

Blake Wise

Final Project

Executive Summary

I am currently doing an internship with a startup named Decisions. They are a workflow automation platform that takes any kind of business rule or workflow and automates it very simplistically. My team is working with their marketing manager and at the beginning of the semester he assigned one of the team members to do weekly SEO reports on Decisions' competitors. She would Google a keyword, go through all ten of the search results, and then record the key SEO data on each of those results. I immediately thought, "I'm pretty sure I can automate that!" Thus my project was born.

With little human interaction, my project takes the desired keywords, inserts them into Google and cycles through the search results then outputs the wanted SEO data.

My Solution

Google's Automation Restrictions

With Google's search results being their golden baby it's only natural that they have automation restrictions on it. This threw a bit of a wrench in my initial solution because that meant the user had to interact with the program a lot more than I wanted. This changed the whole landscape of the project. These restrictions meant that the user had to interact with Google through Internet Explorer in three simple ways:

- Click inside the search bar
- Click the search button to execute the search of the keyword
- Click "Next" if the user wanted data from the search results beyond the first page

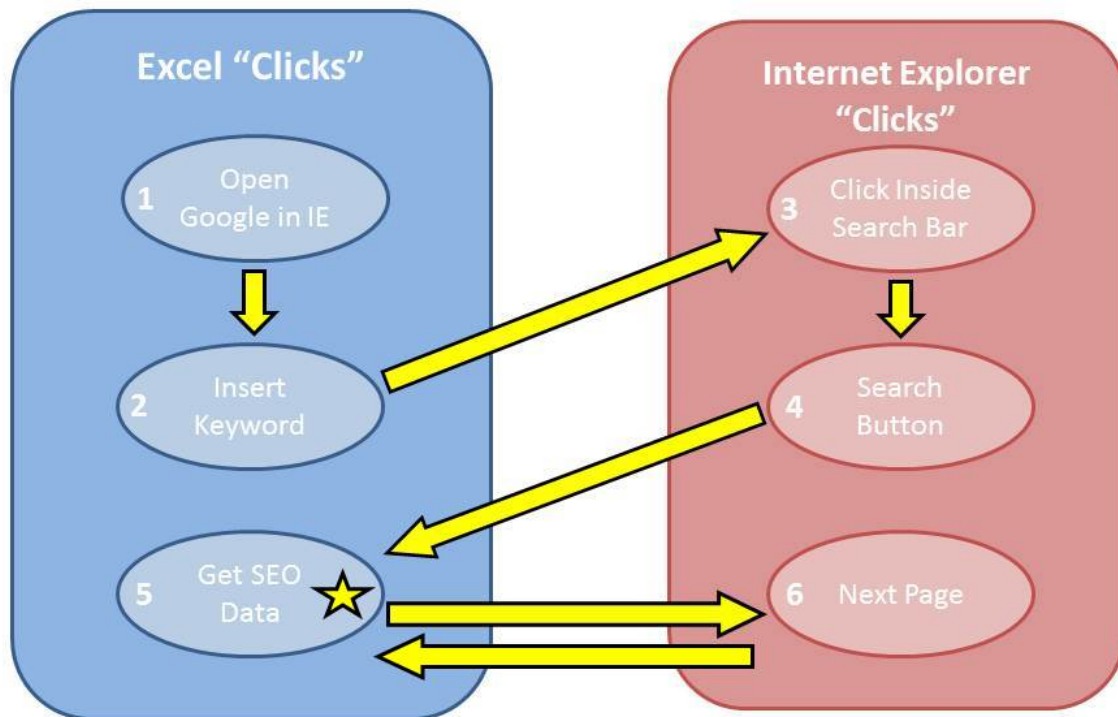
Not only did this create more interaction with Google but it also created more interaction with Excel. Instead of one big button to do it all, I had to create three separate buttons in the ribbon of Excel:

- Open Google in Internet Explorer
- Insert the desired keyword from a list
- Get the SEO data from the search results

For the user, this is a fairly complicated process initially. Unfortunately it is necessary because of the Google restrictions until I can find a better solution.

The Entire User Interaction

Here is the whole back-and-forth process between Excel and Internet Explorer that the user has to perform to get the SEO data:



When it comes down to it, click #5 is really where the meat of the program happens and is the whole point of this program. The rest of the clicks/buttons exist entirely to make sure we are not breaking Google's automation restrictions.

1. Open Google in IE
 - This is the initial opening of Internet Explorer. You can click this button once and then cycle through 2 - 6 for each keyword.
2. Insert Keyword
 - With a list of keywords already typed into Excel, the user can simply start at the top and move down the list. They can also select a specific keyword and insert it into the Google Search bar instead of moving down the list consecutively.
 - This button also creates a blank report in Excel for the keyword inserted.

[illegible]

3. Click Inside the Search Bar
 - This step is needed because simply clicking on the Search button doesn't activate the Search results. For some reason clicking inside the Search bar enables the Search button to be clicked.
4. Search Button
 - When a keyword is inserted into the Google Search bar the search results don't automatically appear like they normally would when typed in. Thus, the need to click the Search button to activate the search results for the keyword inserted.
5. Get SEO Data
 - This is where the magic happens. Once the keyword is inserted and the Search results activated, this click really does all the hard laborious work.
 - This activates the macro which loops through each search result URL and goes to three separate websites to get different SEO data. It then outputs the data to each keyword's individual report.
6. Next Page
 - This click is simply here to comply with Google's restrictions.
 - This is an optional click that if clicked, the user must click #5 again to get the SEO data for the next search results page.

Once again, if the user wants to get the SEO data for another keyword and Internet Explorer is still open, they only have to do steps 2 – 6.

Learning Outcomes

I learned a ton from this project. It made me stretch in more ways than one. The biggest takeaway was my increased determination to succeed. My vision concerning the solution to this project continually changed. I kept running into walls and had figure out how to bust down the wall or go around it. There were a couple different situations where I truly didn't think I could make it work and considered changing to an entirely different project. Yet I didn't give up and eventually came up with a solution. This also increased my understanding to how powerful VBA truly is and with the right amount of drive I can solve many different problems that I had never even thought of. On a conceptual basis here is what I have learned:

- A much deeper understanding of Professor Allen's IE agent and the power it has.
 - Before Professor Allen introduced his IE agent, I was trying to come up with a solution using web queries. I soon found out that it was entirely impossible, especially with the interaction that had to be done with Google's Search results. By following along in class I learned about how to use his agent and in what situations. Yet when I actually dove into what I needed to use it for I really began to understand it. More often than not I would use a property or method of the agent and learn from trial and error. Even now I couldn't say that I am even close to understanding most of its capabilities, but I definitely know a lot more than I did before I started.
 - One situation I needed help with was getting the URLs from Google's Search results. I went to Professor Allen for help on that and gained an even deeper understanding of his web agent.
 - There was another thing I couldn't figure out. If a website popped up a message like, "to prevent spammers enter the following random code," I couldn't figure out how to make that random code show up for my user to see and type it. I know Professor Allen talked about being able to do that, but at that point I was already passed the due date so I couldn't go get help from him.
- Customizing the Ribbon in a professional way.
 - I learned that customizing a button in a ribbon looks so much better than just a macro button on an excel sheet. It looks a lot more professional and really isn't too hard to make.

Assistance

As stated above, I got assistance from Professor Allen when he helped me get the URLs from Google's Search results. He not only helped me get the URLs, but he also helped me understand how to comply with Google's automation restrictions and thus helped me break up the user process into different clicks in Excel and Internet Explorer.