

## **Background:**

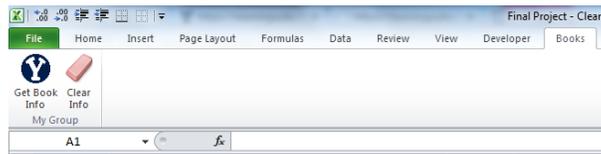
Each semester students spend a lot of time trying to find the cheapest price books. In the end, many students end up paying more than necessary for their books. While BYU does offer several different options on their website of places to buy books, they are not always the most cost effective options. Finding the best prices often requires a lot of time. This project saves BYU students time and money by retrieving their booklist off of RouteY and comparing prices from the BYU Bookstore and [www.textbookpricecomparison.com](http://www.textbookpricecomparison.com).

## **Overview:**

My solution looks each book up by its ISBN number and returns the price from BYU's Bookstore and the three cheapest options from [textbookpricecomparison.com](http://textbookpricecomparison.com). This project retrieves the price for new and used books as well as the price to rent books. This information is then organized in a table that includes the information about the book and the various prices. The cheapest option for each type of book is highlighted in yellow.

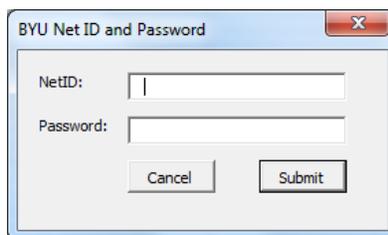
## **Implementation documentation:**

For my solution I added a ribbon entitled "Books." The two buttons, "Get Book Info" and "Clear Info," allow the user to begin to retrieve their book information, or to clear the books listed in the table.



### *Get Book Info Button.*

When this button is pressed it launches a user form asking for the user's BYU netID and their password. Upon entering this information the user can press "ok" or the enter button on the keyboard and it will initiate the subroutine that gathers the data.

A screenshot of a user form titled "BYU Net ID and Password". The form has a title bar with a close button (X). It contains two input fields: "NetID:" and "Password:". Below the input fields are two buttons: "Cancel" and "Submit".

Once the subroutine is finished running it will return the information in a table such as this one:



into excel. From here, a for-each loop is used that looks through the first column of the downloaded data for ISBN numbers. When one is found, it gathers the information surrounding this number, such as the author, course, etc., and copies it into the table on the “Book Prices” sheet.

A web query is then run on the ISBN number of each book on [textbookpricecomparison.com](http://textbookpricecomparison.com). The information from the used, new, and rental prices is then downloaded into excel. A series of for loops are then used to gather the top three prices from each type of book and copy them into the table on the “Book Prices” sheet.

Finally, a compare function is then run to compare the different prices, and the cheapest option is highlighted in yellow.

### **Things I Learned:**

This project pushed me to understand more about how Excel interfaces with Internet Explorer. This biggest problem I ran into as I implemented this project was the inability to read and fully understand HTML code. As such I had a difficult time figuring out how to automate internet interaction without prompting the user for more information. After spending much time trying to manipulate HTML code and Google-ing ideas, I found a price comparison website where the ISBN number of the book being searched for in the URL. This allowed me to use a web query to access the data instead of the agent.

This project also taught me the importance of splitting procedures up into smaller subs. As I began coding I started with one large sub. But, as my code grew I recognized how smaller subroutines eliminate duplicated code and makes the code much easier to understand. As I tweaked different parts of my project, I realized how this also helps to eliminate bugs as I only had to manipulate code in one place as I tweaked different portions of my project, instead of multiple places.

This project also helped me to learn more about debugging. As I went through my project, there were many times when my project would run, but did not do what I had anticipated. As I fixed my logic errors, I found that stepping through projects makes it much easier to find errors than just looking at the code to find errors. I also learned more about fixing various other syntactical and runtime errors. There were several times that I would get stuck on a runtime error, but through internet searching and stepping through my program I was able to fix them.

This project helped me to see the importance of efficient coding. At the beginning of the project, if I had code that worked, I would leave it. But as I went through my project again I found many ways to improve the efficiency of the code. As I tweaked my code to make it more efficient, I found that not only did my program run faster, but it was much easier to understand and follow. One example of this is using the agent vs a web query. At first, I only used the agent, however this took a long time to download each webpage that I would gather information off of. While it

worked, once I remembered that web quires could accomplish the same task, it made this program run much faster.

Finally, this project taught to me the importance of anticipating different things a use may try to do that could “break” this project. There are several aspects of my project, such as checking to see whether the user is registered for classes, which were not part of my original project, but were added.

There were not any aspects of my original project that I was not able to implement. If I had more time for this project, I would like to add a link that students could press to access [textbookpricecomparison.com](http://textbookpricecomparison.com) in order to order their books from this website directly. This would allow them to easily find the book at the price given to them.

**Outside help:**

I did not receive any significant outside help in the completion of this project. When I got stuck on certain ideas I occasionally consulted Google and the course textbook. The agent used was written previously by Dr. Gove Allen and provided us to use as we wanted. The base of the login sub was written in the classes exercise on March 11.