Using requests, beautifulsoup, and pandas to scrape the marathon and half-marathon results

https://www.runrocknroll.com/Events/Nashville/The-Races

Two new python modules:

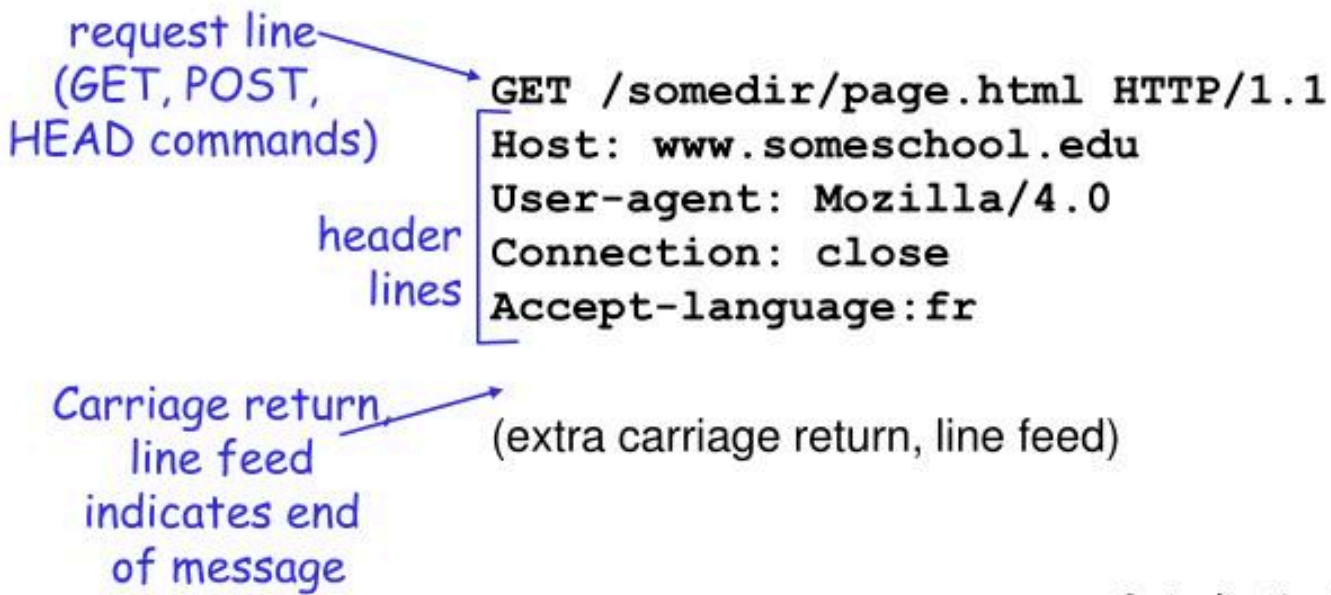
Requests: https://requests.readthedocs.io/en/master/

Beautiful soup: https://www.crummy.com/software/BeautifulSoup/bs4/doc/#beautifulsoup

HTTP request message

The requests package helps us interpret hypertext transfer protocol messages and interact with web pages

- two types of HTTP messages: *request, response*
- HTTP request message:
  - ASCII (human-readable format)



https://www.slideserve.com/wilma-mathis/http-request-message

Check for permission/restrictions:

http:<baseurl>/robots.txt

Examples:

http://wikipedia.org/robots.txt

http://datacamp.com/robots.txt

ST. JUDE Rock 'n' Roll MARATHON & 1/2 NASHVILLE

Saturday, April 27, 2019

To find your results the quickest, please enter your bib number.

First Name | - Gender - | Runner Number (bib)

Last Name | - Division -

Search

Submit a Correction

Leaderboards

Top Females

Gender PL	Name	Time
1	Carson Davis	03:06:25
2	Leah Frazier Allen	03:07:51
3	Emily Soppe	03:11:16
4	Allison Koch	03:15:27
5	Tara Austin	03:15:54
6	Lisa Holding Eagle	03:21:37
7	Rachel Polk	03:22:05
8	Amanda Jackson	03:25:15
9	Marissa Mchugh	03:25:29
10	Jessica Spicola	03:25:43

Top Men

Gender PL	Name	Time
2	Scott Wietecha	02:34:59
3	Jordan Wilson	02:35:24
4	Steelton Flynn	02:39:59
5	Thomas Ellis	02:42:09
6	Nicholas Tseffos	02:48:42
7	Satoshi Mitsumori	02:50:33
8	Harrison Kieffer	02:51:18
9	Steven Forte	02:54:34
10	Grant Rice	02:55:49
11	Andrew Fisher	02:56:05

Examining the page for 2019 marathon results (https://www.runrocknroll.com/Events/Nashville/The-Races/Marathon/2019-Results), we see a search section at the top and two small tables at the bottom. **Using pandas to read this webpage won't get us all the data underlying the search.**

Let's take a closer look at what's happening with the search.

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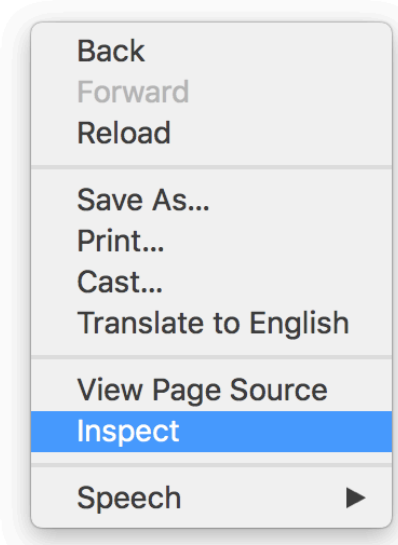
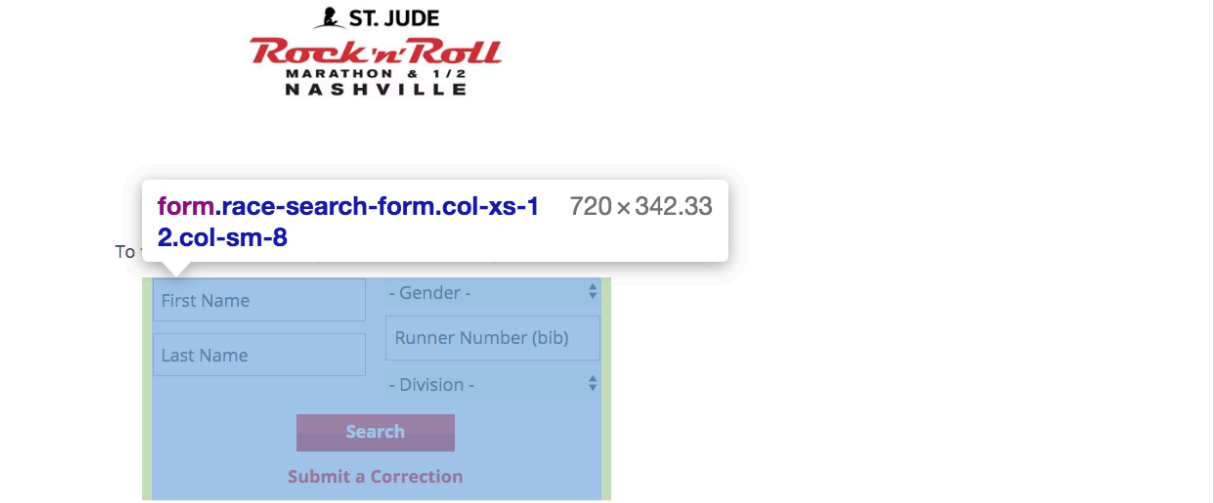
St. Jude Children's Research Hospital



You can right-click on the webpage and ***Inspect*** the underlying HTML.



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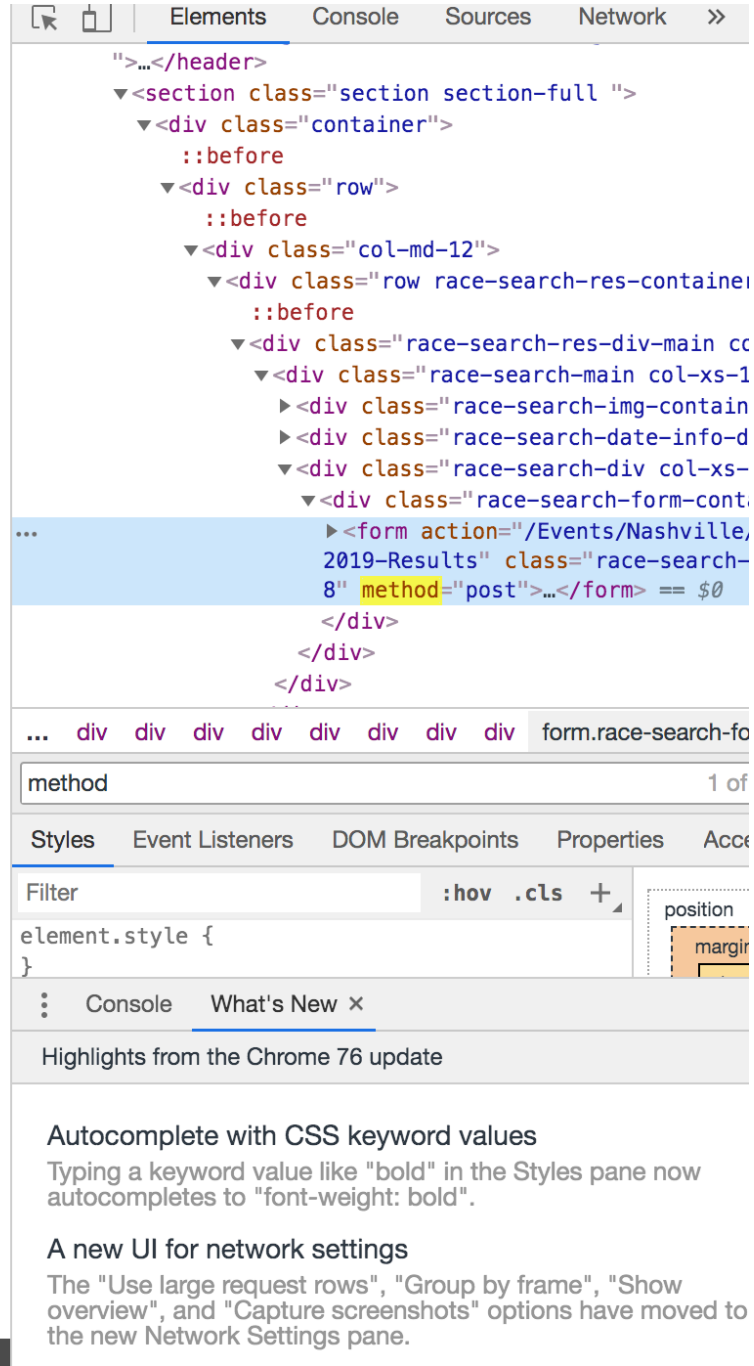

Searching the html for ***method*** we see that the search results are an http ***post***.

So we need to use this **requests** method to retrieve our results:

result = requests.post(url)

for each page

The steps to get a DataFrame from ***one page*** of results look like this:

- Build a URL by combining the base url with a specific page number
- Use requests.post() to get the results of the post
- Make a soup from results.text
- Look at the soup to identify the table you want based on one of its attributes (like class)
- Pass the table as a string to pandas read_html()
  - What does that look like? What is the datatype?

- Keep working with the data until you have it a DataFrame

Let’s code one page of results to a DataFrame together:

Be sure you have imported BeautifulSoup:
from bs4 import BeautifulSoup as BS

Paste these two lines of code into a cell (assumes you created the objects for base URLs that were shared in the README)

base = urlbase_2019
page = 99

Now you're ready to ***write a function*** to ***iterate*** through all the pages of results for each race and ***create a single DataFrame for each race!***