research project, our team will focus on the principle and purpose of SQLite.

With the development of consumer electronics products, the way that people access to the Internet becoming more and more abundant. Mobile devices have the trend to exceed the traditional personal computer (PC), and become the most common way for people to access data. Therefore, we should pay more attention on the development of mobile application. In this project, we are going to develop a simple application that based on Android platform. The application will implement simple data storage and reading in using the build-in database of Android OS. By writing this program, we will learn and understand the lightweight database- SQLite's syntax

and basic knowledge.

"Billing" is a simple accounting application, and it is based on The Android platform. The main purpose of this project is to study how the Android OS operate its built-in database (SQLite), and implement data storage for Android based mobile devices.

As we know the SQLite library is one of the core parts of the Android environment. In the "android. database. Sqlite" namespace, it provides the interface that make Java applications can access the built-in SQLite.

Feature Summary of "Billing"

There are some practical features for our application. In using this application people can record their daily bills with remark details and

classification. Firstly, users can choose the type of a bill. Whether they are outcome or income. The outcome includes daily use, energy cost, gas and others. The income includes salary and others. For example, after I brought some food, and want to save the bill in our application, I can choose daily use. Then users can record how much they spend in a specific item ,and when they spend. In addition, users can also choose the type of a bill, such as personal and company. Finally, users can write their remark in their phone. They can take notes what they think about their bills. In this way, users can know why they spend the money after a long time, and in this way, it will also help people to make rational consumption. Users can check their bills by choosing different months. It is very clear for users.

About SQLite

"SQLite", is a lightweight database, it's used to comply with ACID relational database management system, which is included in a relatively small C library. It is designed for embedded systems, and there are already many embedded products use it, it takes up very low resources, in embedded devices, may only need a few hundred K of memory is enough. It can support Windows / Linux / Unix, and so on the mainstream operating system, at the same time with many programming languages, such as Tcl, C #, PHP, Java, ODBC interface, compared to Mysql, PostgreSQL these two open source The world's leading database management system, it's faster than they deal with.

Project's Name Story

Our project's document name is "ColaBox", it comes from a whim, that when we found our Coca-Cola box was empty after we discussed how to implement the project.

IDE and development Tools

For the IDE of our project, we choose to use Eclipse, first, it is totally free, and it has a wealth of plug-ins to choose. Our development is based on Android 6.0, because if the selected version is too new, it will cause many devices can not run this application. Therefore, we choose one of the most widely used version Android 6.0.

Document structure

In this part, we will introduce the effect and structure of some

important document files in our project.

The document structure is shown as Figure 1.

As Figure1 shows, under the folder "SRC" are the main business logic processing files and UI control files.

In "BillDbHelper.java", it is mainly related to the operation of database for this project, for example create a database named "cola.db", and create the related tables of the database. Also we pre-statement some queries in this file, like insert queries, update queries, delete queries, and so on. Different functions can implement database operations by calling these queries.

"ColaBox.java" is mainly used to accept the data sent by the child thread, and use this data to update the UI with the main thread. It also declares some of the main activities of the systems.

"Dialog_edit.java" is used for

management and control the system

notice and alert dialog.

"Frm_Addbills.java" defines the events for adding bills in different contexts.

"Frm_Editacctitem.java" is used for implement "ExpandableListActivity" it mainly used to control list groups, and its content.

"LocalService.java" is used for implement notification manager.

Under the folder "GEN" the "R.java" is a resource mapping file, it is an automatically generated file.

Under the folder "layout" all the ".xml" files are used for manage the style of text.

Under the folder "drawable" are all the ".png" images that we are using in our application.

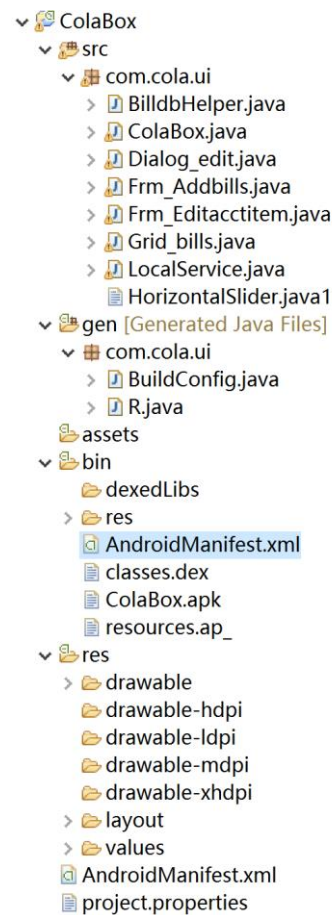


Figure 1

User Case Diagram & Interaction Diagram

User Case Diagram (Figure 2)

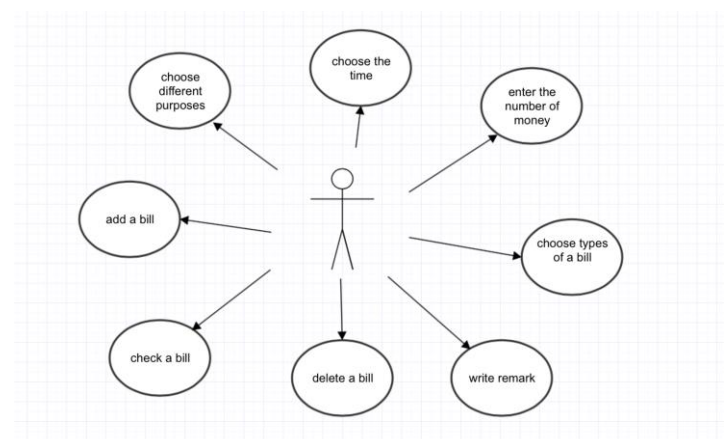


Figure 2

Interaction Diagram (Figure 3)

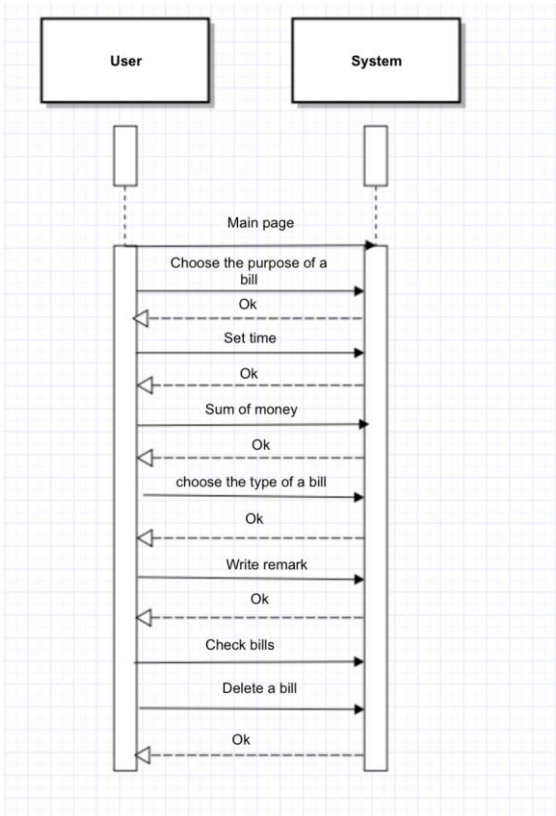


Figure 3

Loading Screen of the Application

(Figure 5)

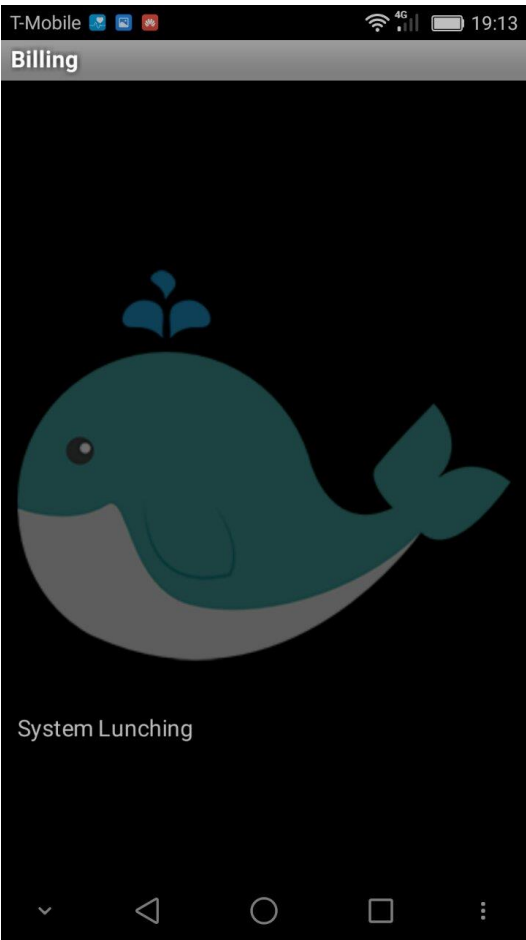


Figure 5

Illustration of the basic features with application screenshot

Icon of the Application (Figure 4)



Figure 4

Main screen of the application add a billing (Figure 6)

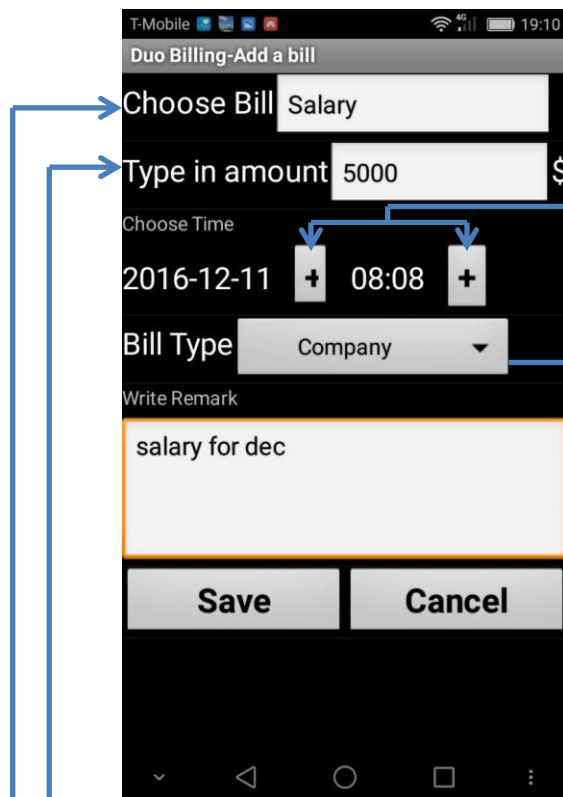


Figure 6

This is the main screen of the application, the features are as follows:

1. Choose the bill type, when you touch the choose bill textbox it will jump to Figure 7, and you can choose the source of the bill..
2. Type in the bill amount, the amount will add or minus from

your monthly balance according to the bill type you choose.

3. Change the bill creation date.(jump to Figure 8 up)
4. Change the bill creation time. (jump to Figure 8 down)
5. Choose where the bill belongs to. (jump to Figure 9)
6. Write remark for a specific bill (jump to Figure 10)

Bill option menu (Figure 7)

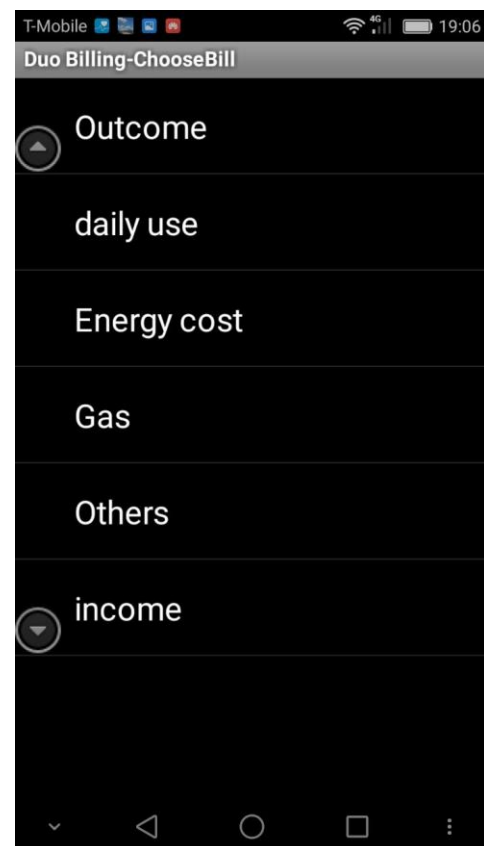


Figure 7

Change the bill creation date & time

The belonging of the bill (Figure 9)

Figure 8

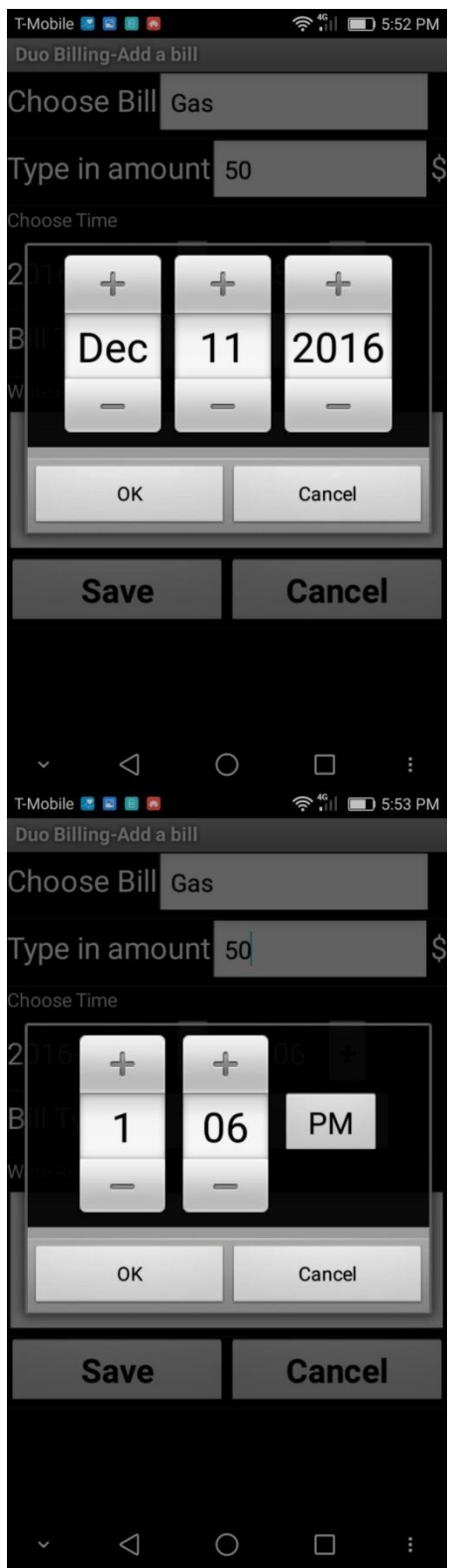


Figure 8

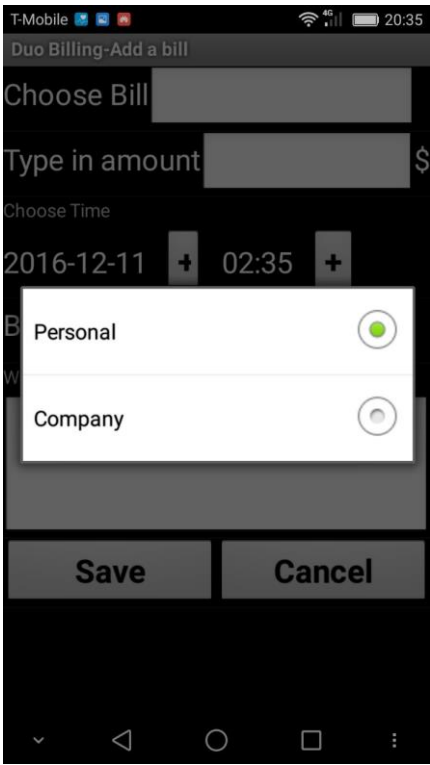


Figure 9

Text remark for a bill (Figure 10)

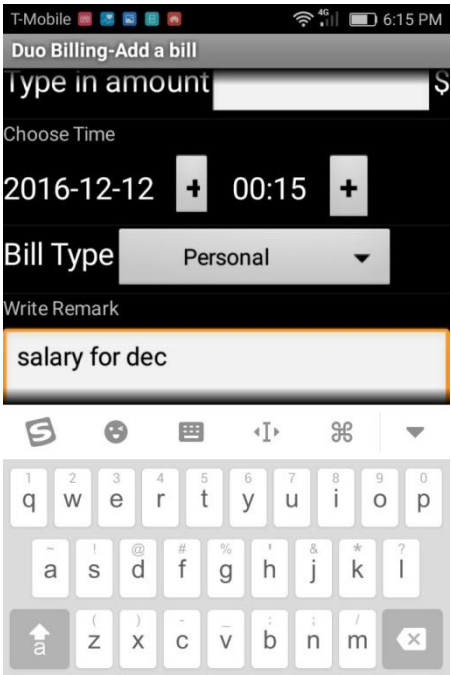
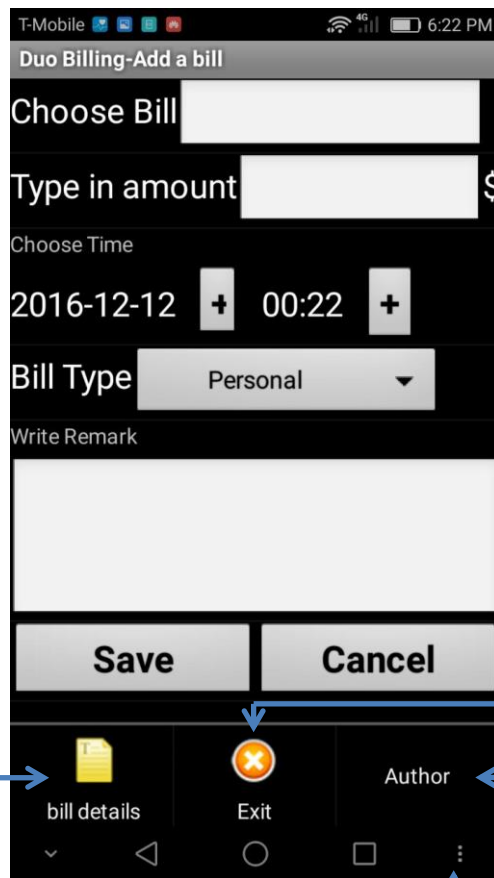


Figure 10

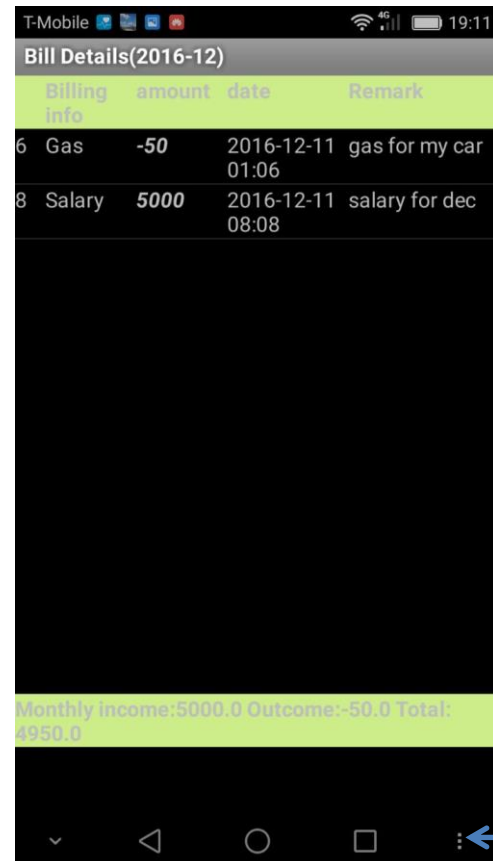
Toolbar of the "Billing" (Figure 11)**Figure 11**

When you touch the toolbar button of the application, it will show you the toolbar as figure 11, and there are three features in the toolbar of "billing":

1. Bill details will shows you the View the monthly bill summary, according to your income and expenditure. (jump to Figure 12)

2. Exit the application.

3. Show the Author.

Monthly bill summary (Figure 12)**Figure 12**

1. In the bill details option, you can get every bill item and the bill summary of the current month.
2. You can also delete a bill record by long touch a bill record. (jump to Figure 13)
3. If you call out the toolbar, you

can also search the bill summary,
according to the month and
year you select. (jump to Figure
14)

Delete a bill record (Figure 13)

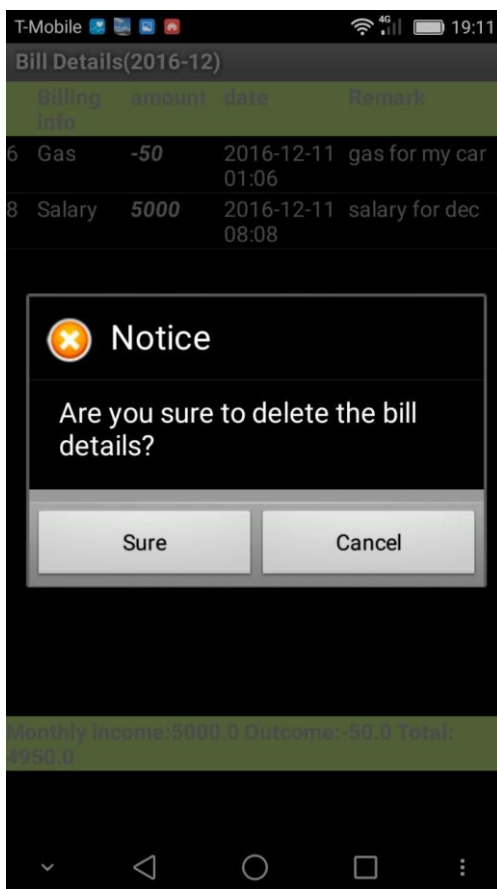


Figure 13

Select the bill details according to
date (Figure 14)

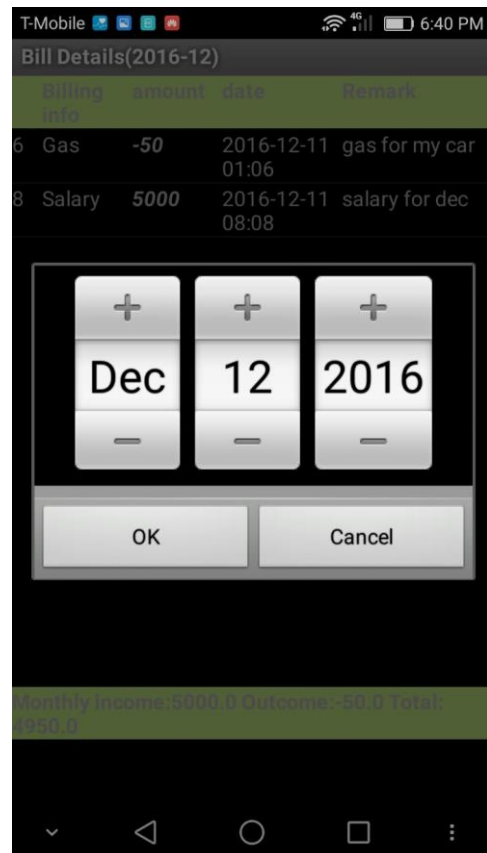


Figure 14

Reference and citation

Reference:

- [1] Vogel, Lars. "Android sqlite database and contentprovider-tutorial." *Java, Eclipse, Android and Web programming tutorials* 8 (2010).
- [2] Alessi, Patrick. *Professional iOS database application programming*. John Wiley & Sons, 2013.
- [3] Junyan, Lv, Xu Shiguo, and Li Yijie. "Application research of embedded database SQLite." *Information Technology and Applications, 2009. IFITA'09. International Forum on*. Vol. 2. IEEE, 2009.

Citation for icons and logos

1. LOGO: <http://www.zcool.com.cn/> Author:

Timker Time: 9/3/2015



2. ICON: "Mobile Retina icon"

<http://www.zcool.com.cn/> Author: Liu

Zhao Time: 3/15/2013

