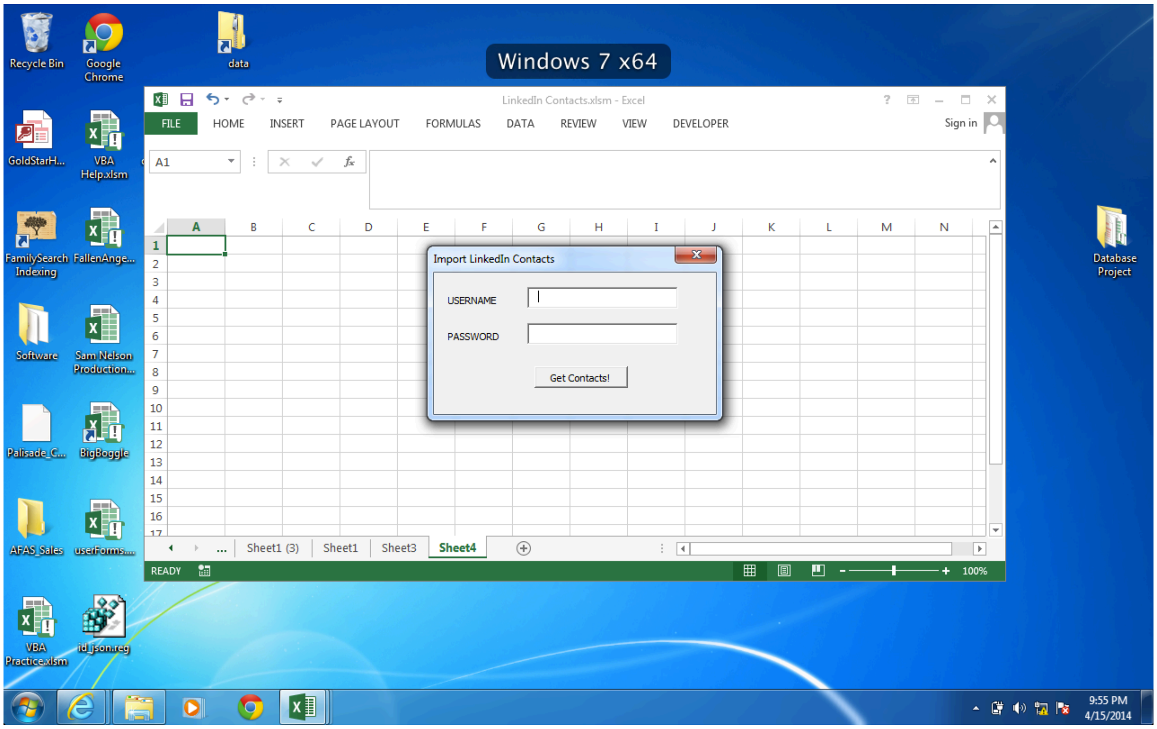
Sam Nelson
VBA 520
4-15-14

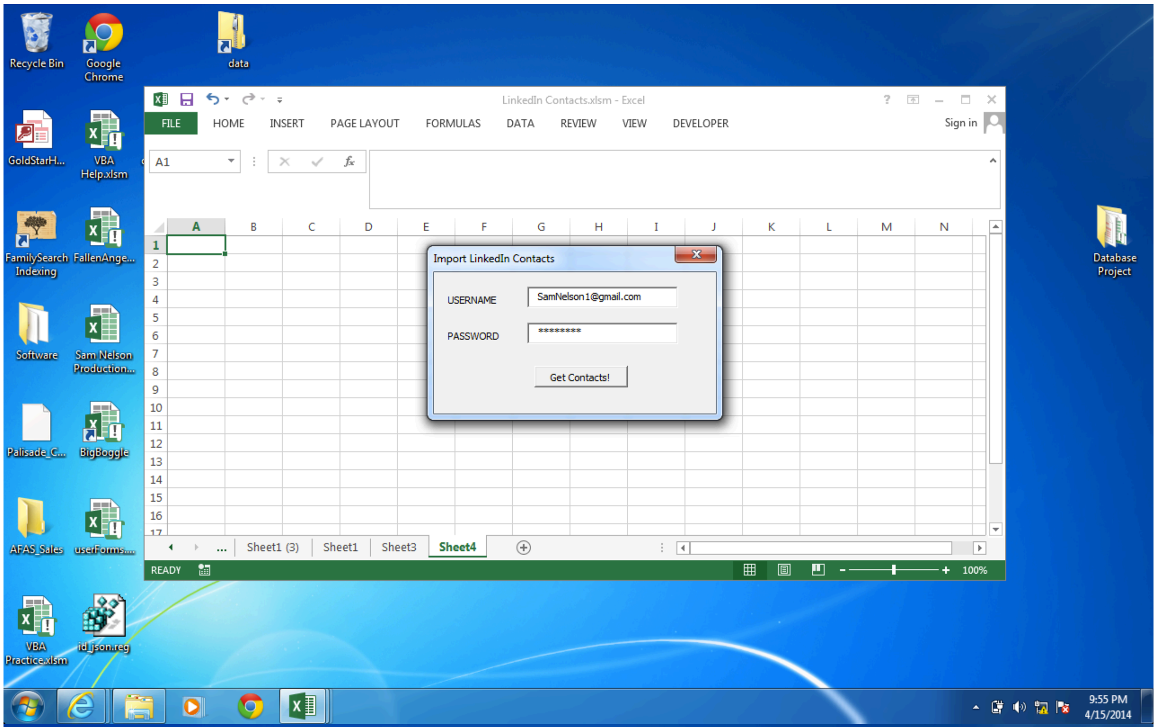
VBA Final Project

Executive Summary

This project is a worksheet that allows someone to enter their username and password in a user form, which retrieve the first name, last name, title, company, and location of each contact in their LinkedIn profile. After that code is executed, another sub procedure cleans common mistakes that come from running the original VBA script. Another script does the formatting. Filters have been added to the different categories so that users can easily lookup a specific contact, or look at contacts in a specific location, industry, or position. Networking is important, and LinkedIn is a great tool, but it is hard to group specific contacts by category on LinkedIn, this script allows anyone to easily and privately import their LinkedIn contacts in excel, filter by whatever grouping the user chooses, and then alter that data however suits them best.

Here are some photos that show what my project does in a nutshell.



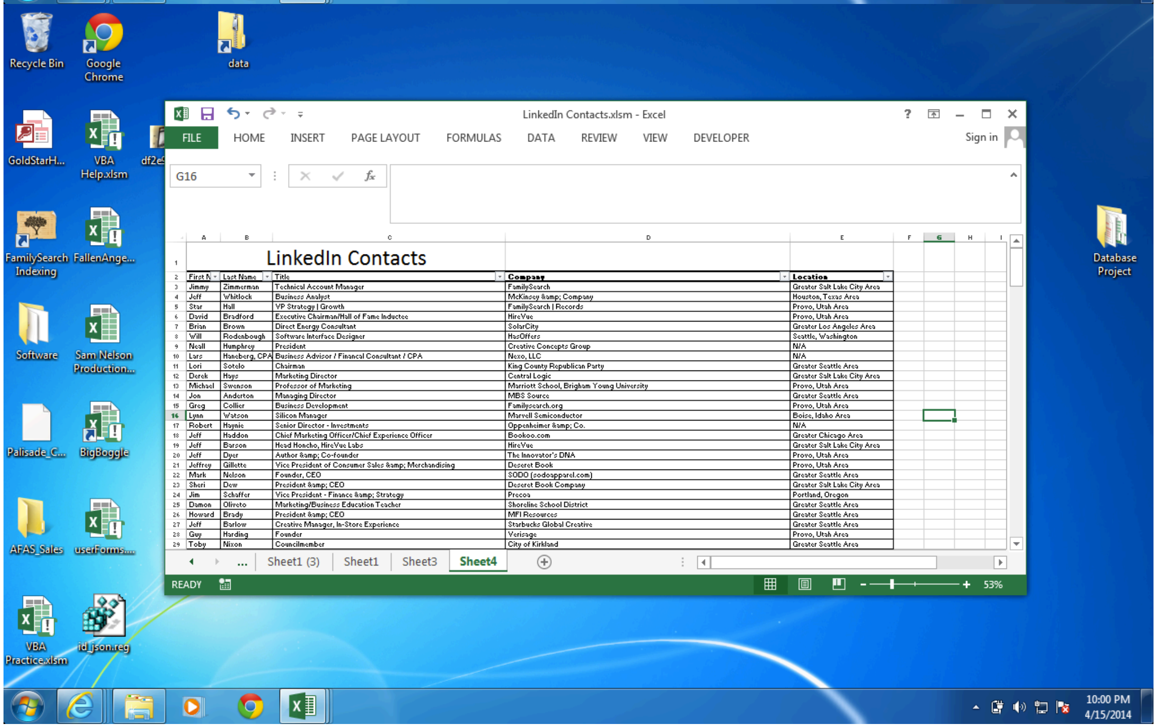


Import LinkedIn Contacts

USERNAME: SamNelson1@gmail.com

PASSWORD: ********

Get Contacts!



LinkedIn Contacts

First N	Last Name	Title	Company	Location
Jimmy	Zimmerman	Technical Account Manager	FamilySearch	Greater Salt Lake City Area
Jeff	Whitlock	Business Analyst	McKinsey &amp; Company	Houston, Texas Area
Star	Hall	VP Strategy | Growth	FamilySearch | Records	Provo, Utah Area
David	Bradford	Executive Chairman/Hall of Fame Inductee	HireVue	Provo, Utah Area
Brian	Brown	Direct Energy Consultant	SolarCity	Greater Los Angeles Area
Will	Rodenbough	Software Interface Designer	HasOffers	Seattle, Washington
Neall	Humphrey	President	Creative Concepts Group	N/A
Lars	Haneberg, CPA	Business Advisor / Financal Consultant / CPA	Nexo, LLC	N/A
Lori	Sotelo	Chairman	King County Republican Party	Greater Seattle Area
Derek	Hays	Marketing Director	Central Logic	Greater Salt Lake City Area
Michael	Swenson	Professor of Marketing	Marriott School, Brigham Young University	Provo, Utah Area
Jon	Anderton	Managing Director	MBS Source	Greater Seattle Area
Greg	Collier	Business Development	Familysearch.org	Provo, Utah Area
Lynn	Watson	Silicon Manager	Marvell Semiconductor	Boise, Idaho Area
Robert	Haynie	Senior Director - Investments	Oppenheimer &amp; Co.	N/A
Jeff	Haddon	Chief Marketing Officer/Chief Experience Officer	Bookoo.com	Greater Chicago Area
Jeff	Barson	Head Honcho, HireVue Labs	HireVue	Greater Salt Lake City Area
Jeff	Dyer	Author &amp; Co-founder	The Innovator's DNA	Provo, Utah Area
Jeffrey	Gillette	Vice President of Consumer Sales &amp; Merchandising	Deseret Book	Provo, Utah Area
Mark	Nelson	Founder, CEO	SODO (sodoapparel.com)	Greater Seattle Area
Sheri	Dew	President &amp; CEO	Deseret Book Company	Greater Salt Lake City Area
Jim	Schaffer	Vice President - Finance &amp; Strategy	Precoa	Portland, Oregon
Damon	Oliveto	Marketing/Business Education Teacher	Shoreline School District	Greater Seattle Area
Howard	Brady	President &amp; CEO	MFI Resources	Greater Seattle Area
Jeff	Barlow	Creative Manager, In-Store Experience	Starbucks Global Creative	Greater Seattle Area
Guy	Harding	Founder	Verisage	Provo, Utah Area
Toby	Nixon	Councilmember	City of Kirkland	Greater Seattle Area

Information from individuals was found by creating a user form that (when clicked) goes into internet explorer, logs that person into their LinkedIn account, opens the page that contains all of the information for all of their connections, and puts each of the five available categories for each individual into different variables in each row. When I looked at the JSON object for LinkedIn, I saw that it gave me the total number of contacts a person has and some good specific information for each person. This helped a LOT! Here is my code for that

(Code/objects I used are in blue, my comments on them will be in black)

First, I logged them in with a standard user form. Password hidden of course.

```
If a.moveTo("https://www.linkedin.com/uas/login") Then
    a.openpage "https://www.linkedin.com/uas/login", True
    a.document.all("session_key-login").Value = username
    a.document.all("session_password-login").Value = password
    a.document.all("btn-primary").Click
    a.waitForLoad
    a.openpage "https://www.linkedin.com/contacts/?filter=recent&trk=nav_responsive_sub_nav_network#?filter=recent&trk=nav_responsive_sub_nav_network", True
End If
```

Second, I used a JSON object from LinkedIn's API to find the number of contacts each person had as well as information about each individual contact. JSON is in BLUE, my comments in BLACK, VBA code in RED.

```
 "status": "success",
   "paging": {
      "count": 10,
      "start": 1,
      "total": 250 },
```

I was able to use the total starting point to loop through all of someone's contacts at once. This was an issue because as you can see by the "count: 10" the webpage generally loads ten users at a time unless it the user scrolls down. Since I am able to consistently get the number of contacts from each person, I was not at the mercy of trying to use VBA to scroll down and reload hundreds of names.

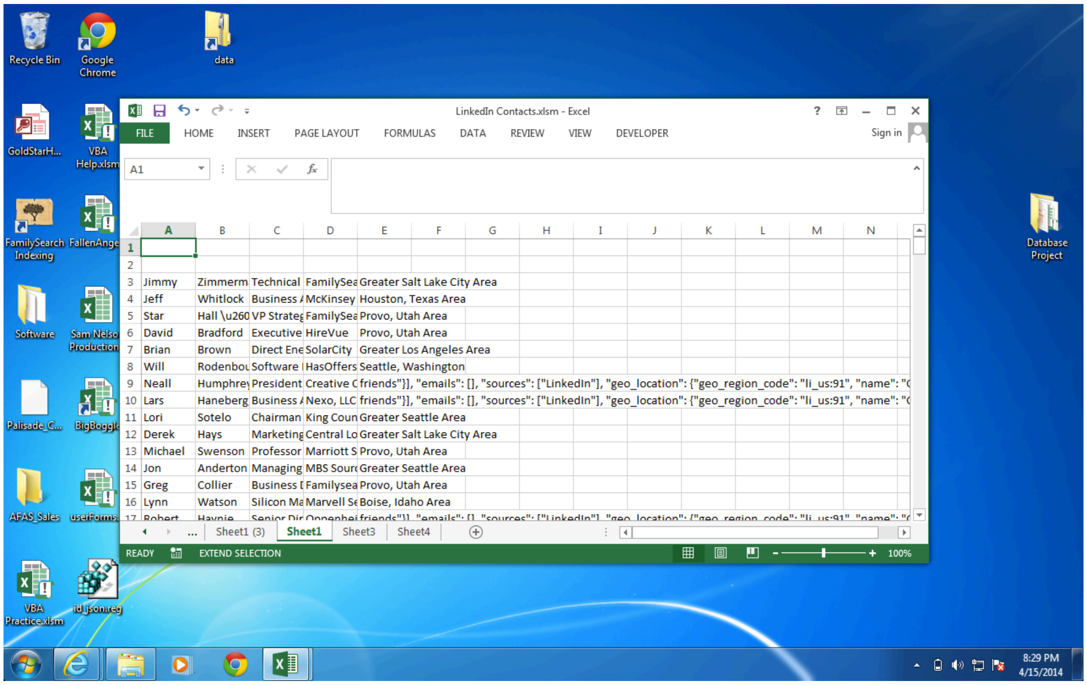
```
"last_sync": 1397532385,
"contacts": [
   {
      "first_name": "Jimmy",
fName = a.getText("""", """last_name"": """")
      "last_name": "Zimmerman",
lName = a.getText("""", """name"": """")
      "name": "Jimmy Zimmerman",
      "title": "Technical Account Manager",
a.moveTo ("""title"": """")
title = a.getText("""",")
      "company": {
a.moveTo ("""", """name"": """")
company = a.getText(""""}, ")
         "id": "li_FamilySearch",
          "name": "FamilySearch"

a.moveTo ("""", """name"": """")
company = a.getText(""""}, ")
      "geo_location": {
         "geo_region_code": "li_us:716",
           name": "Greater Salt Lake City Area"

a.moveTo ("""", """name"": """")
locat = a.getText(""""}, """")
```

I then created a do until loop that went through the JSON object until the end, collecting information as long as there was a first name to identify them. Do While a.moveTo("{""first_name"": """). This returned bout all of a person's contacts and I used a variable to sort all of these into the correct columns.

After the data was imported there were still a few obvious problems with the code the way it came in. Those on LinkedIn that did not put anything in for their location had unimportant parts of the JSON object entered into the cell in the location column. Fortunately for me, all errors had one of four things in common in the particular snippet of the JSON object that filled the cell. All strings either started with “friends”, “classmates”, “group members”, or “partners.” To remedy this, I made a for loop that went through each row on the location column and had separate if statements for each of the four problems. If one was encountered, that cell was replaced with a string that said “N/A”. Users can then use the filter to find all information that was not available and enter it if they know what geographic location they are from.

```
If Left(cellStr, 7) = "friends" Then
  Cells(k, 5) = "N/A"
  cellStr = ""
End If
```

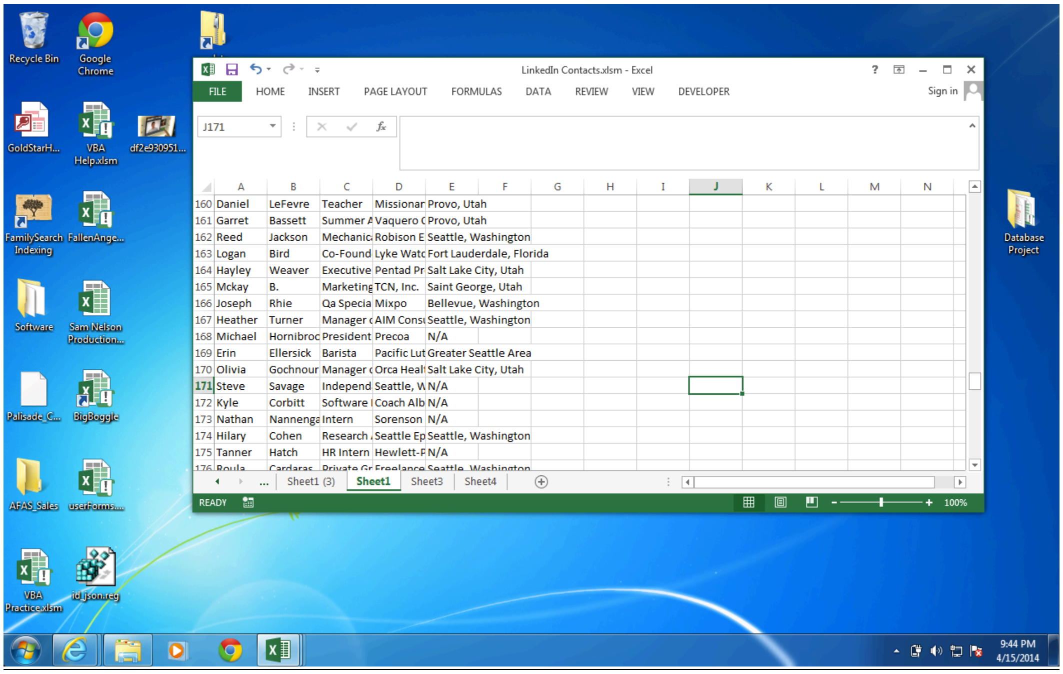
Before


LinkedIn Contacts.xlsm - Excel

A1

	A	B	C	D	E
1					
2					
3	Jimmy	Zimmerm	Technical	FamilySea	Greater Salt Lake City Area
4	Jeff	Whitlock	Business A	McKinsey	Houston, Texas Area
5	Star	Hall \u260	VP Strateg	FamilySea	Provo, Utah Area
6	David	Bradford	Executive	HireVue	Provo, Utah Area
7	Brian	Brown	Direct Ene	SolarCity	Greater Los Angeles Area
8	Will	Rodenbou	Software I	HasOffers	Seattle, Washington
9	Neall	Humphrey	President	Creative C	friends"}], "emails": [], "sources": ["LinkedIn"], "geo_location": {"geo_region_code": "li_us:91", "name": "(
10	Lars	Haneberg	Business A	Nexo, LLC	friends"}], "emails": [], "sources": ["LinkedIn"], "geo_location": {"geo_region_code": "li_us:91", "name": "(
11	Lori	Sotelo	Chairman	King Coun	Greater Seattle Area
12	Derek	Hays	Marketing	Central Lo	Greater Salt Lake City Area
13	Michael	Swenson	Professor	Marriott S	Provo, Utah Area
14	Jon	Anderton	Managing	MBS Sourc	Greater Seattle Area
15	Greg	Collier	Business D	Familysea	Provo, Utah Area
16	Lynn	Watson	Silicon Ma	Marvell Se	Boise, Idaho Area
17	Robert	Haynie	Senior Dir	Oppenhei	friends"}], "emails": [], "sources": ["LinkedIn"], "geo_location": {"geo_region_code": "li_us:91", "name": "(

After

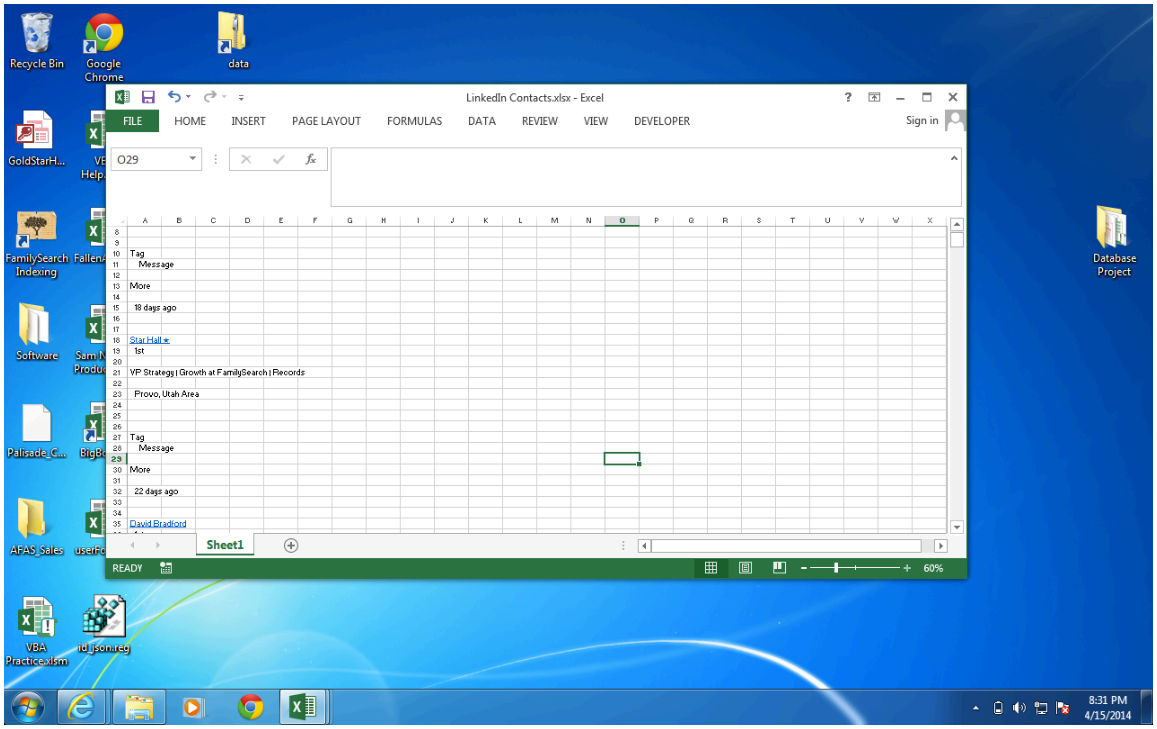

LinkedIn Contacts.xlsm - Excel

J171

	A	B	C	D	E
160	Daniel	LeFevre	Teacher	Missionar	Provo, Utah
161	Garret	Bassett	Summer A	Vaquero C	Provo, Utah
162	Reed	Jackson	Mechanic	Robison E	Seattle, Washington
163	Logan	Bird	Co-Found	Lyke Watc	Fort Lauderdale, Florida
164	Hayley	Weaver	Executive	Pentad Pr	Salt Lake City, Utah
165	Mckay	B.	Marketing	TCN, Inc.	Saint George, Utah
166	Joseph	Rhie	Qa Specia	Mixpo	Bellevue, Washington
167	Heather	Turner	Manager c	AIM Consu	Seattle, Washington
168	Michael	Hornibroc	President	Precoa	N/A
169	Erin	Ellersick	Barista	Pacific Lut	Greater Seattle Area
170	Olivia	Gochnour	Manager c	Orca Healt	Salt Lake City, Utah
171	Steve	Savage	Independ	Seattle, W	N/A
172	Kyle	Corbitt	Software I	Coach Alb	N/A
173	Nathan	Nannenga	Intern	Sorenson	N/A
174	Hilary	Cohen	Research A	Seattle Ep	Seattle, Washington
175	Tanner	Hatch	HR Intern	Hewlett-P	N/A
176	Roula	Cardaras	Private Gr	Freelance	Seattle, Washington

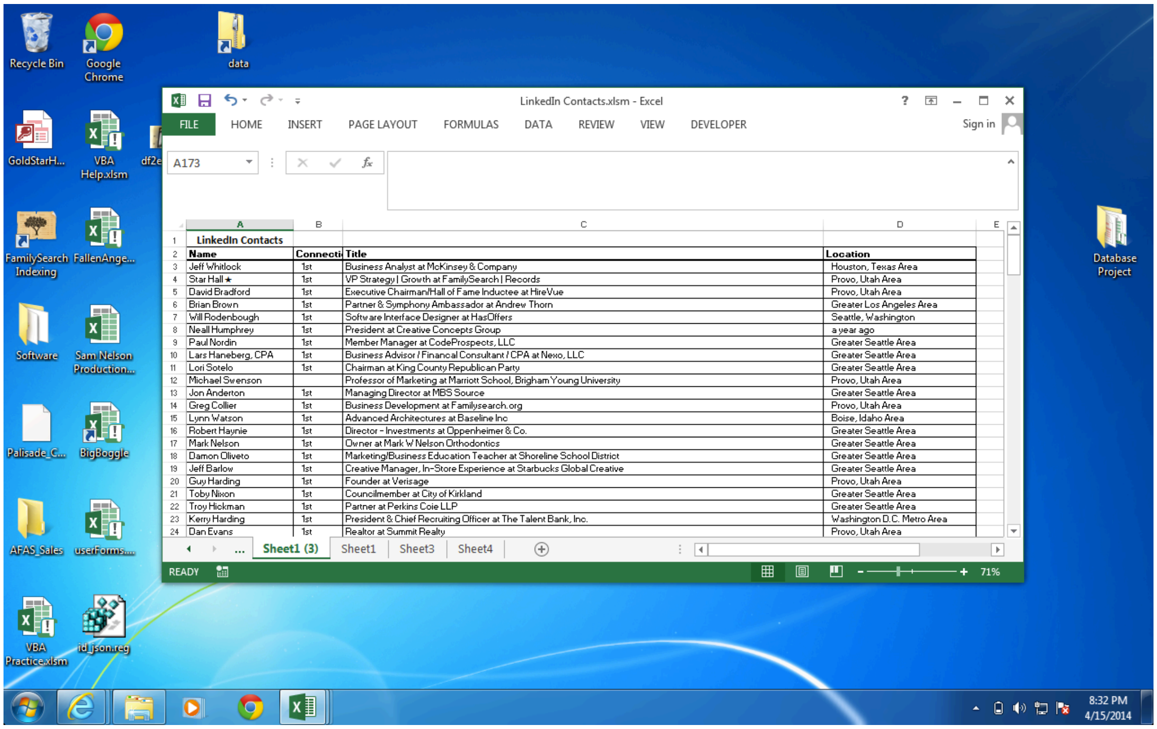
Conceptual difficulties (and solutions): Most of my time ended up being spent on a different way to import the data that had to be abandoned. I spent many hours trying to figure out how to scrape data from a necessary webpage on LinkedIn and I used a large amount of code to sort through all of the random data that the web scraping spat out and organized it into a well-formatted worksheet.

Before



	A
8	
9	
10	Tag
11	Message
12	
13	More
14	
15	18 days ago
16	
17	
18	Star Hall ★
19	1st
20	
21	VP Strategy | Growth at FamilySearch | Records
22	
23	Provo, Utah Area
24	
25	
26	
27	Tag
28	Message
29	
30	More
31	
32	22 days ago
33	
34	
35	David Bradford

After



LinkedIn Contacts

Name	Connecti	Title	Location
Jeff Whitlock	1st	Business Analyst at McKinsey & Company	Houston, Texas Area
Star Hall ★	1st	VP Strategy | Growth at FamilySearch | Records	Provo, Utah Area
David Bradford	1st	Executive Chairman/Hall of Fame Inductee at HireVue	Provo, Utah Area
Brian Brown	1st	Partner & Symphony Ambassador at Andrew Thorn	Greater Los Angeles Area
Will Rodenbough	1st	Software Interface Designer at HasOffers	Seattle, Washington
Neall Humphrey	1st	President at Creative Concepts Group	a year ago
Paul Nordin	1st	Member Manager at CodeProspects, LLC	Greater Seattle Area
Lars Haneberg, CPA	1st	Business Advisor / Financal Consultant / CPA at Nexo, LLC	Greater Seattle Area
Lori Sotelo	1st	Chairman at King County Republican Party	Greater Seattle Area
Michael Swenson		Professor of Marketing at Marriott School, Brigham Young University	Provo, Utah Area
Jon Anderton	1st	Managing Director at MBS Source	Greater Seattle Area
Greg Collier	1st	Business Development at Familysearch.org	Provo, Utah Area
Lynn Watson	1st	Advanced Architectures at Baseline Inc	Boise, Idaho Area
Robert Haynie	1st	Director - Investments at Oppenheimer & Co.	Greater Seattle Area
Mark Nelson	1st	Owner at Mark W Nelson Orthodontics	Greater Seattle Area
Damon Oliveto	1st	Marketing/Business Education Teacher at Shoreline School District	Greater Seattle Area
Jeff Barlow	1st	Creative Manager, In-Store Experience at Starbucks Global Creative	Greater Seattle Area
Guy Harding	1st	Founder at Verisage	Provo, Utah Area
Toby Nixon	1st	Councilmember at City of Kirkland	Greater Seattle Area
Troy Hickman	1st	Partner at Perkins Coie LLP	Greater Seattle Area
Kerry Harding	1st	President & Chief Recruiting Officer at The Talent Bank, Inc.	Washington D.C. Metro Area
Dan Evans	1st	Realtor at Summit Realty	Provo, Utah Area

What is shown above had to be almost completely disregarded… I began working on this project at the beginning of the semester when we learned how to scrape things off of the web. Unfortunately, I learned that there are some benefits to procrastination. LinkedIn came out with an update after I had learned to organize the entire worksheet and I could no longer scrape someone's contacts. Because of this I had to start over and just navigate explorer with VBA. Professor Allen pointed me in the right direction for how to import the data I needed with JSON query and I was able to create a more simple code that executed more quickly. It turned out to be a blessing in disguise because it forced me to learn how to import data from a site using a JSON object and my final project now works more seamlessly than before. I created a more efficient worksheet of LinkedIn contacts. While my original web scraping idea gave me a lot of experience with loops, I realized that it was extremely slow and inefficient in practice. Especially compared to what I found was possible later in the semester. Combining navigation of internet explorer with userforms and the rest of VBA has increased the possibilities of what I can do immensely.

Assistance: I spent a very long time struggling to make my original web-scraping idea work, but the more I worked on it the more I realized I was trying to fit a square peg in a round hole. After a few hours trying to figure out how to navigate LinkedIn by controlling internet explorer from excel. Professor Allen spent a few minutes with me and very effectively taught me how to do this. The bittersweet discovery was that it would obviously be much easier to start over after Professor Allen taught me how to navigate LinkedIn. The errors that came up and the way I needed to clean the data was different, but still, overall starting fresh with a more efficient way was more efficient than trying to repair the old broken way. I didn't understand extremely well how to navigate excel from class and so the one on one time with Professor Allen was extremely valuable to my learning. I also had help from Nathan. Leaning on both Nathan and Professor Allen's advice demonstrated the importance of Perhaps the most important thing that I learned throughout the project was that as breadth of knowledge increases, efficiency increases A LOT. This is true with anything, but I think especially so in a coding language. Each new concept I learn increases the possibilities I can develop on my own exponentially, and some of those will undoubtedly be better than old ideas. It will be extremely valuable to keep up the skills I do have and learn what I can on my own to grow my understanding.