CSC 301, Software Installation

Overview

In this class we will use several tools for web development and web scraping, including editors for developing web pages using HTML/CSS/JavaScript, Python for web scraping, and R for web development. Instructions for installing or accessing the necessary tools are provided below.

Text editors for web development

In general, we will use Glitch (https://glitch.com/), an online editor for developing and rendering web pages in the browser. It is recommended that you create a free account on Glitch so that you can save your projects.

In some cases, we will also need to use standalone editors. While many are available, I recommend the two below, primarily for their strong functionality yet ease of use.

- For **Windows** users, I recommend downloading Notepad++ (https://notepad-plus-plus.org/), a user-friendly text editor that has syntax highlighting for many languages. Notepad++ is what we will use in class.

- For **Mac** users, I recommend downloading Brackets (http://brackets.io/) , a text editor designed for web developers.

Installing Python and Jupyter Notebook through the Anaconda Distribution

Python (https://www.python.org/) is a general purpose programming language and *Jupyter Notebook* (https://jupyter.org/) is a web-based platform for creating, explaining, and sharing code. We will use both for web scraping.

To install both Python and Jupyter Notebook, simply install the Anaconda Distribution for your system by following the directions at the following link:
https://www.anaconda.com/distribution/

Running Jupyter Notebook

Open Anaconda Navigator, and from the Home page, click the "Launch" button under Jupyter Notebook. If you prefer, you may also type the following using your machine's **terminal** or **Anaconda Command Prompt**:

```
jupyter notebook
```

On school computers, you can simply double click the Jupyter Notebook icon.

Installing Selenium

Selenium (https://selenium.dev/) is a framework for browser automation (for writing code that opens and uses web browsers). In order to install selenium for Python, type the following command in your **terminal** or **Anaconda prompt**.

```
conda install -c conda-forge selenium
```

You will also need to install a web driver, for communicating with automated browsers. The browser we will use in class is Firefox, so Firefox also must be installed: https://www.mozilla.org/en-US/firefox/new/.

To install the firefox web driver, type the following in your **terminal** or **Anaconda prompt**.

```
conda install -c conda-forge geckodriver
```

If installed correctly, you should be able to execute the following commands in Python without any errors. The code below uses Selenium to open Eastern's homepage.

```
from selenium import webdriver
driver = webdriver.Firefox()
driver.get('https://easternct.edu')
```

Installing R/RStudio

R (https://cran.rstudio.com/) is a programming language for data visualization and analysis, and *R Studio* (https://rstudio.com/) is an integrated developer environment (IDE) for *R*. We will use *R* and its *shiny* package to create interactive, data-driven web pages.

1. Install *R* for your system from https://cran.rstudio.com/
2. Install RStudio by clicking the download button on https://rstudio.com/products/rstudio/download/#download and following the instructions.

R package installation

In class we will be using the packages *dplyr* (for manipulating data), *shiny* (for development of web applications), and *rvest* (for web scraping).

These packages can be installed by running the commands below from within R Studio:

```
install.packages('dplyr')
install.packages('shiny')
install.packages('rvest')
```

Note that during installation you will receive red messages (and possibly warnings) showing the progress of the installation. This is normal. However, if you get an error, then the package was not installed and you should contact me and I will help troubleshoot the issue.

After a package is installed, it can be loaded using the *library* function, as in the code below:

```
library(dplyr)
library(shiny)
library(rvest)
```