Executive Summary

I work at a financial advisor office called Merrill Financial Associates in Provo. Among my various responsibilities, I am in charge of making investments into clients' accounts, as well as performing semi-annual rebalances on most of our clients' accounts. To perform these tasks, I work inside of what we call "The Supermodel". This is an Excel workbook that has been built and modified over the years, which allows us to import data into the workbook so that we can analyze each clients' account and make necessary adjustments.

The first day I started this job I was given the challenge by my manager to try to "automate myself out of my job". I received that challenge before I even knew about this class, so I thought that challenge was impossible to accomplish. However, now that I have taken this class the challenge seems entirely possible.

Although I won't be able to automate my entire position away like I was challenged to, I wanted to automate a process that I perform everyday. This process usually takes me about 20 minutes. Being that I work 5 days a week for about 4 hours a day, those 20 minutes add up quickly and take away a lot of precious time which could be spent doing much more productive things for the business.

The process that I automated was one in which I have to go onto our broker dealer's website and download a total of 8 reports. Once these reports are downloaded and exported into excel, I then manipulate the data to make it more useful for our "Supermodel". I then use Vlookups to bring this data into the "Supermodel" which enables me to perform my other responsibilities.

Implementation Documentation

This program enters into Commonwealth Financial's website (Screenshot below shows one site). Due to the fact that this data comes from my work's broker dealer, this program will only function when on Merrill Financials network.

As I navigated to each site I either have to click on one or two more links before clicking on an "export to excel" button. However, each link required different code in order to click on it. This was the first of many "bumps in the road" for me. After a lot of trial and error of using different ways of clicking on buttons that we learned in class, I was finally able to figure out how to click on all of the different links that I needed to click on. The two ways that I found worked best for the HTML I was dealing with were a.followLinkByText "" and a.document.getelementbyid("").Click.
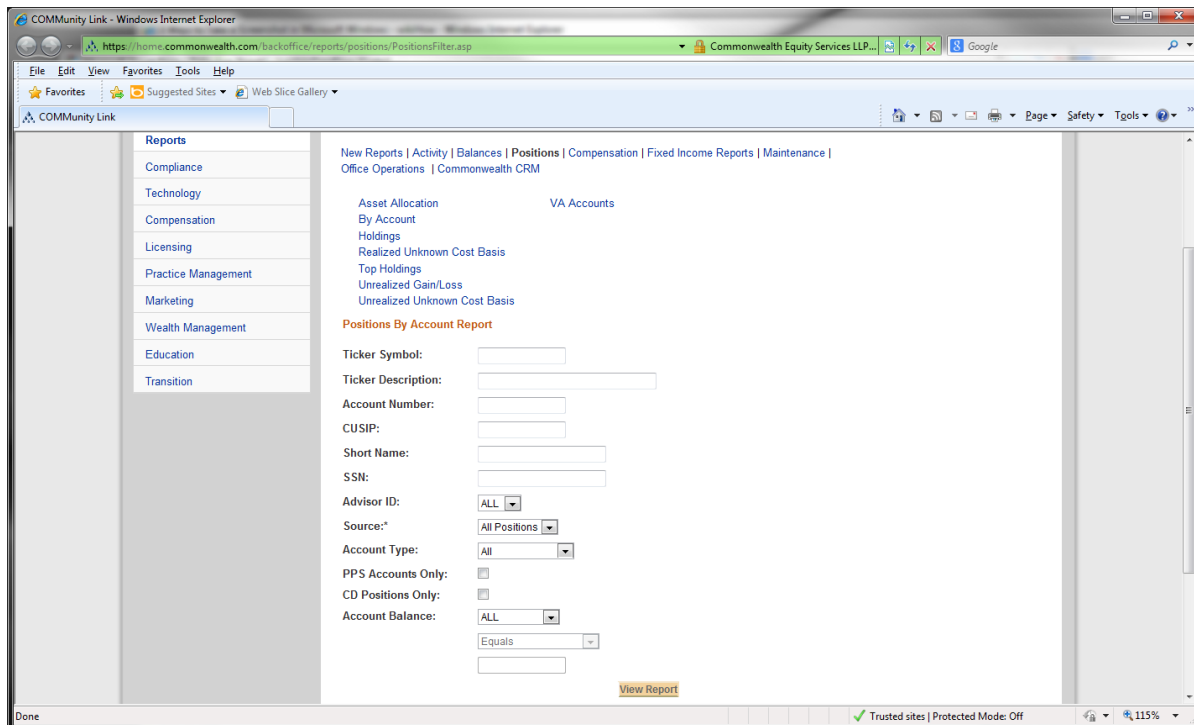
Once I load the initial site, for most of the reports all that I needed to do was click on a button, which then led to a pop-up window appearing (I will talk about the pop-up window problem later.) However, for some of the reports, I needed to either select an option on a drop-down list (as shown below),

or I needed to change the date in an input box (as shown below).

In order to change the drop-down list I used the code
"a.document.getelementbyid("cmbTransType").Value = "SWP"". In the 2nd example, I need four

years of data, So I needed to change the date to 4 years and one day prior to the current day's date. And in order to change the date, I used the code "a.document.getelementbyid("txtDateFrom").Value = DateSerial(Year(Now()) - 4, Month(Now()), Day(Now() - 1))".

As I mentioned above, for all of the reports that I ultimately need to export, once I have clicked the first link, a pop-up window appears. An example of one of these is shown below.

This served as a bit of a wall for me in terms of making progress on this project. It took me a very long time how to figure out how to control a pop-up window. I didn't realize that I needed to "attach" onto that window in order to control it. So, after spending hours trying to figure out way nothing was working for me once a pop-up window appeared, I finally asked the TA and he informed me of the "a.attach" line of code that was necessary to use when dealing with a pop-up window. Once I learned this, I was finally able to make progress again.

Once, I gained control of the pop-up window, I then either needed to click on the export to excel by clicking the button shown below,

Or in one case, I needed to click on the "Position type" check-box before exporting to excel (as shown below).

This was accomplished by using the code "a.document.getelementbyid("chkColView_Position_Type").Click". Once I clicked on the "Export to Excel" button for all the reports, I ran into another roadblock. If I was stepping through the code one line at a time, the macro would run fine and the excel file would download and there were no problems. However, whenever I tried to run the macro on its own there was always some kind of problem. Sometimes, for some reason, it was as if the export button never got clicked and nothing would happen at all. Other times, the pop-up window that had the report, which I was trying to export to excel would just go blank and again, nothing would happen. I attempted many different things in attempts to fix this problem, but I could not figure it out. Ultimately, to get around this, I ended up splitting up what I wanted to be just

one continuous macro, into multiple macros. Each report has one macro to retrieve the data, and then one to insert the report into my workbook and then manipulate the data into something I can use in the "Supermodel".

Another issue I ran into with one of the reports was this:
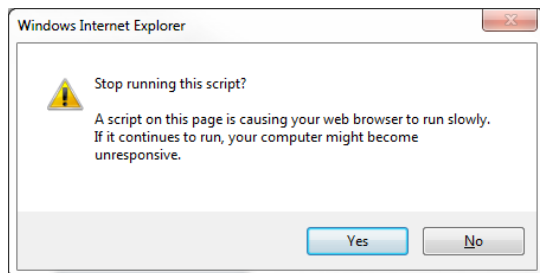
When I click to export the report, seven of these windows pop-up one after another upon clicking on the "No" button. I was not able to figure out how to control this window through VBA code, so I also had to skip this step and I will continue to have to do this manually.

After each report I download and export into excel, as mentioned, I then copy and paste each report into their respective tabs in my workbook called "The Data Page". Extremely creative name..I know. The screenshot below shows an example of a sheet in this workbook.
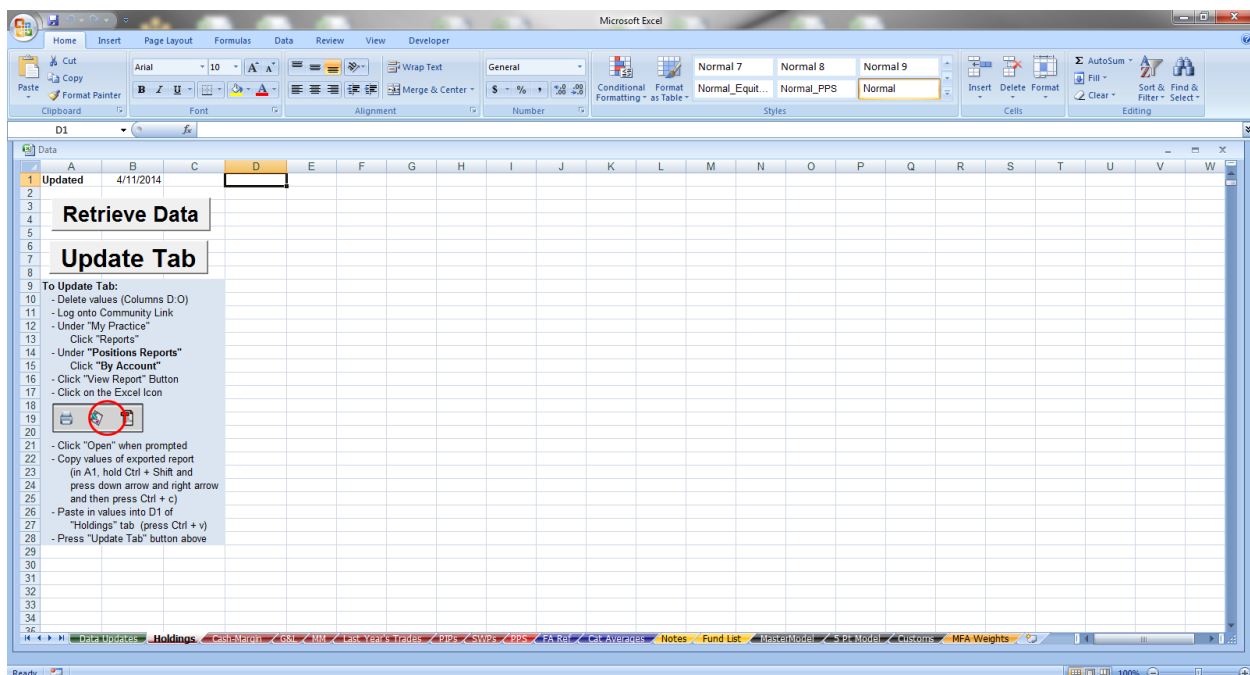
Once I have copied and pasted the data into the Data Page, I then manipulate that data. Each report required different things to be done, but for each one I was able to record a majority of

the code. However, I did have to modify a few parts to create loops in order to make the code useable for an ever-increasing number of records on these reports.

I was also working on a User Form which would allow me to select if I wanted to do a daily update which includes downloading the reports that my program currently does, or I could have selected "Monday Update" which would have been one extra report. However, for some reason I wasn't able to click any of the buttons on the page. As a result, I had to toss that idea.

Learning and Conceptual Difficulties

I was able to learn a ton after spending hour upon hour attempting, and many times failing, with so many different techniques and lines of code trying to figure out how to click different buttons, change inputs, check boxes, select items on a dropdown list, and all the other things I did in this project. At times (most of the time), the learning periods were very frustrating, however, now that I have completed the project I can definitely say that I understand how to use VBA to do a lot of things in Internet Explorer. I also learned a lot about the grueling process it sometimes take to create a program. Writing code, especially as a VBA rookie, can be an extremely frustrating and humbling experience. Many times I reached a point where I just felt like I was spinning my wheels for hours making no progress and then I would finally figure something out and I would then make tons of progress until I hit my next roadblock. So I learned that coding takes a lot of patience and persistence. I also learned that there are many ways different ways to accomplish a task in VBA, and the secret isn't that you need to find "The Best" way to do something, but instead just to find a way and then move on to the next step. Towards the beginning of this project, I wasted a lot of time trying to figure out the most efficient way of doing everything. But, as I worked my way through different problems I found that it really doesn't matter what the code looks like. All that matters is that the code accomplishes what I need to accomplish. I also learned the importance of using available resources for assistance when stuck. I spent WAY more time on certain parts of this project then I probably should have. Once again, towards the end of the project I realized that using forums online as well as bringing certain questions to the TA were much more efficient then trying to figure everything out by myself, which not only wasted my time but it also made me a lot more stressed out and frustrated then I needed to be. Overall, this project really helped me learn a lot and grow as a coder.

Assistance

Other than looking at some VBA forums online, the only assistance I received on this project was asking the TA, as well as Professor Allen one question each. The TA told me about "a.attach" so that I could control pop-up windows. Professor Allen informed me that Microsoft

has not provided a way for VBA to control the "Download" screen when prompted to select if you would like to download a file or not in excel. Due to this problem, I was unable to automate the process of downloading one of the many reports that I need. Other than that, I did this project on my own.