Final Project – Apartment Comp Tool

Executive Summary

For the past 4 years, my wife and I have been managing a condo here in Provo. One of the challenges we face every year is deciding what is the appropriate rent and security deposit to charge our students for the upcoming year. Historically, we have had to log onto the BYU Off campus Housing Portal, search through the different listings, look up each listing's individual information, and then see how that apartment compares to our apartment. This process not only takes several hours, but it is extremely tedious.

This semester as I prepared to go through this process once again, I realized this was the perfect opportunity to automate something using VBA to try and save time. I created the Provo Apartment Comp Tool to help automate and simply the comparison process. The tool logs onto the BYU web portal, navigates to the listings page, searches for listings that meet the correct criteria, pulls the data into excel, and then reformats the data in a simple and easy to view comparison page.
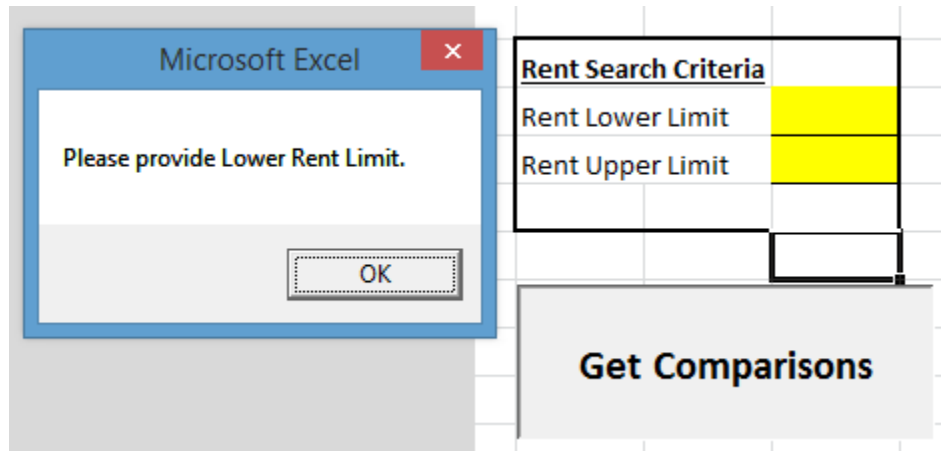
Implementation Documentation

I began the project using the Naxos composer's project that we completed in class as a guide. The agent to interact with html websites was critical to my projects success. From my main project page, "Rental Comps", the user begins by inputting the rent price range for potential competitors.

Rent Search Criteria		
Rent Lower Limit	$	200
Rent Upper Limit	$	320

Get Comparisons

If the user tries to run the program, "Get Comparisons", without putting either a lower or upper boundary, they will be notified to "Please provide Lower/Upper Rent Limit" and the program is stopped.

Once the user has selected the limits of the rent criteria, the program will successfully proceed.

Accessing BYU Portal

The program I built will log me onto BYU's secure website and navigate through the several pages to the Contracts Search page. The authentication process was similar to the Naxos exercise so I used the same process. (Decide if you want to add authentication code).

```
'this code allows me to login the BYU web portal
    a.visible = True
    a.openpage "https://cas.byu.edu/cas/login?service=https%3A%2F%2Fhome.byu.e
    a.document.all("username").Value = "pflclub"
    a.document.all("password").Value = "********"
    For x = 0 To a.document.all.Length - 1
      If LCase(a.document.all(x).tagname) = "input" Then
        If InStr(1, a.document.all(x).outerHTML, "type=""submit""") > 0 Then
          Debug.Print x, a.document.all(x).outerHTML
          a.document.all(x).Click
          a.waitForLoad
        End If
      End If
    Next
    a.waitForLoad
```

Specify Search Criteria

From there, the program will input the appropriate search criteria, including the user specified rent parameters, and pull up a page that lists comparable units. Since I was doing this project based on the one apartment that we currently manage, I hard coded several of the search criteria based on this apartment. I plan to update this tool to make it more customizable for other properties and rental units.

```
'this selects the rent range
a.document.all("lowRent").Value = Sheets("Rental Comps").Range("I6").Value
a.document.all("highRent").Value = Sheets("Rental Comps").Range("I7").Value

'this selects the different criteria for the search
a.document.all.Item("Other_FacilityType")(0).Checked = True
a.document.all.Item("TermContract_availableFor")(4).Checked = True
a.document.all.Item("TermContract_sharedPrivate")(1).Checked = True
a.document.all.Item("TermContract_spacesAvailable")(4).Checked = True
```

With the detailed information opened, I copy the information to an excel worksheet and reformat the data on a separate worksheet with the essential data. I decided to import the entire webpage and the results because my search results were limited enough that I decided it was easier to reformat the key information in Excel.

Web view of search results

›Welcome Page › Compare Listings

		Hugh B. Brown House — Details	House close to BYU!!! Atwood House — Details	Atwood House BYU Women's Housing - Available 8/14 — Details	Hampton Court #8- Two Blocks to Campus! — Details	Brownstone #10 BYU Women's Housing - AVBL 8/14 — Details	4 spaces in Mountainwood - Women's — Details
Terms							
Fall/Winter 2014	Shared/Private		Shared	Shared		Shared	Shared
	Spaces Available		4	4		6	4
	Rent		$ 295	$ 295		$ 285	$ 280
	Deposit		$ 350	$ 350		$ 350	$ 350
	Avg. Utilities						
Spring/Summer 2014	Shared/Private	Shared Shared			Shared		
	Spaces Available	4 1			4		
	Rent	$ 185 $ 170			$ 195		
	Deposit	$ 150 $ 150			$ 300		
	Avg. Utilities						

Imported view

20 E 900 N Provo 84606			
Rent:	$225 - $295		
Available:	08/29/14 Sp/Su, Year Round, F/W		
Spaces Avail:	4 Shared		
Contact: Listing Department			
(801) 607-1680			
leasing@aspenridgemanagement.com			
Contract Information			
Spring/Summer 2015	Year Round 2014		Fall/Winter 2014
Shared	Shared		Shared
4 spaces available	4 spaces available		4 spaces available
Rent:	$225	Rent:	$272	Rent:	$295
Deposit:	$350	Deposit:	$350	Deposit:	$350
Avg Util:		Avg Util:		Avg Util:	
Amenities			

Final View of the Tool

Provo Apartment Comp Tool

Title	Rent	Available	Date Available	Deposit
Mountain Wood #109	$210 - $310	08/29/14 F/W, Sp/Su	4 Shared	$0
Chalet #519 BYU Women's Housing - AVB 8/14	$225 - $335	08/29/14 Sp/Su, F/W	1 - 4 Shared & Private	$350
House close to BYU!!! Atwood House	$225 - $295	08/29/14 F/W, Sp/Su	4 Shared	$0
Victoria Place II	$200	04/26/14 Sp/Su	4 Shared	
Mountain Wood #210	$195 - $295	08/29/14 F/W, Sp/Su	4 Shared	$0
Hugh B. Brown House	$170 - $185	04/25/14 Sp/Su	1 - 4 Shared	$150
Courtside #101- Checkout This Low Price!	$195	04/28/14 Sp/Su	4 Shared	
Atwood House BYU Women's Housing - Available	$225 - $295	08/29/14 Sp/Su, Year Round, F/W	4 Shared	$350
Hampton Park Court Condo #3	$225 - $310	08/29/14 Sp/Su, F/W	4 Shared	$350
Hampton Court #8- Two Blocks to Campus!	$195	04/28/14 Sp/Su	4 Shared	
Brownstone #10 BYU Women's Housing - AVBL 8/:	$185 - $285	08/29/14 F/W, Sp/Su	6 Shared	$350
4 spaces in Mountainwood - Women's	$190 - $280	08/28/14 Sp/Su, F/W	4 Shared	$350
Belles n Beaux	$195	04/25/14 Sp/Su	4 Shared	

Learnings and Difficulties

This project really tested me and helped me improve my overall VBA skills. As the first computer language class I have ever taken, this final project really helped me get a better understanding of the proper syntax for VBA. It also helped me learn to think "different", especially as I dealt with the logic

behind the different potential loops I could use. Although time consuming and frustrating, spending this amount of time living within VBA really helped me to feel more confident with my skills and helped me to feel ready and excited to try and take on new projects that can be automated using VBA.
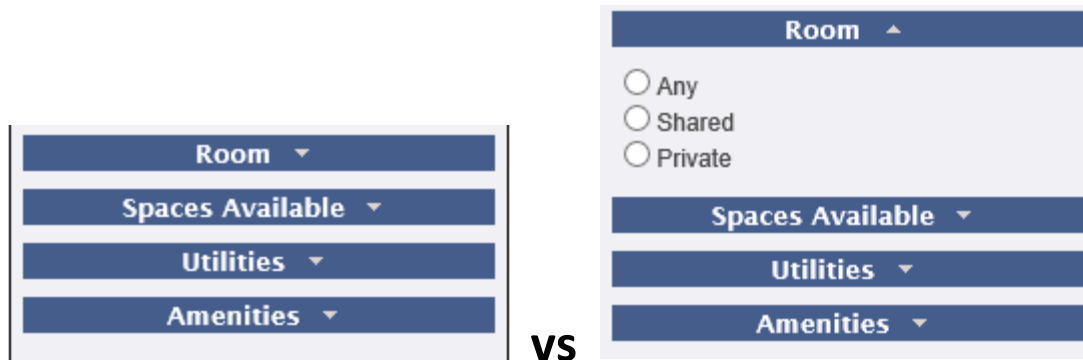
Key Project Learnings

- I always though VBA would be easier because of all the solutions people post online. What I didn't realize was there are several different ways to solve a problem, and each solution can do things very different.
- Using effective and concise loops is something I need to continue to work on. The loop I used as I was reformatting the data was simple enough, but I know there are more efficient and error free ways to write the code.
- I need to be quicker to ask for help. There were several times in this project where I got stuck for hours. I really try and figure things out on my own but it is foolish to waste my time when there are so many people who can help me learn something so easily.
- Changing formatting of my main user page after a significant portion of the code was finished was much harder than I realized. I had to go through all my code and make all the appropriate changes needed to be made.
- I don't know what I would have done without the agent that Professor Allen provided for us to pull data from the web. I hope I will be able to better understand how and why it works like it does.
- Don't forget to save **often!** There is nothing more frustrating than writing a block of code and having it deleted because your computer dies on you.
- Using the record a macro function inside of excel really helped me get to some code that I didn't know how to do on my own.

Difficulties

- Accessing data - My first difficulty came as I tried to access the online data. I knew I would have to authenticate to get on, but I didn't realize how much code it would take just to get to the data.
- Java Script – On the webpage where I selected my criteria for the search, there were several section that were collapsed and I couldn't access the data. I spent several hours trying to figure out how to "click" using code like : a.document.all.Item("roomDiv").Click. Little did I know that one simple line of Java Script code would solve my problem.

```
'this will toggle (uncollapse)
 a.execScript "toggle('roomDiv')"
 a.execScript "toggle('spacesAvailableDiv')"
 a.execScript "toggle('utilitiesDiv')"
 a.execScript "toggle('amenitiesDiv')"
```

VS

- Copied code – I used some code from the User From project to have message boxes pop up if the user didn't input data where it was necessary. The code I input was pulled straight from the user form assignment and it worked great there. The code I pulled used the syntax "Message Box" all spelled out. It took me a good period of time before my error was coming because I need to change it to "MsgBox".
- "waitForLoad" – When accessing the web via VBA, I learned from trial and error that VBA runs much faster than the web and you need to insert the code a.waitForLoad to allow the web browser to keep up.

Assistance

The main people I received help from on my project were:

- Rick Smith – He helped me try and solve the Java Script issue for over an hour.
- Professor Allen – After asking several more people, I ultimately turned to Professor Allen for help with the collapsing issue. He immediately recognized my problem for what it was and provided me with the 1 stinking line of code that fixed my problem.
- Steve Carroll – As a fellow classmate, Steve provided the eyes I needed as I worked on my Message Box (MsgBox) error. He had pulled the same code and faced the same issue earlier but gave up. He finally realized that our syntax was wrong and it fixed the problem.
- Nathan (TA) – Like he has done with almost every project I have worked on, Nate helped me as I was getting started with this project. I'm sure I would have spent more time with him, but several of his TA sessions conflicted with other class schedules.