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Final Project Report
ISys 540
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Easycache - a time saving tool for Geocaching.com

Executive Summary

Geocaching is an activity where participants use Global Positioning System (GPS) receivers to hide and seek containers (called "geocaches" or "caches") at specific GPS coordinates anywhere in the world. The caches are generally hidden in public outdoor locations in small (film canister size) to medium (ammo box, Tupperware, or up to the size of a 5 gallon bucket) size containers. Geocaching.com is a website where you can look up the coordinates of caches and then log your visit after you have found it.

In order to speed up the process of geocaching for me (and my impatient children), I have created a time saving spreadsheet tool for the Geocaching.com website, called Easycache. The Easycache tool performs the following:

1. Automatically logs in and logs out of Geocaching.com
2. Collects the critical geocache information for a list of caches you provide
3. Presents the data in a concise format for you to print and take with you on your geocache hunt
4. Automatically logs your "finds" into the website for all the caches you find

Easycache reduces the time I spend on the computer, gathering information about the geocaches I want to find, and give me more time doing the fun part – actually searching for the geocaches! There are over 1 million caches hidden around the world, so I need all the time saving help I can get. Below, Figure 1 shows a screen shot of the Geocaching.com homepage with labels of some key points of interaction with the website.

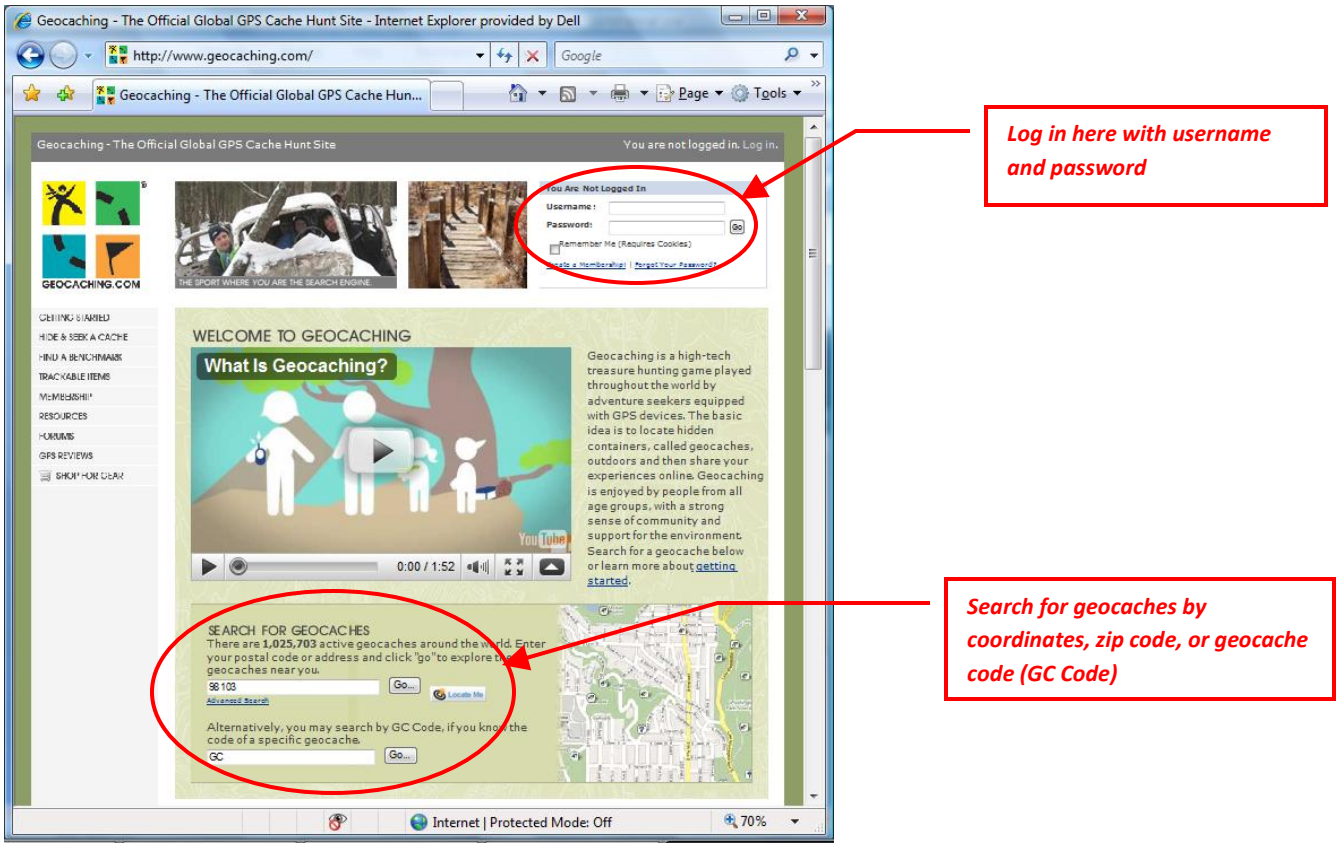

Figure 1. The Geocaching.com homepage.

Implementation

My goal is not only to provide an interface with the user, but to also provide a compact collection of the information so the user can print off the information on one page as a reference when going out to look for the geocaches. To do this, I created a simple interface for Easycache, allowing the user to enter information, click on buttons for automated functions, and view a compact collection of data about the caches. This Easycache interface is shown below in Figure 2.

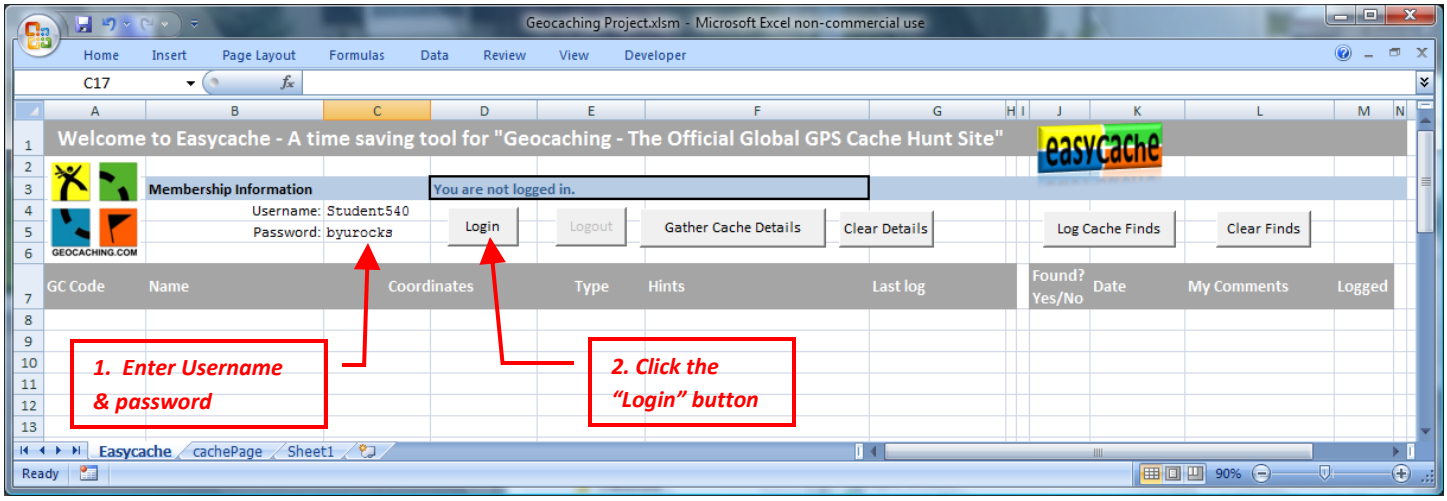

Figure 2. The Easycache user interface.

The steps of using Easycache	What the code is doing
Step 1: Enter your Geocaching.com username and password.	This information will be used to login to the Geacaching.com website.
Step2: Click the "Login" button.	This activates a macro that opens Internet Explorer to the Geocaching.com website, enters your username and password into the appropriate locations, and logs you in.
Step 3: Search for geocaches you want to find by searching near your home coordinates, or entering an address or a zip code. When you find a geocaches you want to find, copy and paste the geocaches' unique code (called a GC Code) into the "GC Code" column in Easycache. See Figure 3 below.	

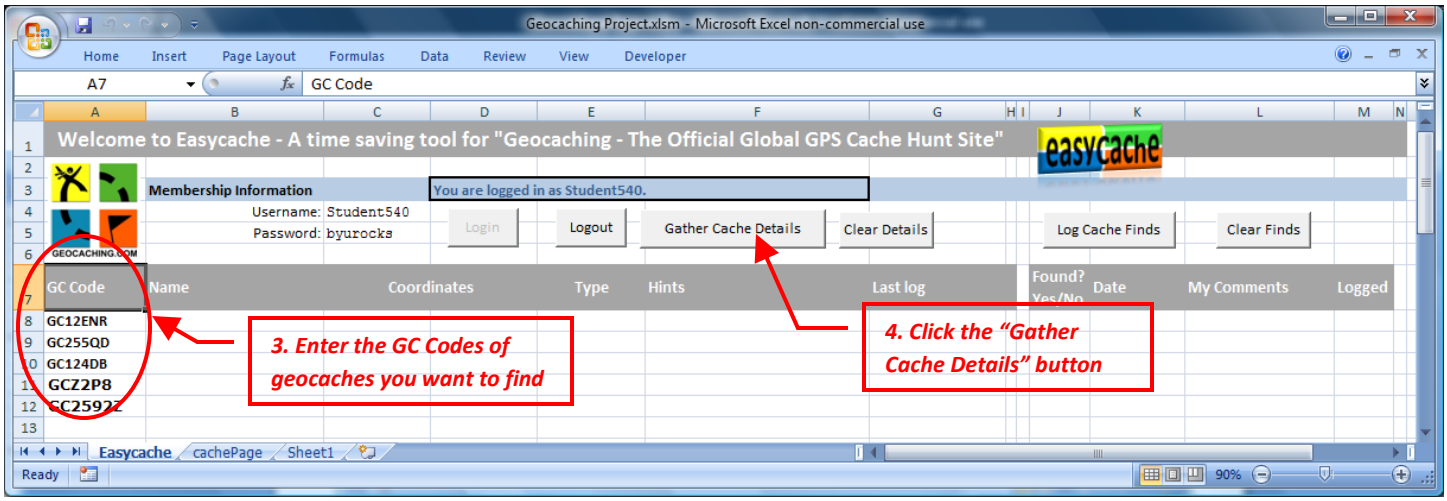

Figure 3. The Easycache interface with GC Codes saved of the caches you want to look up and find.

Step 4: Click on the “Gather Cache Details” button.	This activates a macro that uses the GC Codes, one at a time, to open the individual cache webpage, and gather detailed information needed to find the cache. The macro updates a Web Query of the web pages for each GC Code saved in your spreadsheet, and gathers the essential information for you to find the geocache. This data includes: • geocache name • coordinates • type of geocache • hints to help find the geocache • the date of the last log for the geocache Below, Figure 4 shows where this data is located on the individual geocache web pages. Figure 5 shows the Easycache interface after all the essential data has been collected on each GC Code and put in the corresponding columns.

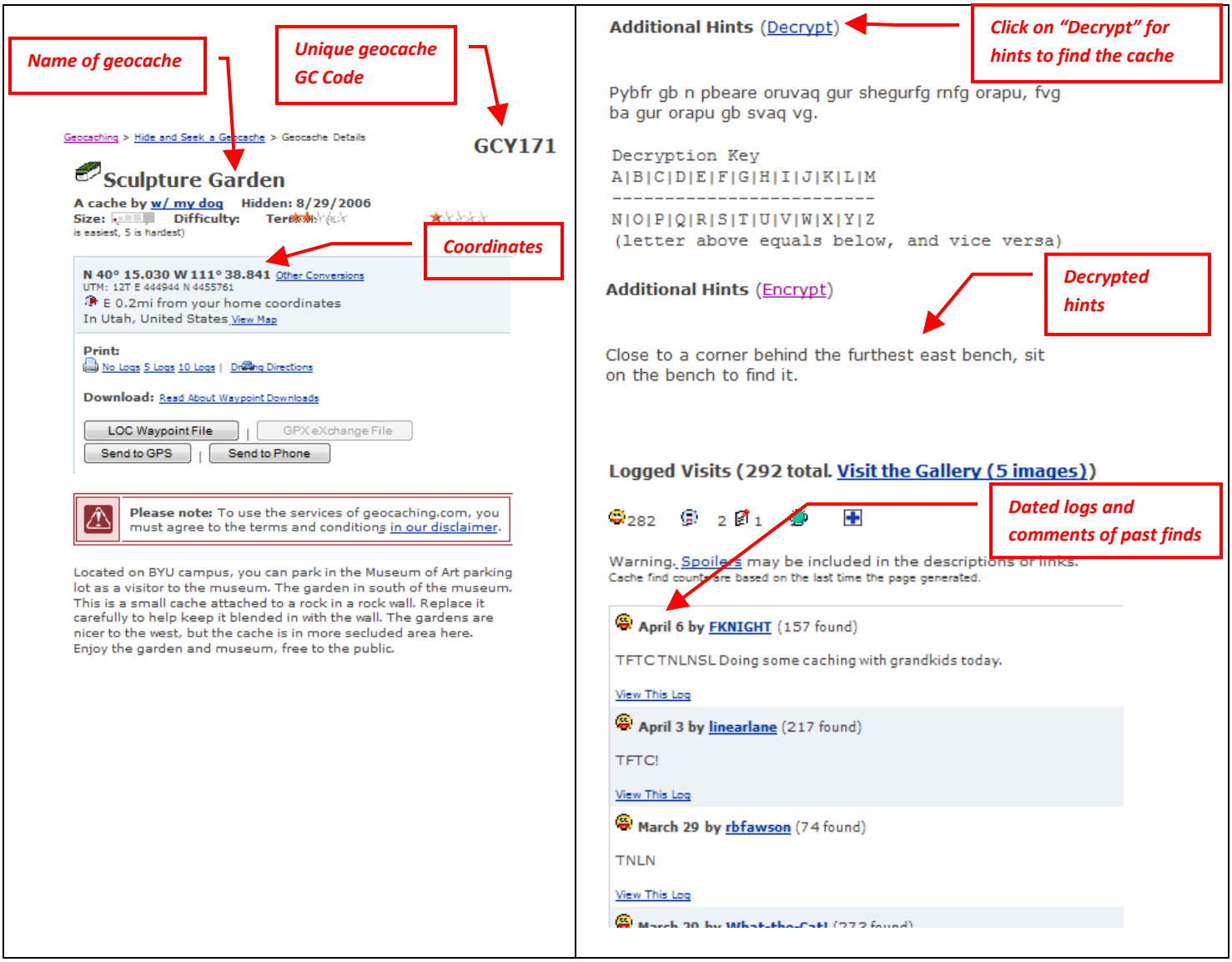

Figure 4. The full information page for an individual geocache, including the encrypted and decrypted “Additional Hints” message.

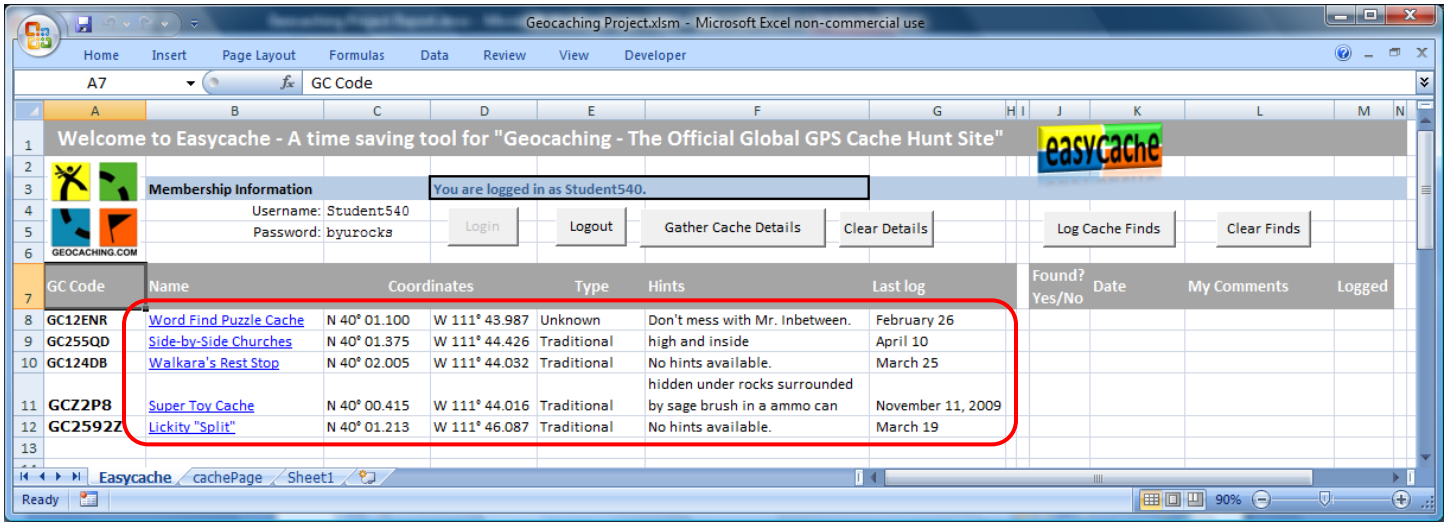

Figure 5. The essential details of each cache have been gathered from their web pages into the columns.

Step 5: Print off the Easycache page with all the essential information for the geocaches you want to find. Then, go and find the Geocaches!	
Step 6: Enter your logged information in the columns on the right and click "Log Cache Finds", as shown in Figure 6.	This starts a macro that goes the geocache webpage for each geocache for which you have entered find information in the columns on the right, and automatically logs your find, date, and comments. An example of the log that is created is shown in Figure 7. As a confirmation that the log was made, the current date is placed in the far right column for the logged geocaches. This is also shown below, in Figure 7.

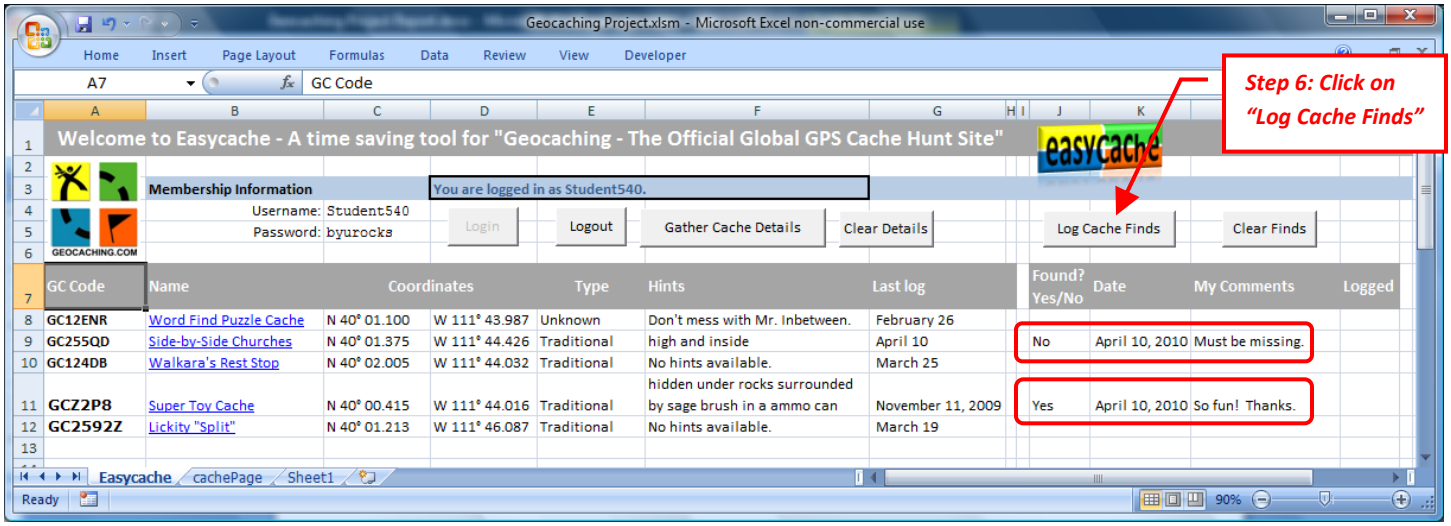

Figure 6. Enter your logs for the geocaches you searched for, and then log your finds with Easycache.

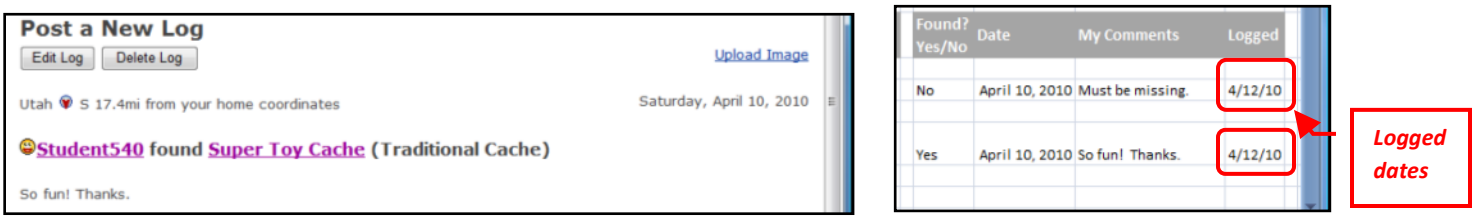

Figure 7. A log that was automatically created from information entered into the Easycache interface, and the confirmation date of the log.

Step 7: Click on the button "Clear Finds" to delete the rows of geocaches that you've already found.	This starts a short macro which deletes the rows of data that have a date in the "Logged" column.
Step 8: If desired, click on the button "Clear Details" to clear all the cache details from the sheet.	This starts a macro that clears all data from rows with GC codes listed.
Step 9: When done, click the "Log off" button, to log off Geocaching.com and close the browser window.	This starts a macro that accesses the geocaching website and logs off the user from their account, and then closes the browser window.

Discussion of Learning

The first obstacle I faced was using VBA as an object oriented language. I am used to programming quite extensively in MatLab, but not using objects (although I recognize now that they have just added certain objects in MatLab). I was able to learn how to use the Internet Explorer object in new and powerful ways, such as interacting with the browser. One neat property that I used was the *ie.LocationURL* property, which allowed me to create hyperlinks on the spreadsheet for the web pages of the geocaches.

Another learning point was how to parse data effectively. I set up web queries that would update for the web pages of each geocache, but the data I needed on each webpage was formatted and positioned slightly different on each page. I had to search for the common reference points to count from in order to parse out the specific data I needed. Also, some of the web queries would pull multiple things into one cell, which I had to then split at a certain point. Again, to do this I had to find the common reference points that I could use to split the data in the correct point. I used the *InStr()* and *Mid()* functions a lot for this type of operation.

I spent a lot of time working on the schemes for the function of the buttons in the interface, so that the tool really saved me time, rather than just do some neat stuff that I could do just as quickly manually. Since this tool is meant to be used to look up data from the website, and then to log data back to the website at a later time or even a later day, I had to do some status checking to know if the macros needed to repeat operations. An example of this is that I had to check to see if there was an active Internet Explorer object to know if I needed to open a new web browser, or use one that was already open. Another example of this is the automatic formatting of "Log in" and "Log out" buttons to make them "grayed out" to give the appearance that one or the other was not active. I also realized that it would save a little time by creating the "Clear Finds" and "Clear Details" buttons, which automate the simple task of clearing/deleting data from the spreadsheet, but it provides consistent operation of clicking on buttons for the user.

One thing that might improve this tool is the use of forms. I only see an advantage to using a form if for some reason you wanted to use this tool with a database of all your finds, but that is exactly what is done for you on the Geocaching.com web site under your membership features. I started making forms, but wanted to keep this tool simple, so decided to leave the forms out.

I'm sure that as I use this tool more, I will see the need for more/different functionality. This class has taught me the basics of the VBA language, and through this project I have learned how to find the methods I need to do whatever I might need to do in the future.