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Bookkeeper

Overview

In real life, we all like shopping and getting things we like, especially during the COVID epidemic, online shopping becomes much more easy and convenient for people to spend money. We all indeed enjoy the moment to buy. However, when we look at our credit card at the end of the month, we have to ponder where the money goes?

Bookkeeping applications can organize and display your financial information in an easy-to-understand way, thereby making you or your bookkeeper more efficient. This also makes it easier for you to plan for the future of your finance or business and understand the impact of different financial decisions. Some people might argue that I can also use manual accounting. Yes, but manual accounting is not only troublesome, but it also requires manual entry and accounting, and there is no way to systemize and visualize the bill. However, If you use accounting software, you will think this is a very user-friendly application.

Our Bookkeeping app has multiple different tab views which allow users to view their spending in each category of each month, a yearly report on total cost in each month of the year, and recording their earning and spending transaction by type in associate information of the transaction.

Goals

The primary goal is to help users record user's transactions and visualize a complete summary of their spending. Therefore, based on the data from the summary, users can be aware of whether they are overspending each month. If so, they can adjust their financial plan for next month based on provided data. If not, it's a good habit that always manages personal costs. This app is aimed at helping users develop good consumption habits to prevent any possible financial risk in the future. (the example could be no saving to deal up unexpected illness)

Determine the type of transaction

We know that there are two types of transactions in the bookkeeper: earning vs spending. We do not only allow users to record the money they spent, but also the money they earned. This allows the whole app is also going to be simulated like a bank account, where you can keep track of your current balance in the app. Users can specify the type of transaction by using the picker when they try to add a new transaction.

Determine the category of this transaction belongs to

We may have hundreds of transactions each month, it is essential to identify what category of each transaction belongs to. For example, we spend 10 dollars on Chipotle and 10 dollars on McDonald's, both of these transactions will be in the category "Food". More categories of spending will be Cloth, Transportation, Housing, and Entertainment. And the categories of earning will be Salary, Bonus, and investment. When adding transactions, we provide the user the picker to select which categories of this transaction belong to.

Calculate the total balance based on transactions

After we can add the transactions, now I want to calculate the current balance based on the added transactions. For example, I spent 10 dollars on buying clothes, the total balance will be subtracted by 10 dollars, which will be -10 for your current balance. Then, earning a salary of 1000 dollars, then the current balance will be automatically added 1000 dollars, with 10 dollars cost on the clothes before. The new updated current balance will be 9990 dollars shown on the main screen.

Generate a page that shows all the transactions information

Once we have all the process that helps to get information of the transaction, we now want to create a page that can display all transaction in a page. Users can click the button on the main page to view all the detailed information about their transactions.

Generate a monthly report

In another tab view, create a monthly summary of each month's transaction. In each month, the program should count up total spending in each category of the month. Users should have a clear view of total spending in that month

Indicate which category that spent the most

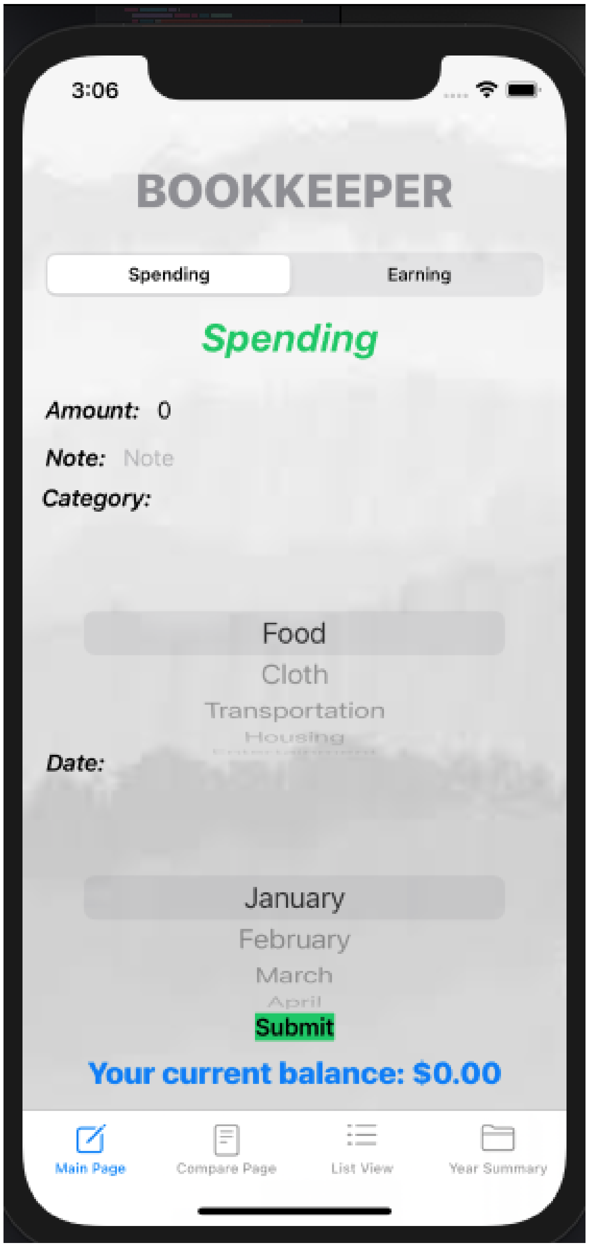
We are also interested in which category the user spent most based on the monthly summary. So that users have a sense of whether or not they spent too much on a certain category. For example, in the past three months, the majority of my spending is on the food category, if I don't use my APP, I won't be aware that I spent too much on the food every month. After knowing this information, I can further regulate my spending.

Comparison between two months

In a single complete tab view, users can compare two months of spending by choosing two months. After clicking the button ‘compare’, the app will open up new windows that compare two-month categories line by line.

User interface

When we first start the app by going to the main page of our interface. On the top of the screen, users can specify the type of this transaction they want to add. In the amount text field, it’s going to be the amount of money this transaction costs. In the following text field, the note will be the name of this transaction. Then the user may choose the category of this order by scrolling the picker. Same method for the Date below. Finally, click the submit button to send the information to the backend.



BOOKKEEPER

Spending

Amount: 0

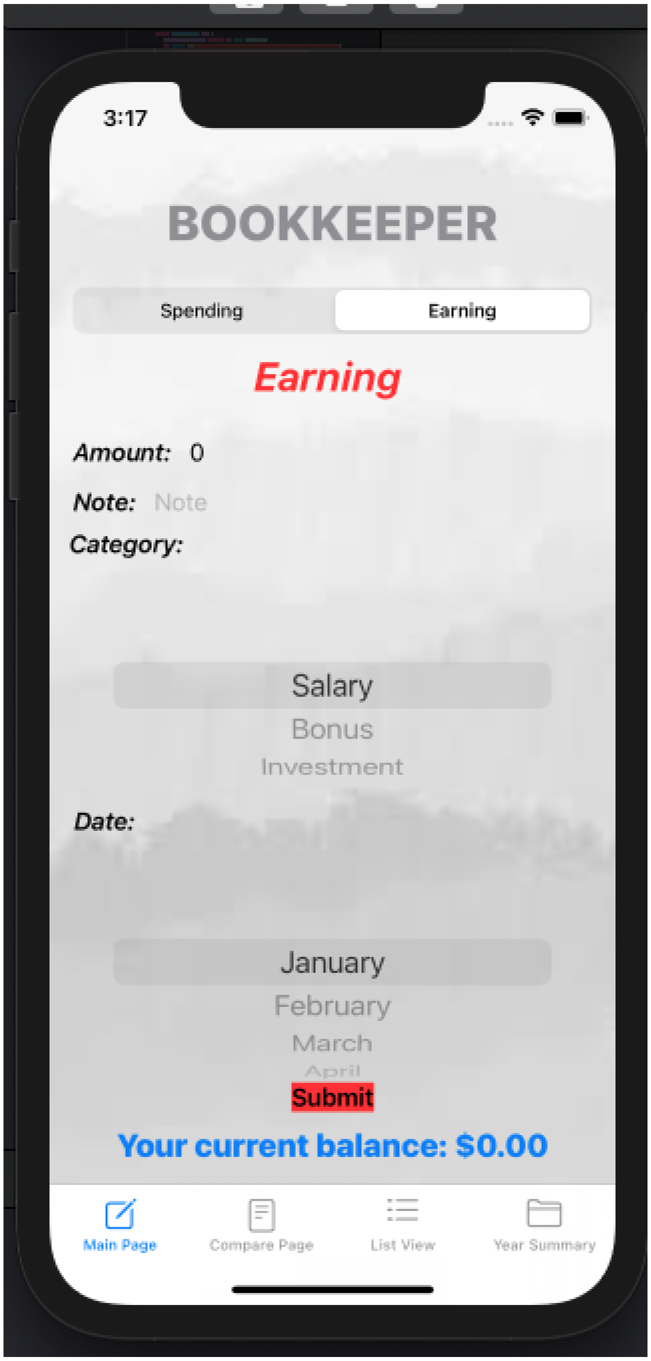
Note: Note

Category: Food

Date: January

Your current balance: $0.00

If they click earning picker, this will be the interface that shows in the app:



BOOKKEEPER

Earning

Amount: 0

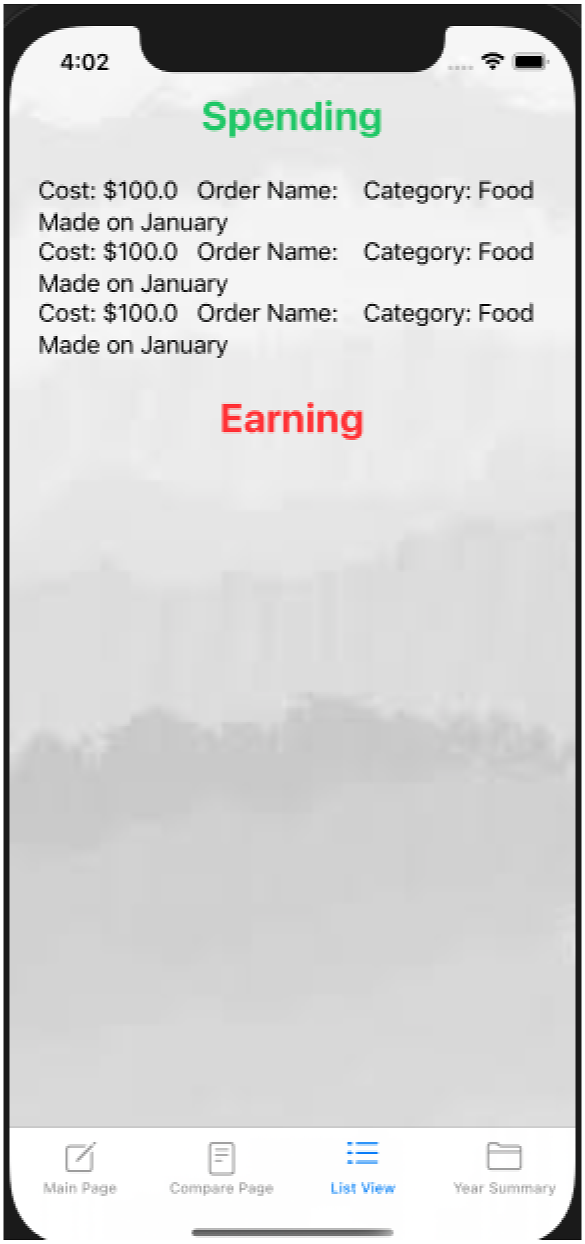
Note: Note

Category:

Date:

Your current balance: $0.00

This is the interface in the list view when we add the transaction:



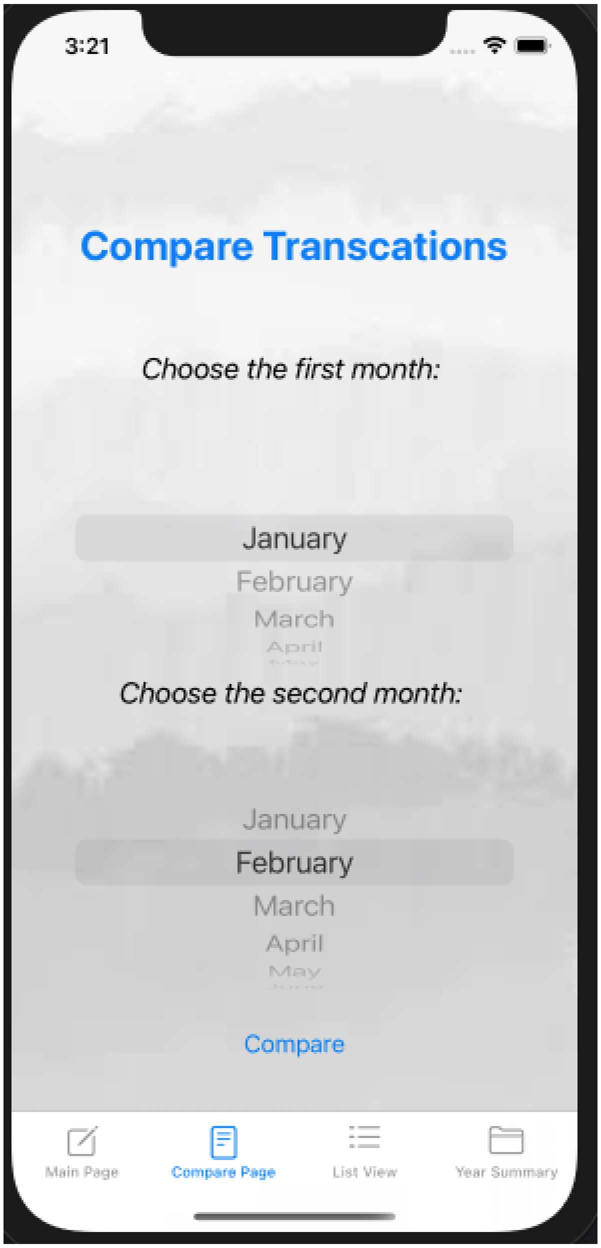
4:02

Spending

Cost: $100.0   Order Name: Category: Food
Made on January
Cost: $100.0   Order Name: Category: Food
Made on January
Cost: $100.0   Order Name: Category: Food
Made on January

Earning

Interface for the compare page view:

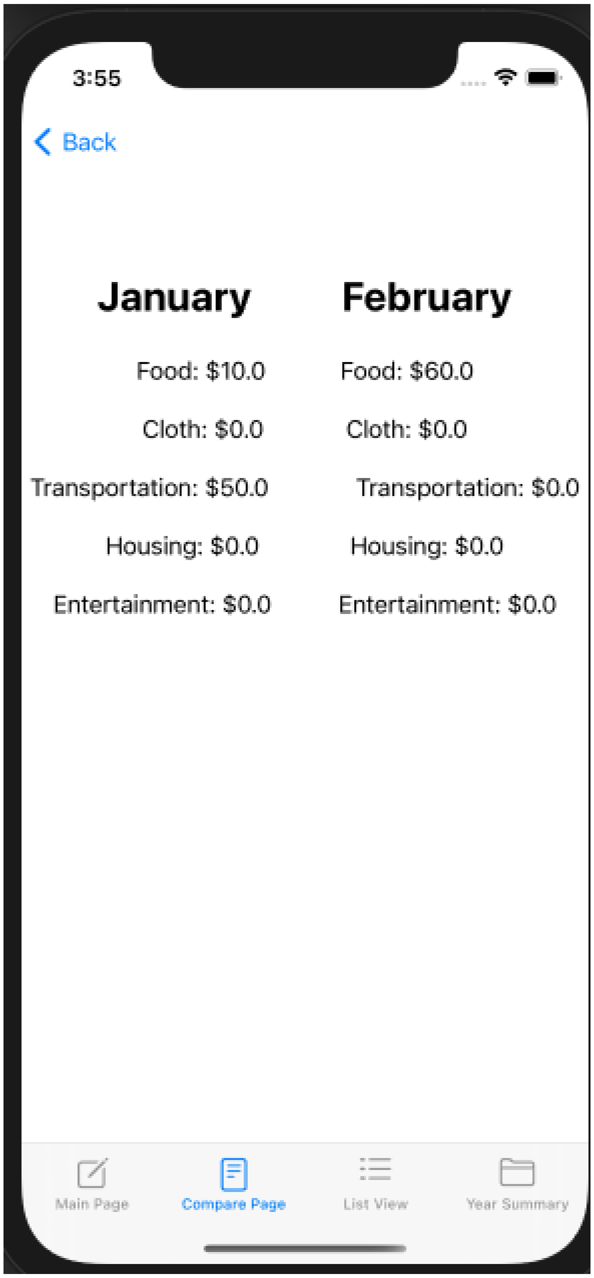


Compare Transcations

Choose the first month:

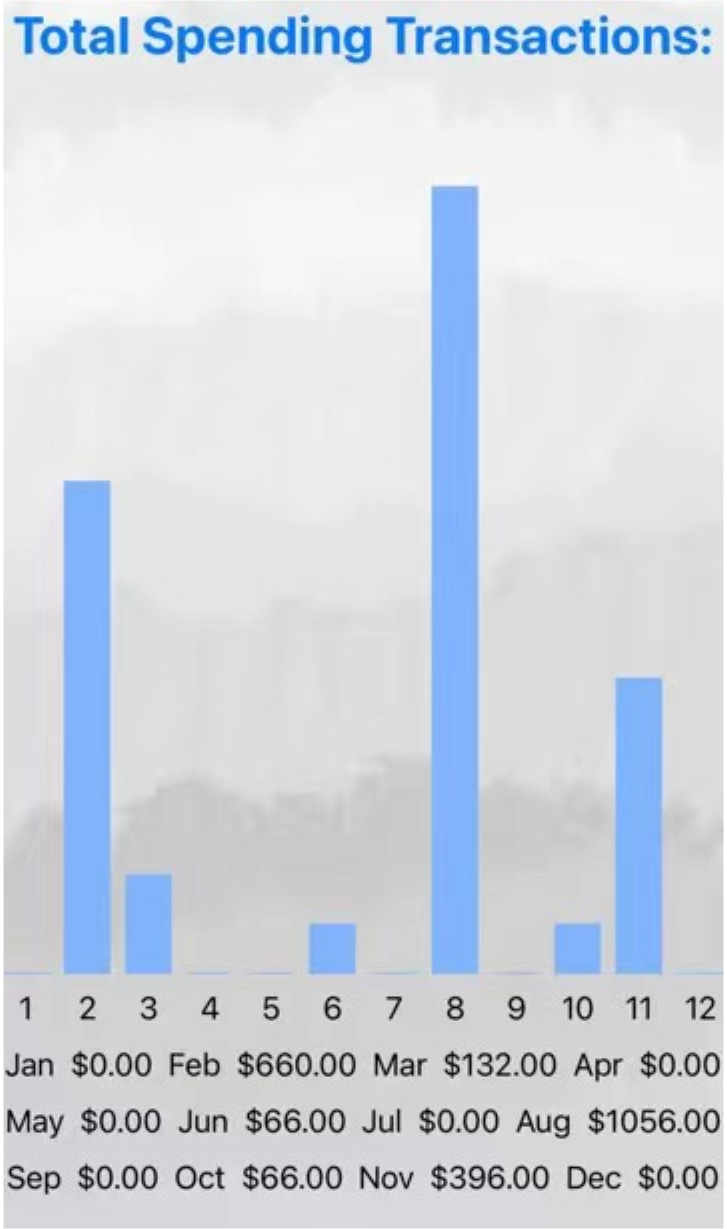
Choose the second month:

When I clicked compare button:



January	February
Food: $10.0	Food: $60.0
Cloth: $0.0	Cloth: $0.0
Transportation: $50.0	Transportation: $0.0
Housing: $0.0	Housing: $0.0
Entertainment: $0.0	Entertainment: $0.0

Here is the year summary view:


Total Spending Transactions:

Jan	$0.00	Feb	$660.00	Mar	$132.00	Apr	$0.00
May	$0.00	Jun	$66.00	Jul	$0.00	Aug	$1056.00
Sep	$0.00	Oct	$66.00	Nov	$396.00	Dec	$0.00

Development process:

The idea of this app is not difficult. In the beginning, we just start off by creating a backend file that is able to store all the information. I create a class called Transaction which represents each transaction in the bookkeeper. The data will be store in a list of Transaction courses and have toString method to print out all the information that is needed. The overall backend development is successful without having too much issue.

However, we spent a lot of time formatting the front end. We design to have all the associate buttons and text fields on a single page and does not affect the appearance. However, as you can see, we have two types of transactions: earning and spending. We first tried to include both on the main view page, and have the amount of current balance display on the button. However, our primary goal is to have a simple and easy use main page, so that people will know how to use our app without any explanation. The issue is if we tried to include everything, the overall format will look pretty tight. We tried to adjust the font size of the text, and use offset to help use the most of the free space. But this method does not work well. Instead, we came up with a new solution that uses a picker to switch between spending and earning types. When spending is clicked, only the associate field with spending will show up, same for the earning type is chosen.

So far at this point. The goal for our milestone one is completed. Here is the summary of what we did: Our APP can read the users' input, calculate, and display the input data at the bottom of the page: when there is earning, we add this amount into balance; while there is spending, we minus it. Also, we design a picker at the top in order to switch the mode between spending and earning. We use different colors to distinguish them. At the same time, we use the navigation view to display all the user's transactions through the button “show all transaction". In this view, the user can see their transaction in words which includes amount, note, and category. In spending mode, the user can choose the field they spent: education, entertainment, transportation, etc. In the future, we will try to present them in the graph. Although our interface is not beautiful enough, we will continue to improve and make the functions more perfect in the next milestone.

Furthermore, we wanted to update our app by split transactions based on the month. So that later we could implement the monthly summary of spending. To do this, we need to first create a new variable in the backend file which can store spending based on each month. And within each month, it should be also divided up based on category. Therefore, we use an array of hash to store the data. First of all, each element of the array is a hash, and within each hash, it has initialized the key as the name of the category, value as the corresponding spending in that category. Every time when we add a new transaction, we do not only add this transaction into the list of transactions but also add its cost and corresponding category into this array of hash. In order to get the month of each transaction, we add a new picker that allows users to choose what month this transaction belongs to. Once we have all the data we needed to create the monthly report. We create a new view to visualize the monthly spending.

Lastly, we want to add a new feature that can compare two-month spending. I think this feature is important because we all want to see whether this month’s expense is higher than the previous month. In order to do so, we also create an individual view for this added feature. Because the primary goal is still having an easy use and clear user interface. In the new tab, users can use the picker to choose which two month’s expense they want to compare, they just simply click the “compare” button to invoke a navigation link to open up a new window. The result of each month will be compared line by line.

Stretch goal

The stretch goal for our projects is to create a graph visualization instead of a text report. Nowadays, people are lazy to read the text, and we all prefer to have a graph visualize to view the data. Therefore, we create a bar graph to visualize the yearly summary of the transaction. Users can easily see which month they spent the most, and which month they spent the least. And analyze the overall trend of their spending pattern(increasing or decreasing in terms of spending cost).

Potential future direction

The feature we want to develop in the future is to predict the next month’s expense based on the current data we have. This involves the machine learning process, we want to come up with an algorithm to analyze the current data, and write out the appropriation equation to predict the future expense.

Moreover, we also want to develop our app to become not just a personal bookkeeper app, but also can help professional accounting to generate company relative transaction data. For example, convert the data we have in the app into an excel file