Cream

Android Money Manager

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Prepared for Dr. Ouda

Mobile Application Development (60-420)

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Design Considerations

The application makes use of the controller-view-model design pattern. Models are kept in sync with the data by the controllers, which are the fragments. The fragments are also the view for which the models data is shown. The application makes use of adapters to show the lists (of accounts, transactions, etc) in an efficient manner. They can be viewed in '/views', as they provide the views of the data provided by the controlling fragments.

Once past the login/setup stage, a single activity is used for the menu, with a fragment holder to show the various screens.

All input is validated before it is sent it to the database.

As opposed to the menu that pops up in ExpenseIQ's application for transactions and accounts, this application offers the same functionalities within the edit screens for each.

On each page that shows data, other than the reports screens, a loader is used to fetch the user, their accounts, and their transactions from the SQLlite database. The data is saved into a User object, which has Account objects, which have Transaction objects (in /models package). The User is then saved to the single instance in MainActivity. This is done for simplicity. If a page doesn't have a loader, because it doesn't update data for instance, it may access the latest user info through MainActivity's *CURRENT_USER* variable. It ensures that the application always delivers up-to-date and consistent data. For instance, when a user goes "back", the loader will fetch a new model. The developer doesn't have to worry about the state of each individual feature, just that they fetch the models on screen load. The use of objects also allows for easy to read code, as common functions can be used. For example, the transactions object can use a Java Calendar object, which is easy to work with when trying to filter by period. Also, instead of complicated join queries for every piece of data, one set of queries is performed for every page, and all of the consuming features use the same User object. Add, update, and deletes are handled through the database content provider, and then a simple restart of the loader manager refreshes the User model. In the future, I would like to make the individual queries to the database for fetching the user data. This would be more complicated, but more efficient for large amounts of data. For now though, this approach works fine on modern phones.

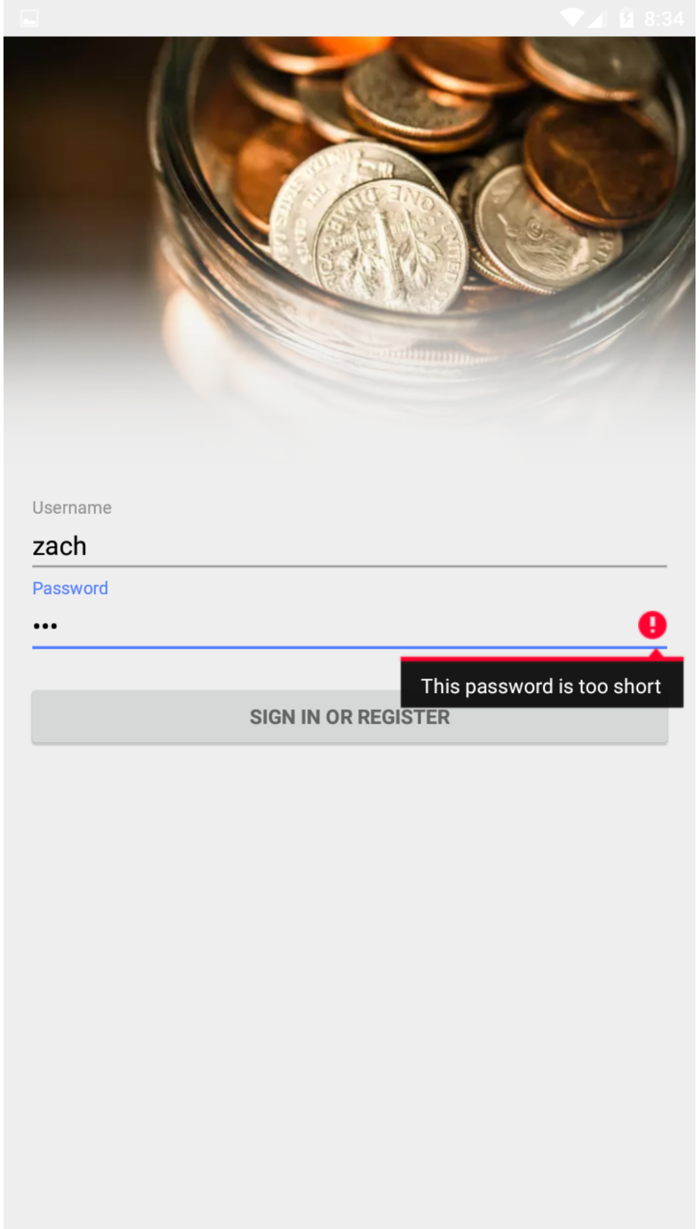
Two external libraries are used: MPAndroid and Floating Action Button. MPAndroid provides a library for building charts. The use of this library can be seen in 'utils/ChartGenerator'. Floating Action Button is used on the Overview screen to show the popup floating action buttons for "Add Expense" and "Add Income".

User Guide

The following is an overview of the various screens and features in the application.

Login / Register

If user exists, will attempt to login with password. If they don’t, the user will be registered with password. If password is too short, user will be notified.



Username: zach

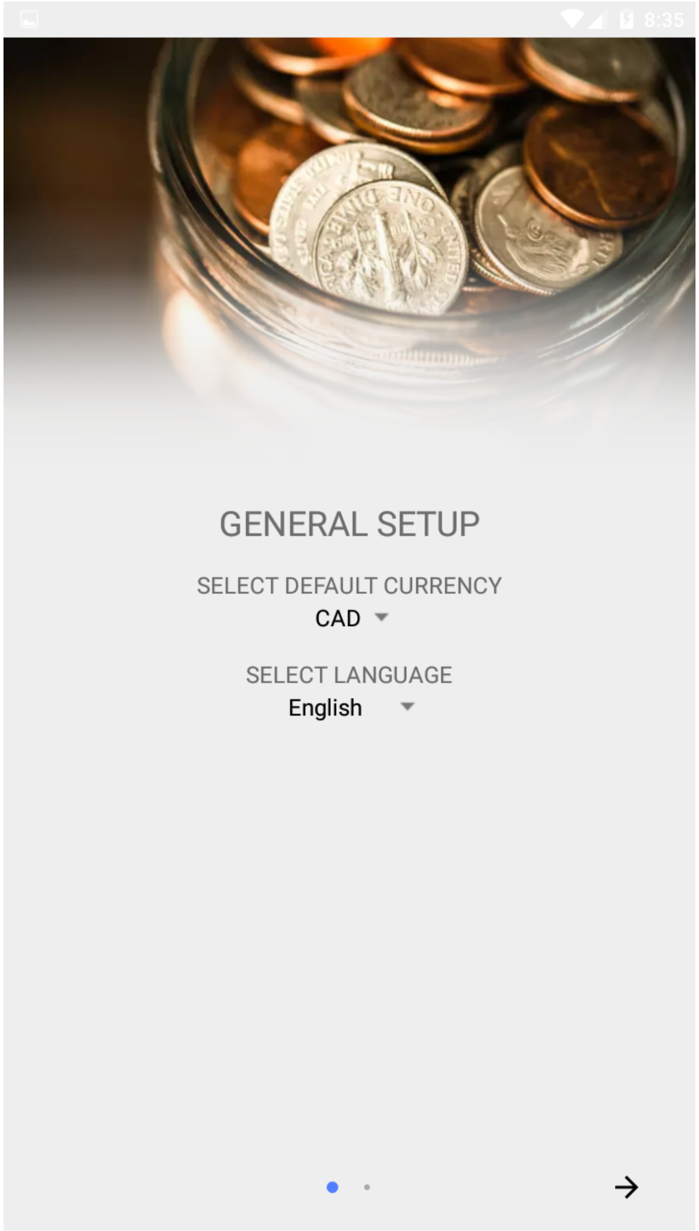
Password: •••

This password is too short

Setup

User may choose between multiple currencies. Money values in the app will be displayed according to chosen locale. User may also choose between different languages. This currently has no effect on the app and only English is provided, due to budgetary constraints.

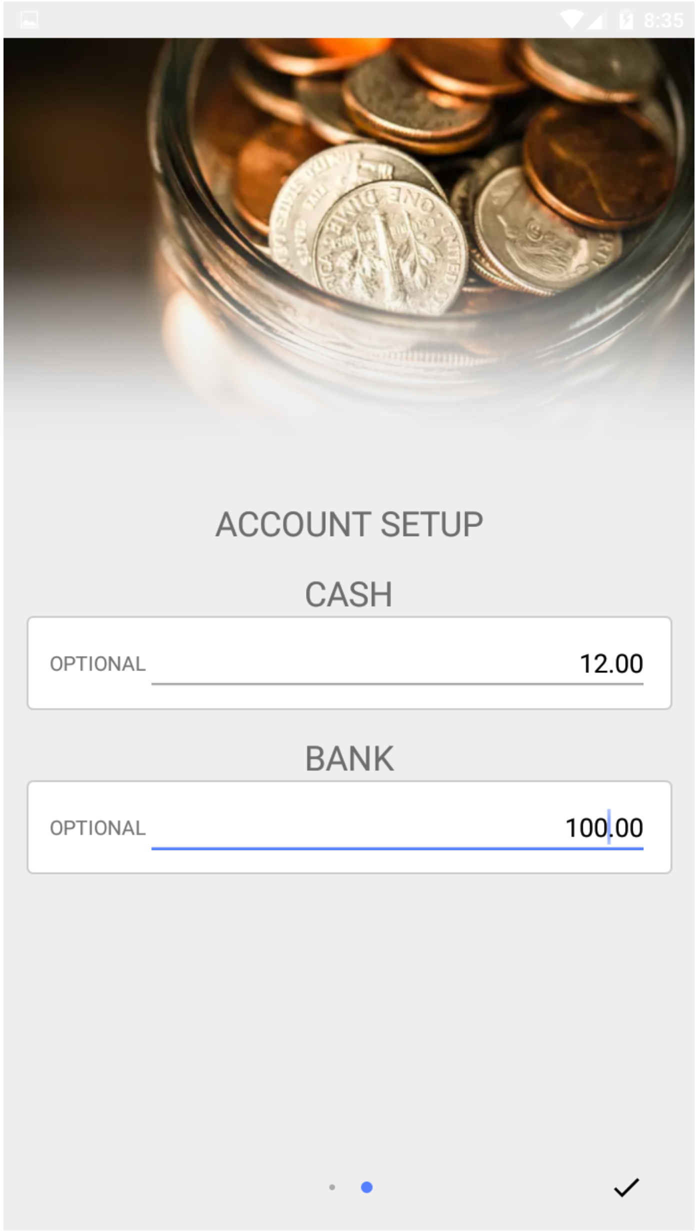
Two accounts are created by default: Bank and Cash. The user may define the opening balances in the setup screens. They can edit either after they are logged in.



GENERAL SETUP

SELECT DEFAULT CURRENCY
CAD

SELECT LANGUAGE
English



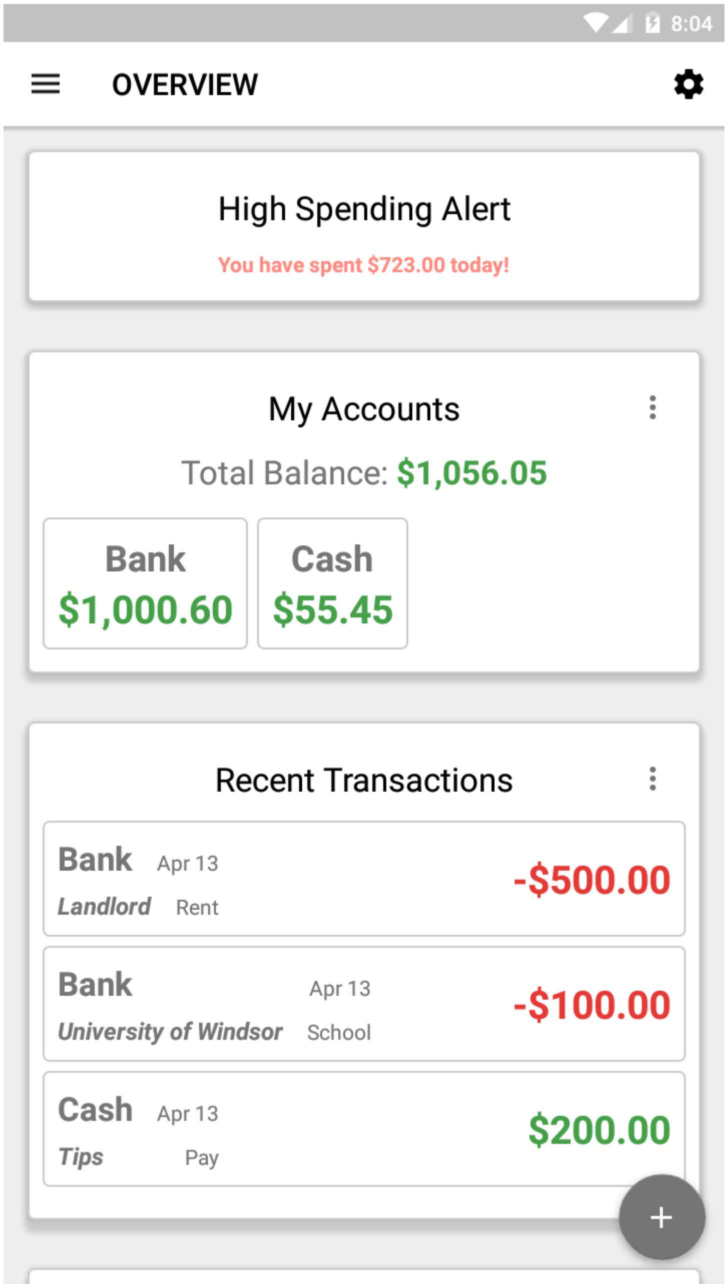
ACCOUNT SETUP

CASH
OPTIONAL 12.00

BANK
OPTIONAL 100.00

Overview

The Overview screen shows a slice of the overall features. Important information will be displayed here.



High Spending Alert

You have spent $723.00 today!

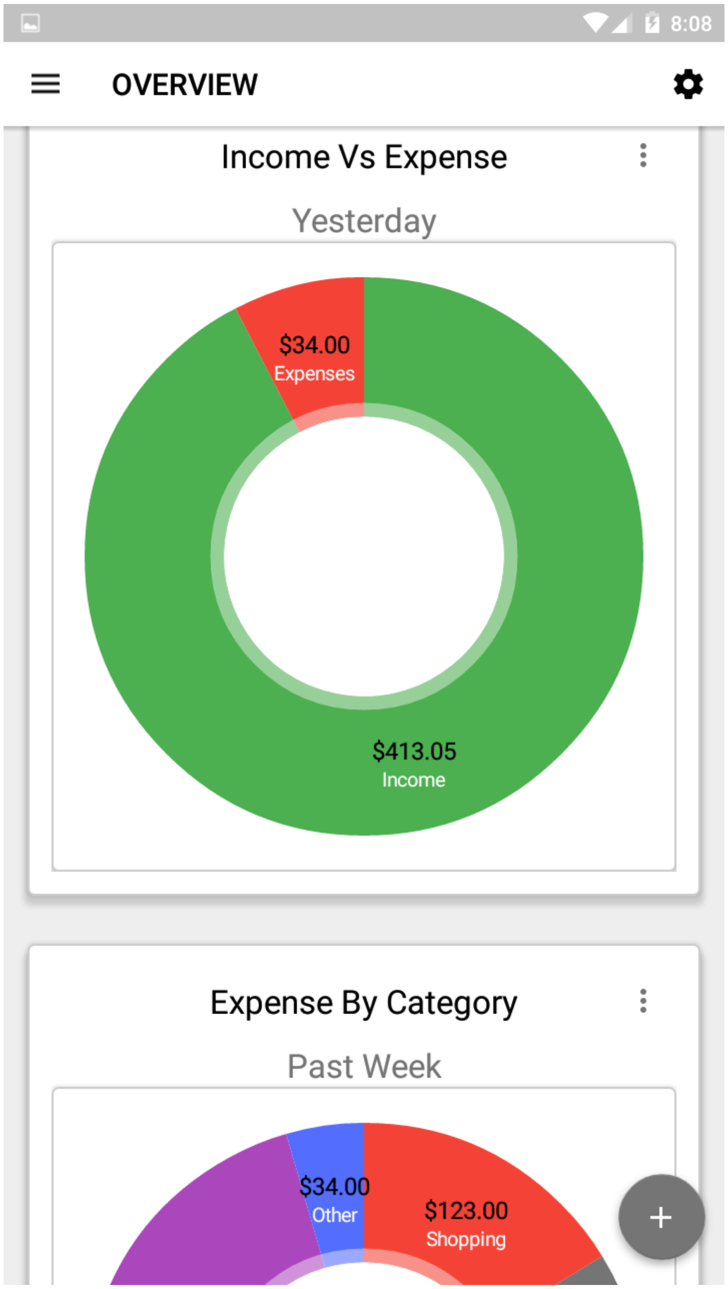
My Accounts

Total Balance: $1,056.05

Bank	Cash
$1,000.60	$55.45

Recent Transactions

Bank Apr 13 *Landlord* Rent		-$500.00
Bank Apr 13 *University of Windsor* School		-$100.00
Cash Apr 13 *Tips* Pay		$200.00



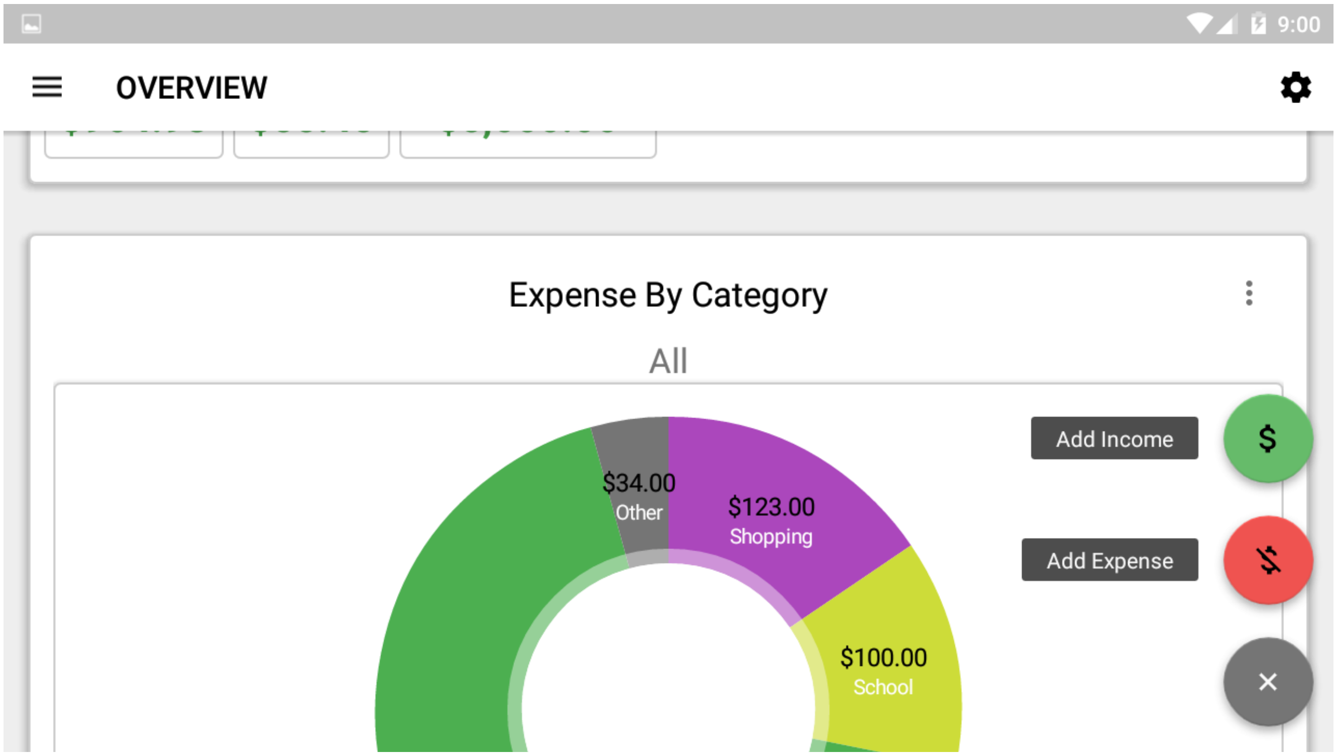
Income Vs Expense

Yesterday

Expense By Category

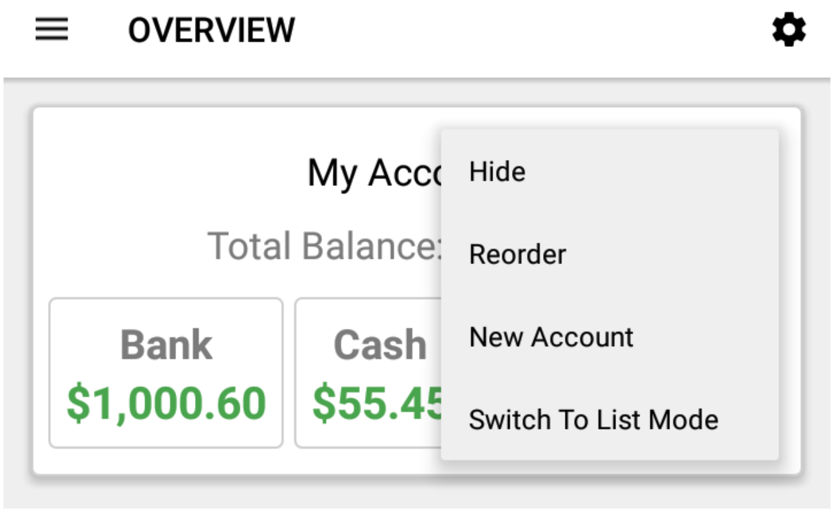
Past Week

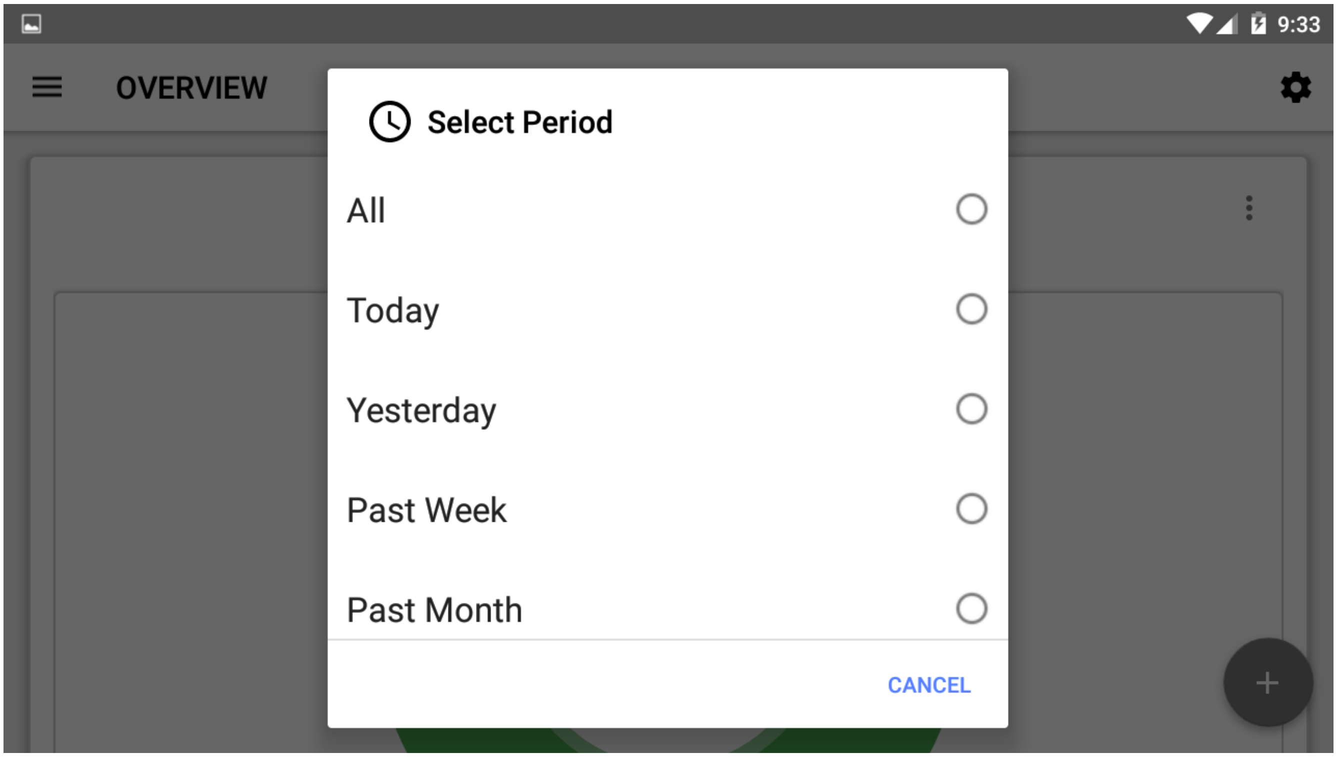
Transactions can also be added from the overview screen. Click the floating action button, and a sub menu will open offering the choices



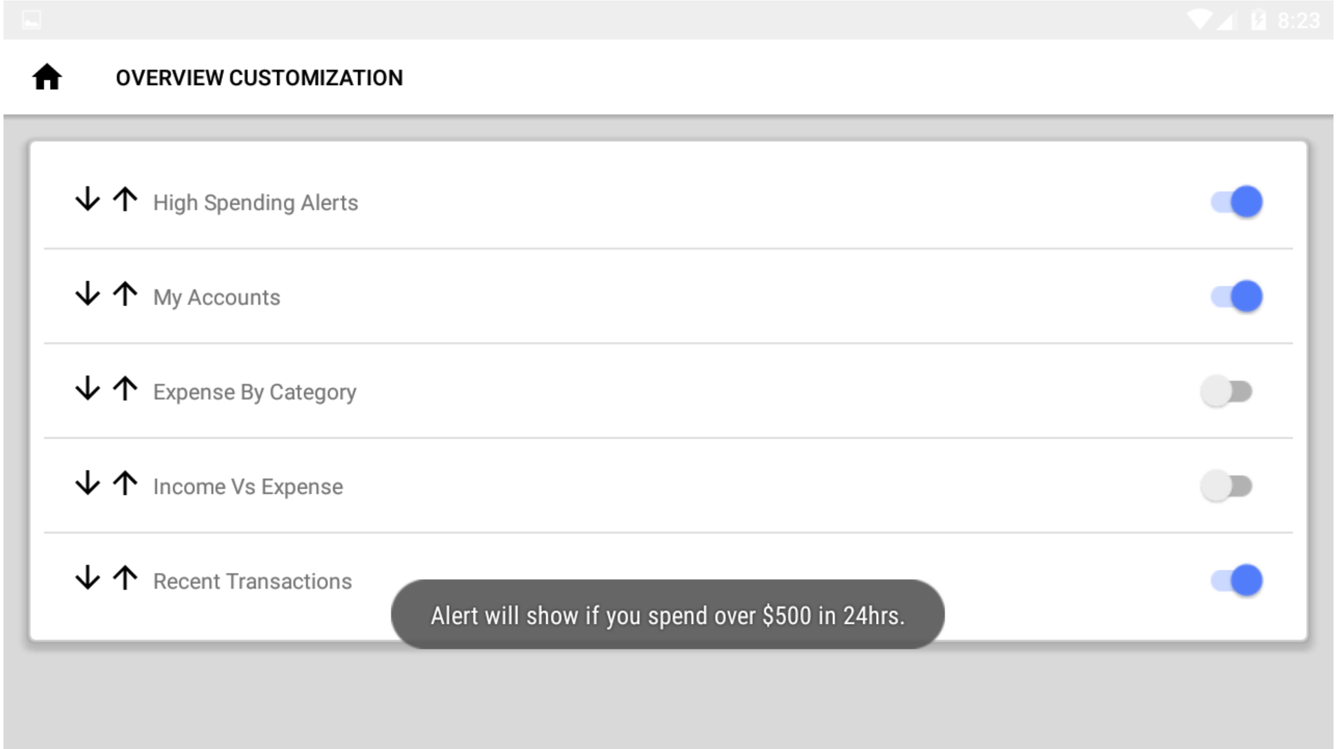
Overview Customization

Many of the overview features can be customized using the settings options in the top right corner of that features card. For example, the appearance of the "My Accounts" list can be modified, or the period for charts can be selected:





The layout of the overview screen itself can be customized by tapping the “gear” icon in the top right corner. The order and visibility of each feature can be modified.



↓ ↑ High Spending Alerts ●

↓ ↑ My Accounts ●

↓ ↑ Expense By Category ○

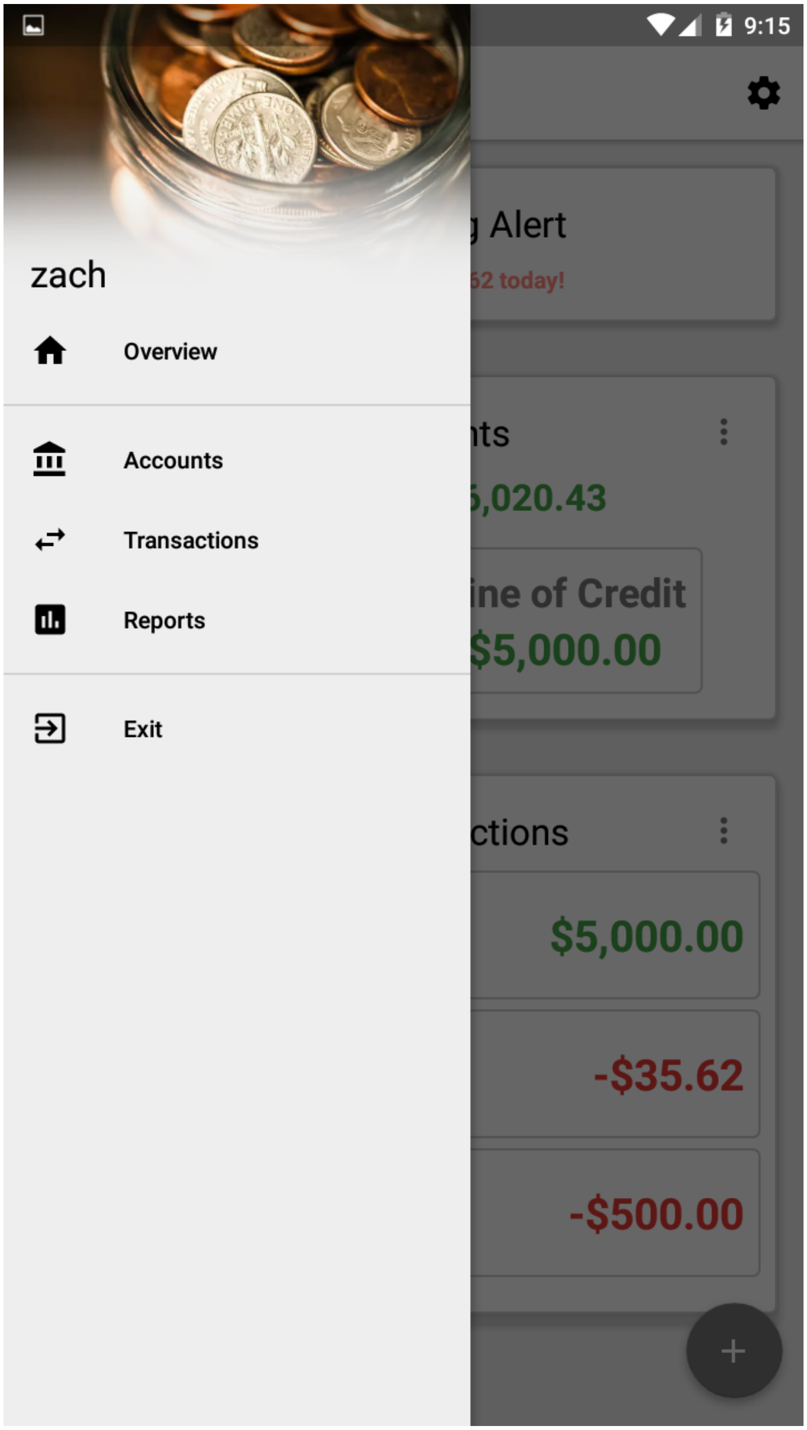
↓ ↑ Income Vs Expense ○

↓ ↑ Recent Transactions ●

Alert will show if you spend over $500 in 24hrs.

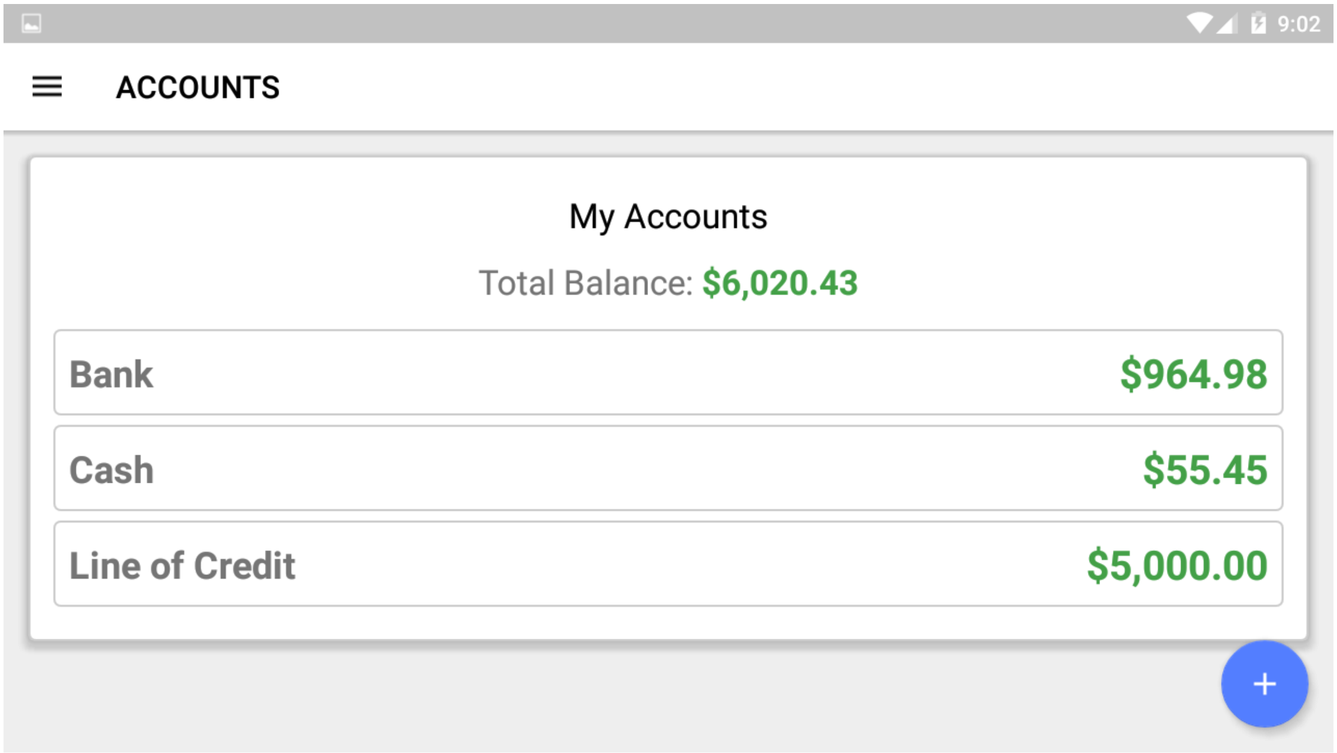
Navigation

The user can press the back button at anytime to return to the previous screen. The main navigation is done through the navigation drawer menu, which is opened by sliding from the left or tapping the hamburger icon in the top left of the screen. The user’s name is shown at the top of the menu. The application can be exited at anytime, signing the user out, but tapping the “Exit” button.



Accounts

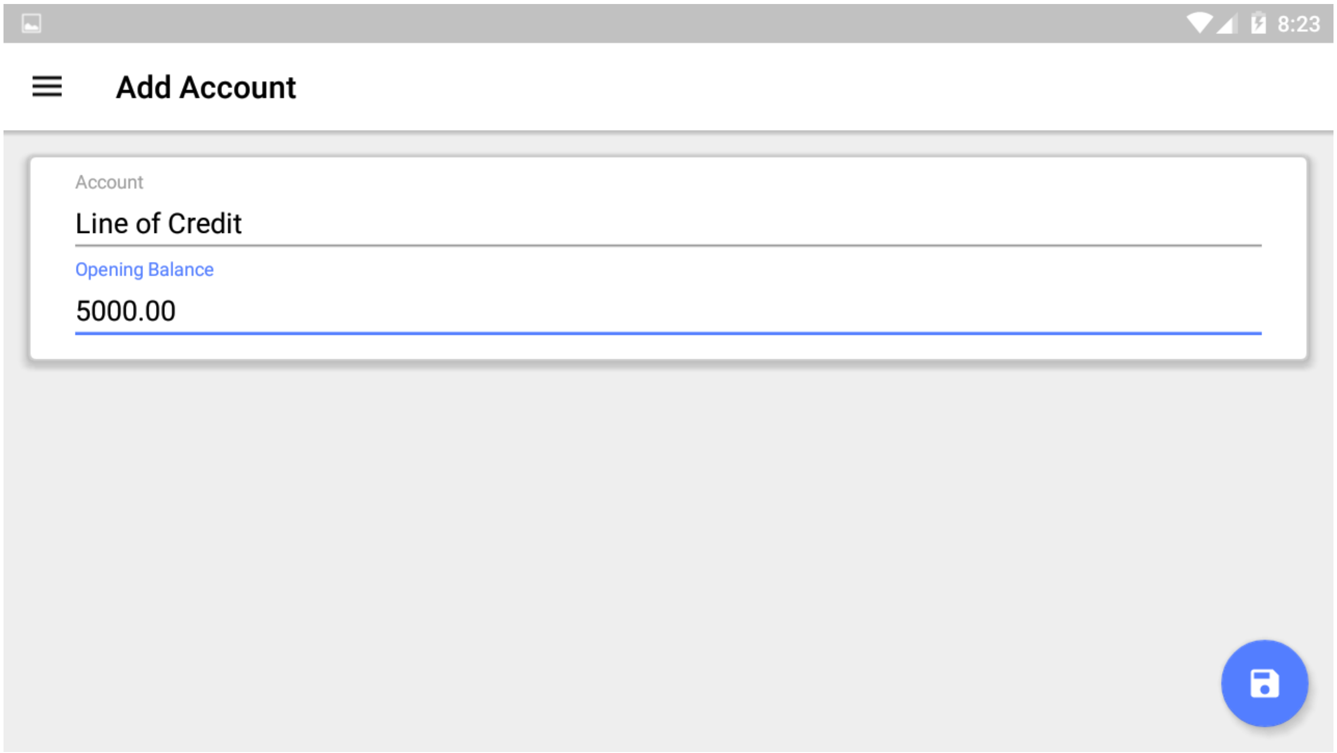
The Accounts screen shows an overview of all accounts. It allows for adding, editing, and deleting of accounts. To add an account, tap the “+” button in the bottom right.



My Accounts

Total Balance: $6,020.43

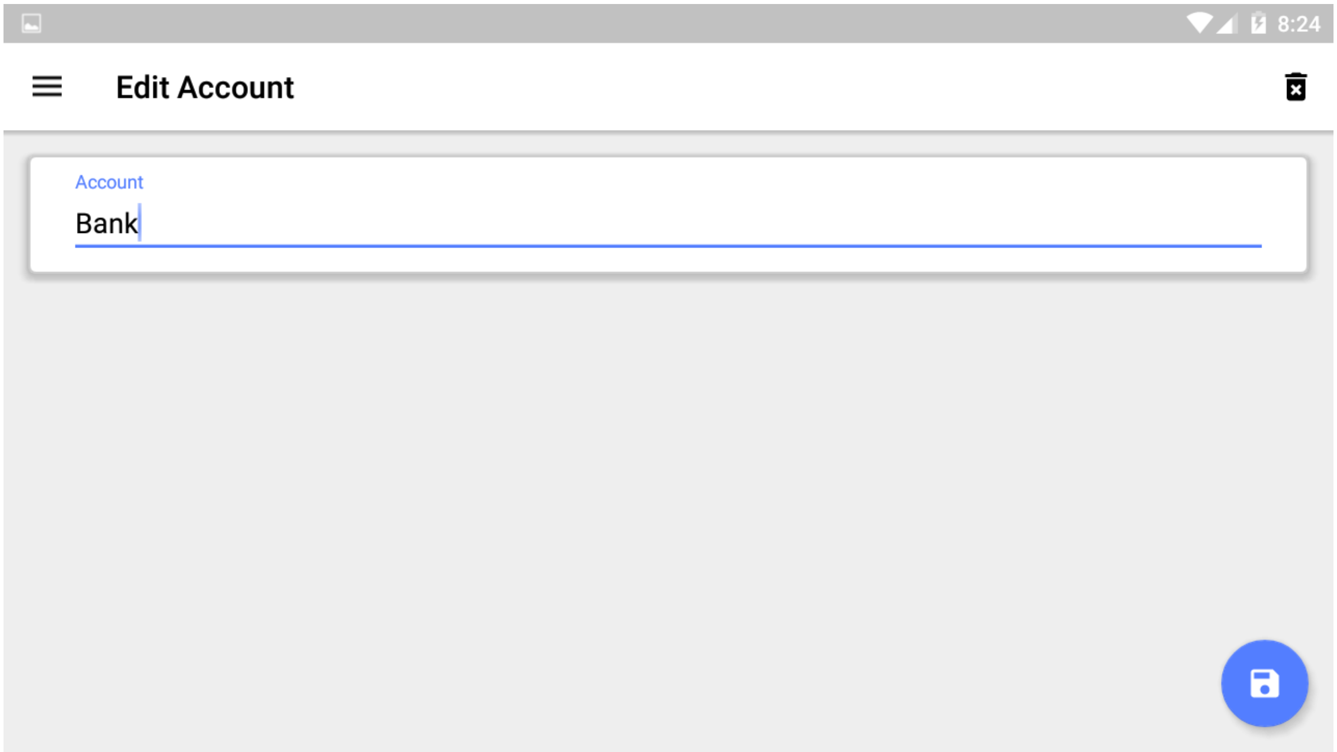
Bank	$964.98
Cash	$55.45
Line of Credit	$5,000.00



Account: Line of Credit

Opening Balance: 5000.00

When editing an account, the user is given the option to delete it. They must double tap the garbage icon in the top right.

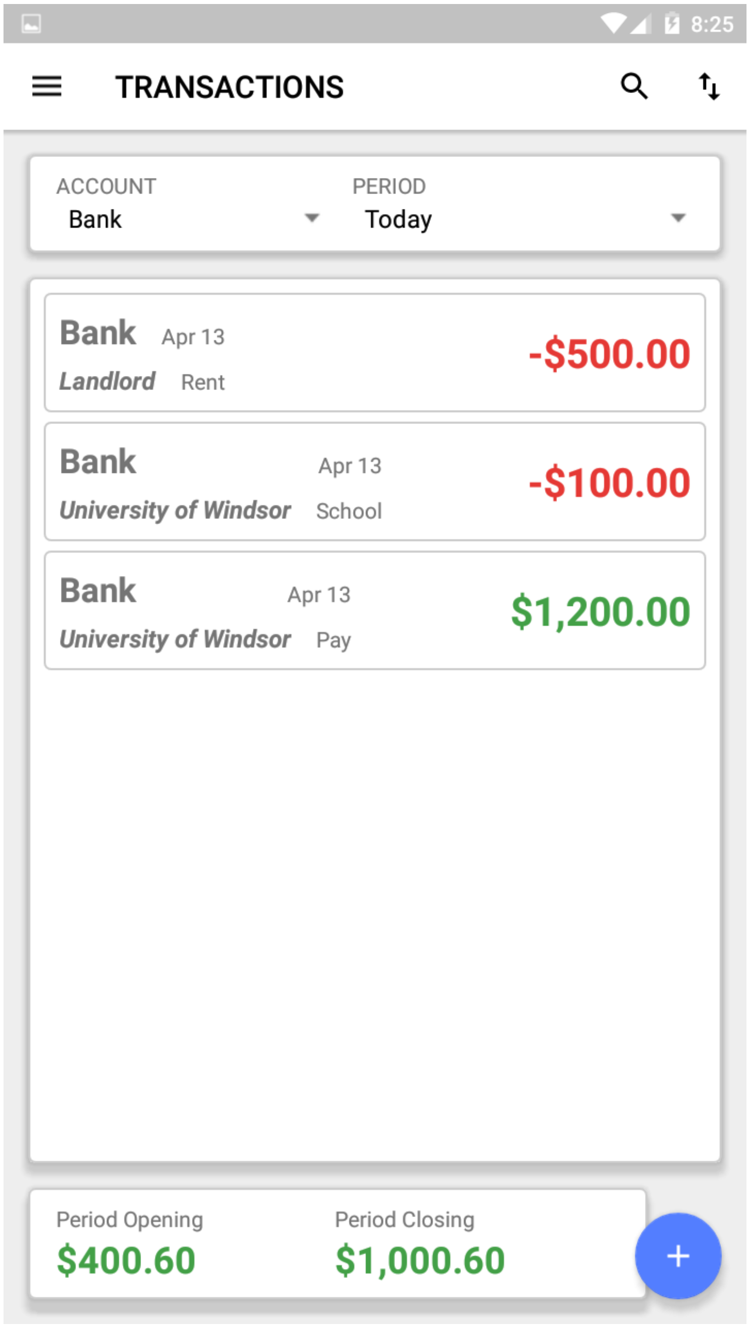


Account

Bank

Transactions

Transactions screen shows a list of transactions, ordered by date. The user can reverse the sort using the icon in the top right. Transactions can be filtered by account, or date period. The opening and closing balance for the period is viewable along the bottom of the screen. To add a transaction, tap the “+” button in the bottom right. Click the “Expense” button to change to “Income”. To edit or delete a transaction, tap on it in the list. A limited search feature is also included. Searches do exact matching words in a transaction, and show the results as the user types. To close the search, tap to the left of it.



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TRANSACTIONS

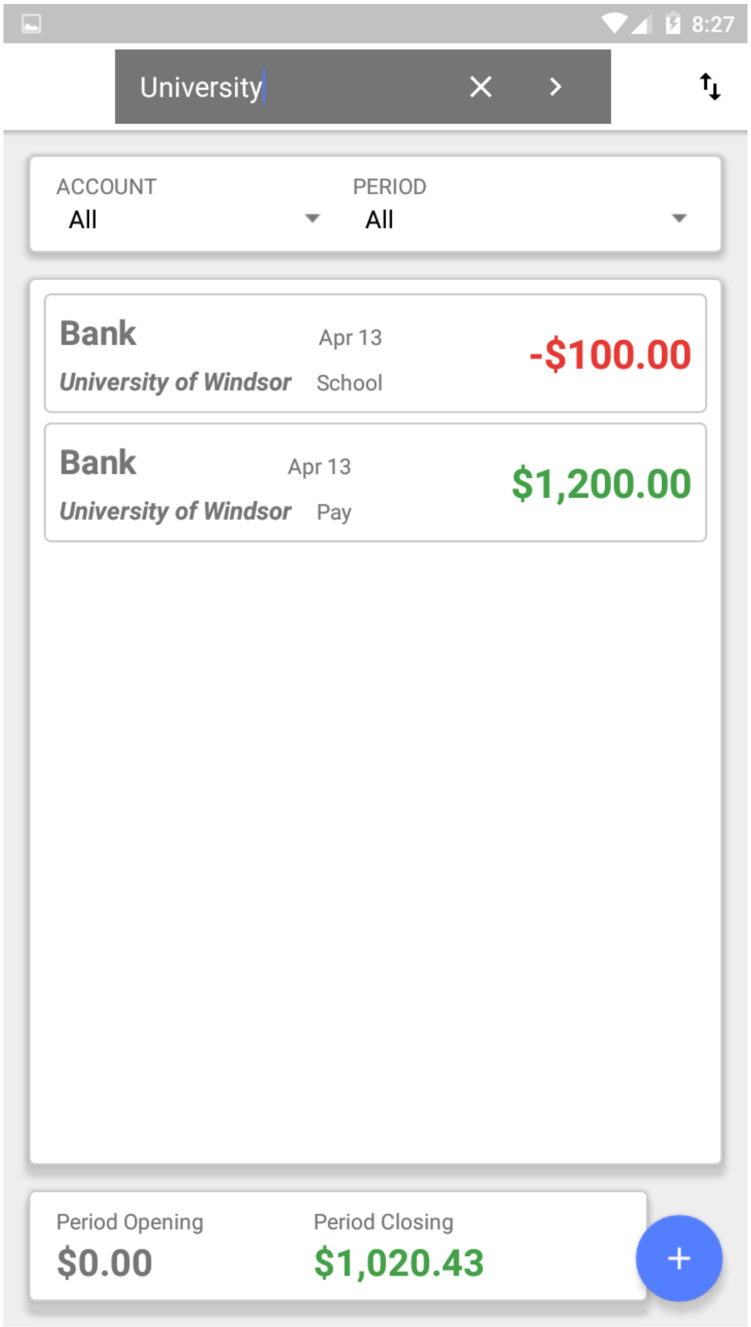
ACCOUNT: Bank
PERIOD: Today

Bank Apr 13
Landlord Rent
-$500.00

Bank Apr 13
University of Windsor School
-$100.00

Bank Apr 13
University of Windsor Pay
$1,200.00

Period Opening: $400.60
Period Closing: $1,000.60



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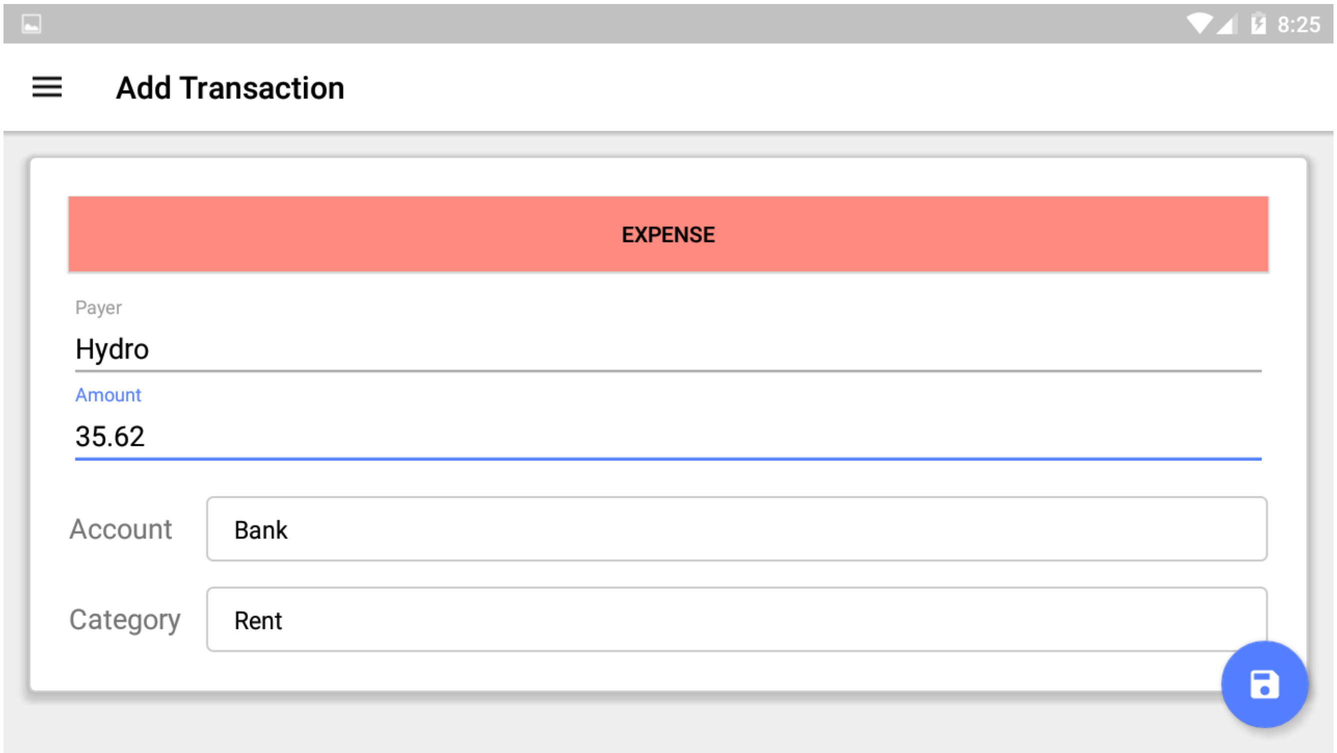
University

ACCOUNT: All
PERIOD: All

Bank Apr 13
University of Windsor School
-$100.00

Bank Apr 13
University of Windsor Pay
$1,200.00

Period Opening: $0.00
Period Closing: $1,020.43

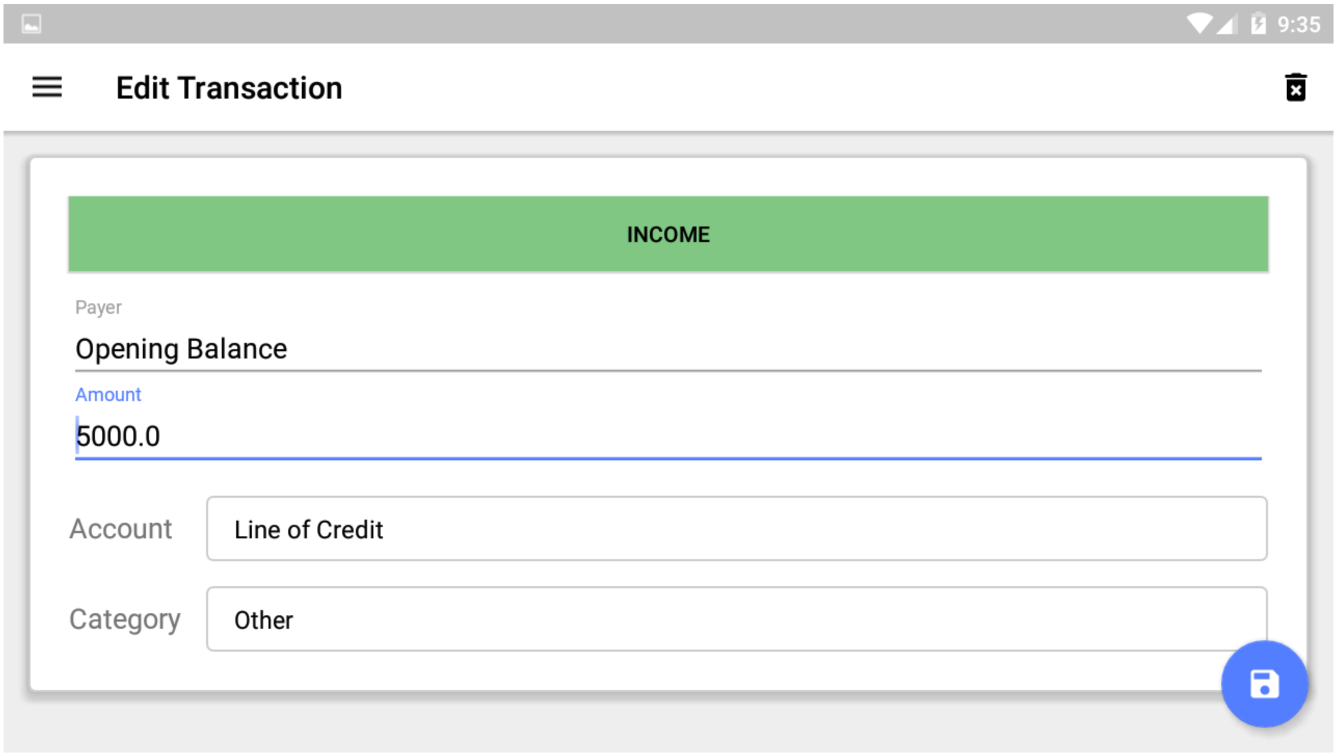


Payer: Hydro

Amount: 35.62

Account: Bank

Category: Rent



Payer: Opening Balance

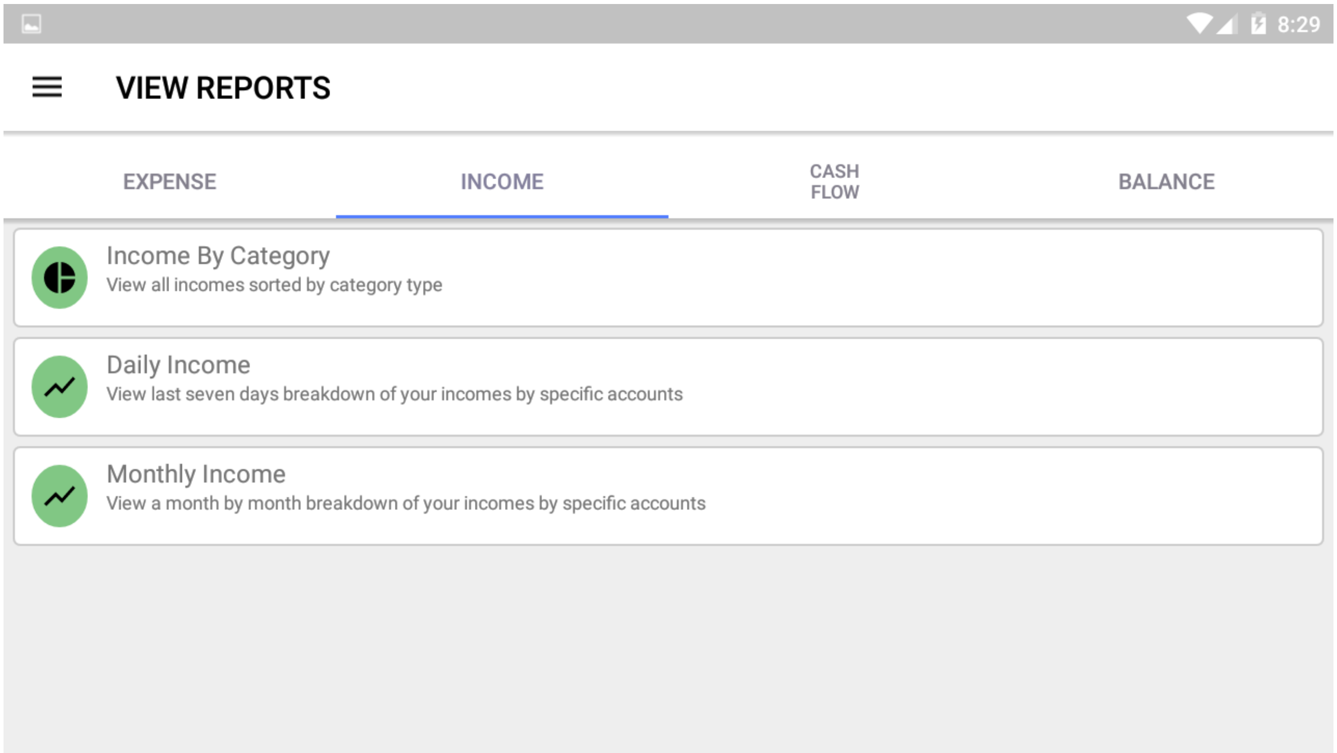
Amount: 5000.0

Account: Line of Credit

Category: Other

Reports

The reports sections offers visualization of transaction data, filtered by account and date periods. Different reports are divided into sections, which can be slid between or navigated to through the tabs. The charts themselves have a variety of functionalities, such as zooming, scrolling, highlighting and more. The user can interact with them and the filters customize how they view their data.



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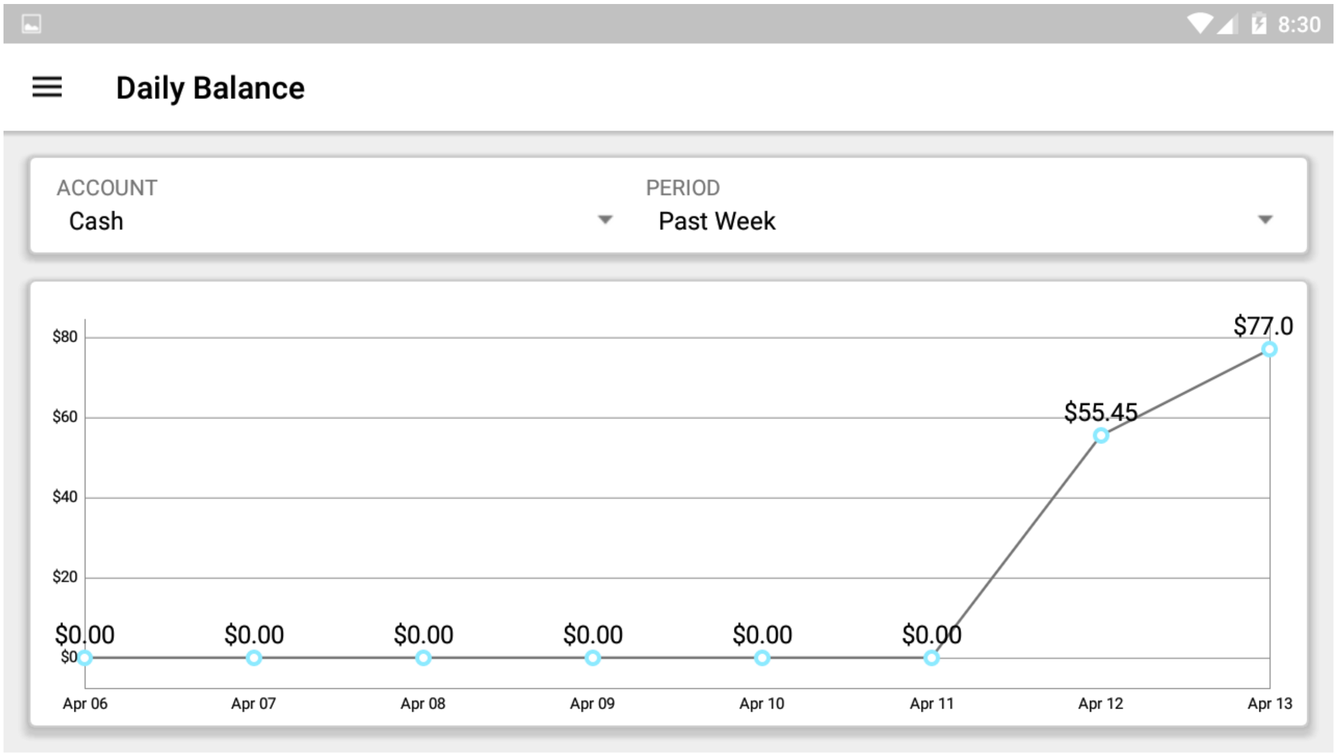
VIEW REPORTS

EXPENSE | INCOME | CASH FLOW | BALANCE

Income By Category
View all incomes sorted by category type

Daily Income
View last seven days breakdown of your incomes by specific accounts

Monthly Income
View a month by month breakdown of your incomes by specific accounts



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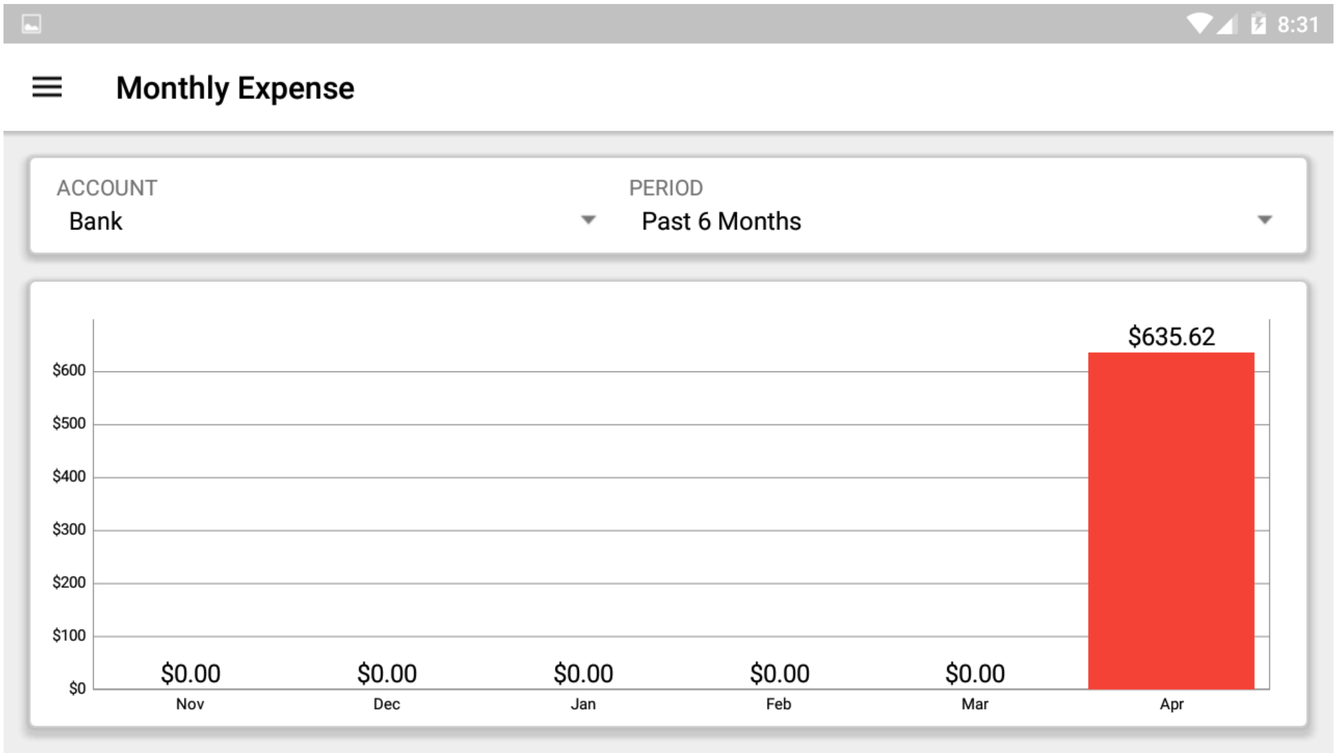
Daily Balance

ACCOUNT
Cash

PERIOD
Past Week



Monthly Expense

ACCOUNT
Bank

PERIOD
Past 6 Months