2017

Documentation for the Automated Python Charter Scheduler and Updater

AN ALMOST USEFUL SETUP AND USER GUIDE

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Introduction

Welcome to the python charter program user guide. The python programs this document documents were hastily written by Corwin Diamond over the course of about 30 hours. The programing is by no means stable, easy to read and edit, or the best method of working with selenium. This was Corwin's first time using selenium or any other web driver software. Corwin profusely apologizes for all the bugs you will encounter using these programs.

The Goal of the programs was to provide a way for charter paperwork to be automatically, or at least with minimal effort, loaded into the MTI charter calendar. The Batch charters program will search for all approved charters waiting to be scheduled up to 85 days in advance that do not contain rich, 1205, sub, surb, or white in the charter name. If a charter meets that criteria, it will be entered into the calendar.

If the program crashes it is possible to look up what charter it was trying to enter and use the update charter tool to ensure the charter is entered properly. The update charter tool may also be used to update the calendar when a charter is changed.

This user guide will Cover how to get the programs installed and set up, how to use the programs, and how to respond to some of the common errors.

Program Installation and Setup

If there is not currently a designated desktop with the programs installed, or setting up another desktop is desired; it will become necessary to follow the following steps for the programs to be useable and operational.

Download Python

If the installer in the *"Company Shared\INSTALLS\Python"* folder does not work, Google search Python 3.6.1 and download the appropriate version and release for the desktop computer based on the workstation specs.

It is helpful for python to be installed for all users in C:\Program Files (x86)\Python36-32. Often, you will need to login as CT or an account that has administrative privileges specific to that workstation.

If the program is installed elsewhere on the machine, several lines of code and several system settings will need to be updated to correlate with the adjusted file path.

Set Path

For the program to be able to find several subroutines and python extensions, their locations need to be set in the system path. The operating system uses the system path as a cheat sheet of where to look for programs when the entire file path is not explicitly given. Again, administrator privileges are required.

To edit the system path in windows 7:

Click on the [**start Menu**] > [**Control Panel**] > [**System and Security**] > [**System**]

On the left side of the screen in the blue bar next to one of the shields, click on [**Advanced system settings**]

Towards the bottom of the pop-up window, click on [**Environment Variables…**]

Ensure **TEMP** is selected in the top window, and **Path** is selected in the bottom window.

Click [**Edit…**]

Append the text in *"Company Shared\INSTALLS\Python\path.txt"* to the text already in the Variable value: text field.

Click[**OK**], [**OK**], [**OK**]

Install Selenium and Chromedriver

Now that the system path is set, pip may be used to install selenium and chromedriver. These two programs are the web browser software that python uses to manipulate webpages.

To install these programs, click on the [**start Menu**] and search for *cmd* and hit enter.

Cmd.exe should automatically run.

Type "cd .." and hit enter, this will change directory to the next level up.

Repeat the previous step until the bottom line reads "C:\>", indicating that

Now type "cd "Program Files (x86))\Python36-32" and hit enter

If python is installed elsewhere on the computer, you will have to enter the appropriate folder.

Type "pip install selenium" and hit enter

Type "pip install chromedriver" and hit enter

Selenium and Chromedriver should now be installed

If errors persist at runtime after installation, check the system path.

Install wkhtmltopdf

Wkhtmltopdf is the python extension that turns the html taken from trip tracker and turns it into pdf documents.

The installation wizard is in the "*Company Shared\INSTALLS\Python"* folder

Run the installation wizard and ensure that the program is installed as *'C:\Program Files (x86)\wkhtmltopdf\bin\wkhtmltopdf.exe'*

If the program is not installed in that location, you will have to change path_wkthmltopdf = r'**IMPORTANT_FILE_PATH**' accordingly. The line of code is located near line number 14 in both python source files. To edit python source files, right click on the file and select **edit with IDLE**.

Shortcuts

It is possible to create shortcuts to the programs on your desktop. And it is recommended.

Right click on the file and click create shortcut

You can than move the shortcut wherever and rename the shortcut as your hearts desires.

Logins Used by the Program

The programs have the login information hard coded into the python source files.

The logins are located in the functions openTripTracker() and openWebMail()

TripTracker uses the user name Corwin.Diamond, but that may need to be changed if that login is discontinued on Hopkins side. The webmail login uses the MTI charter account.

Batch Charters

To run the batch program, simply double click on Batch Charter Icon. The Batch Charters Python script will login to Hopkins trip tracker and the MTI outlook webmail client charter calendar. The script then run down the list of approved charters waiting to be scheduled up to 85 days in advance that do not contain rich, 1205, sub, surb, or white in the charter name. For that reason, trips to the Richardson Nature Center and other similar trips may not be scheduled. **This makes it important to check trip tracker to make sure all the trips that need to be scheduled are, and that the calendar in trip tracker agrees with the MTI charter calendar.**

Once a charter is selected, the program will schedule the charter in trip tracker and attach the horrible Bing directions that are built into trip tracker. The driver paperwork is copied as HTML text and converted into a pdf with the addition of the mileage and time tracking section. The pdf is then attached to an appointment in the MTI charter outlook calendar. Due to the way, the Outlook Web App was designed, the times entered for outlook are rounded to the half hour. There are some errors that can occur within the program, and they will be addressed in the error handling section of this user guide. Additionally, if more than 10 charters exist the program will try to skip, the batch program will crash, and the update charter program will have to be used. However, the likelihood of that scenario happening is very unlikely.

The program will ask for a random value to be entered before closing. The value entered is unimportant. The purpose of this feature is so that the user can see that the program has finished without any errors.

It is possible to move the two webdriver windows and python output window to see what is going on in the program.

Occasionally, the python folder fills up with pdf files. These may be discarded or saved. They are already in outlook.

Updating Charters

The updating program uses a lot of the same code as the batch program. Over 90% of the code is the same. The main difference is how the main function operates. The program will ask the user if they want to update a charter. If the response contains a 'y', upper or lower case, the program will ask for the charter number to be updated. If the charter number exists, the program will run. Even if the charter is years into the future and has rich, 1205, sub, surb, and or white in the name. For this reason, you can use the Update charter program to schedule and get paperwork for individual charters that the batch program does not get.

The charters on the calendar will contain updated in the name of the appointment, and they will have the date and time they were updated at the top of the paperwork on the first page. That is a nice feature because there ends up being two copies of the charter in the calendar, and it can become confusing which one to delete.

Errors

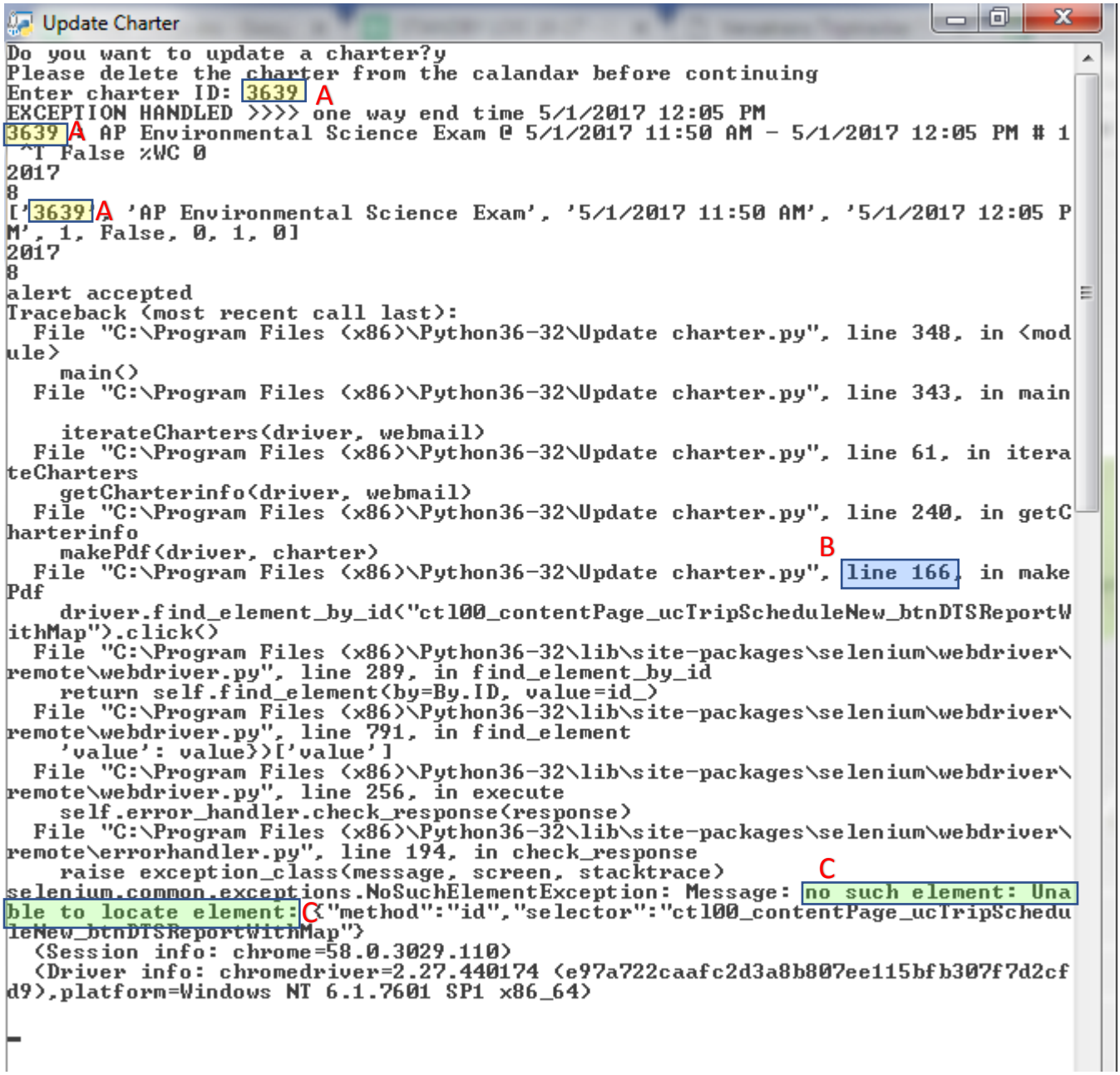
Both programs are subject to many of the same errors. Some are due to poor understanding of selenium and trying to develop the program within a reasonable amount of time, some are due to slower than normal internet, some errors are temporary lapses in service from trip tracker, and others are due to data entry errors by Hopkins.

When an error occurs in the program, python will display a traceback of the error.

The Trace back will follow the function calls and display the program process stack, and the actual error message. The error message and traceback will aid in determining the error. Additionally, it is often possible to see where the error happened within the process of scheduling the charter based on what is displayed on the webdriver.

Unable to Locate Element

This will be the most common error. Here is a sample traceback:



In this traceback, you can see that the program was working on charter 3639 base on the values highlighted by the yellow rectangles labeled A. It is important to check if the program was able to get to the point where the charter was

scheduled in trip tracker or if it is still just considered approved. If the error occurred after charter was scheduled, the charter update program must be used to complete the process of entering the charter into the calendar correctly.

The blue box indicated by the Letter B lets you know where in the program code the error may have occurred. The green box around the actual error message is identified by the letter C.

This particular error can be caused by a multitude of reasons that can be hard to track down.

Internet Connectivity

The most likely cause for an element not being found is a web page loading to slowly and causing selenium to time out while waiting. Often waiting a half hour will resolve the issue. If the problem persists relatively frequently, it is possible to go to the lines of code near where the error occurred and update the amount of time the program waits to load.

Increasing the number in time.sleep(#) will cause the program to pause for longer before trying to execute the next line of code. The line driver.implicitly_wait(10) causes the program to retry the previous command for up to 10 seconds before throwing an error.

Trip Tracker Website Internal Error

Occasionally, Directions are unavailable, or the actual website has issues. Usually the issues are resolved within half a day, but you are at the mercy of the internet shamans at VersaTrans.

Hopkins Location Error

Often times the locations on the trip are not correct, but the program will still run. Other times the address for the location will not be entered. The trouble shooting trick to this error is to check if you can manually attach directions in trip tracker.

If you cannot, try to identify which location needs the address. Then you will need to hover over the **Admin** drop down menu, then **System Lists**, and click on **Trip Locations**.

You will then have to click on the numbers below the trip locations until you find the location that needs the address. Click on the location, enter the correct address, and click Update. The program should now work.

You can also update addresses so they are correct, which is helpful.

Other Errors

Most of the other errors will be weird. Try turning if off and on again and then try running the program again. If the problem persists, make sure the computer is plugged in, both electrical and network. Make sure you can browse the internet and log-in to trip tracker. If you run out of trouble shooting options, call a geek!