

# Personal Finance System

Author: Dawson Dauphinais

Advisor: Andrew Poe

Committee: John Sarkela, Randy Appleton

Description:

For my senior project, I would like to design and implement a sort of personal finance tracker. I have never been the best at keeping track of my expenses, nor have I ever been very good at saving money. My aim is to build my own finance system, as I have used many other “free” applications that I never really cared for. With this semester being my last before I go out into the real world, I think it would be a great idea for me to start getting into the habit of tracking my expenses, and making sure that I am saving money with every paycheck.

However, that idea sounds kind of boring and straight forward. So, what I would like to do with my system is figure out some features that I think would be more useful to me, and make it fun. For example, maybe I add a feature that will tell me how much I should be saving from each paycheck if I want to be a millionaire by the time I’m forty—highly unlikely, but something that would be fun!

What I would like to do, on a more serious note, is use some sort of database to store all of the data that I’m collecting from myself. I would like to store this data in both a database, and an Excel-readable file—what I mean by this, is I want to find a way for my program to be able to directly work with Excel and manipulate my data from inside my application. This will also allow me to easily visualize my data, using some of Excel’s built-in graphs/charts. I would also

like to implement some smaller features that I think might be interesting, such as a weekly update, or alert, etc...

I am planning on writing this application in C++, so I think that I will probably use some sort of SQL database, and I'm currently thinking that will be just be plain-old MySQL or PostgreSQL. Now, to do this in C++, it looks like I will need some external libraries—SOI is looking like my best bet so far for this aspect of the project. I have never really used MySQL (other than the very basics) or PostgreSQL, and I have never used the SOI library, so these things will probably require a bit of research. Also, for working with Excel in C++, I will need to find some sort of library that allows it. I looked into it a bit, and it looks like the ole2.h header includes some interfaces that could be useful.

As of now, I am not sure that this application will be something that will work on both Unix-based machines and Windows machines, but that is what I would like to try and accomplish. I think that seeing as though Excel is a Microsoft program, it might be a pain to try and get it to work on Unix machines, but that is my current goal. This means that I will probably run everything of the Windows Subsystem for Linux (WSL). With that being said, I would like to try and learn a new IDE while I am at it. It turns out that I love IntelliJ, and JetBrains makes an IDE for C/C++ development called CLion. While using IntelliJ over the summer for my internship, I realized how powerful (and convenient) it is—especially being able to access databases directly from inside the IDE. However, if things really are not working with regards to both Unix and Windows platforms, I will probably resort to Visual Studio as my IDE.

## Features I'd Like to Have:

1. User inputs the name of an item, quantity of the items purchased, and the price... These will all be stored for viewing data at the end of the week or month. For example, each day the user would input things they have spent money on, or money that they have received, so that at the end of the week/month, there is a nice little report. This report could show the largest spending categories or whatnot.
2. Some sort of investment calculator... Specifically, when a user enters money that they have received, the application will tell them how much of that money should be allocated to different things (savings account, bills, stock market, emergency, spending money, groceries, etc).
3. Find some way for the program to send notices/reminders to either the user's email or phone. I feel like sending text messages might be hard in C++, so if that doesn't work, I will try to send some sort of report via email.
4. Use a database, as I mentioned above, to store expenses so that they can be retrieved and viewed by either excel, or something that I build myself.
  - a. Have the database interface directly with Excel so that the reports are viewable in Excel as a nice sheet for the month.
5. Anything else that I think of as I go.