CSS Locators

WEB SCRAPING IN PYTHON



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Rosetta CSStone

 / replace by > (except first character) XPath: /html/body/div • CSS Locator: html > body > div // replaced by a blank space (except first character) o XPath: //div/span//p CSS Locator: div > span p [N] replaced by :nth-of-type(N) XPath: //div/p[2]

• CSS Locator: div > p:nth-of-type(2)

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XPATH

```
xpath = '/html/body//div/p[2]'
```

CSS

```
css = 'html > body div > p:nth-of-type(2)'
```

Attributes in CSS

- To find an element by class, use a period
 - Example: p.class-1 selects all paragraph elements belonging to class-1
- To find an element by id, use a pound sign #
 - Example: div#uid selects the div element with id equal to uid

Attributes in CSS

Select paragraph elements within class class1:

```
css_locator = 'div#uid > p.class1'
```

Select all elements whose class attribute belongs to class1:

```
css_locator = '.class1'
```

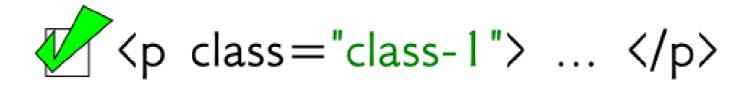
Class Status

```
css = '.class1'
```

```
⟨p class="class-1"> ... ⟨/p⟩
⟨div class="class-1 class-2"> ... ⟨/div⟩
⟨p class="class-12"> ... ⟨/p⟩
```

Class Status

```
xpath = '//*[@class="class1"]'
```



Class Status

xpath = '//*[contains(@class,"class1")]'





Selectors with CSS

```
from scrapy import Selector
html = '''
<html>
 <body>
   <div class="hello datacamp">
     Hello World!
   </div>
   Enjoy DataCamp!
 </body>
</html>
1.1.1
sel = Selector( text = html )
```

```
>>> sel.css("div > p")
out: [<Selector xpath='...' data='<p>Hello World!'>]
>>> sel.css("div > p").extract()
out: [ 'Hello World!' ]
```

C(SS) You Soon!

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Attribute and Text Selection

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You Must have Guts to use your Colon

Using XPath: <xpath-to-element>/@attr-name

```
xpath = '//div[@id="uid"]/a/@href'
```

Using CSS Locator: <css-to-element>::attr(attr-name)

```
css_locator = 'div#uid > a::attr(href)'
```

Text Extraction

```
  Hello world!
  Try <a href="http://www.datacamp.com">DataCamp</a> today!
```

• In XPath use text()

```
sel.xpath('//p[@id="p-example"]/text()').extract()
# result: ['\n Hello world!\n Try ', ' today!\n']

sel.xpath('//p[@id="p-example"]//text()').extract()
# result: ['\n Hello world!\n Try ', 'DataCamp', ' today!\n']
```

Text Extraction

```
  Hello world!
  Try <a href="http://www.datacamp.com">DataCamp</a> today!
```

• For CSS Locator, use ::text

```
sel.css('p#p-example::text').extract()
# result: ['\n Hello world!\n Try ', ' today!\n']

sel.css('p#p-example ::text').extract()
# result: ['\n Hello world!\n Try ', 'DataCamp', ' today!\n']
```

Scoping the Colon

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Getting Ready to Crawl

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Let's Respond

Selector vs Response:

- The Response has all the tools we learned with Selectors:
 - xpath and css methods followed by extract and extract_first methods.
- The Response also keeps track of the url where the HTML code was loaded from.
- The Response **helps us move from one site to another**, so that we can "crawl" the web while scraping.

What We Know!

xpath method works like a Selector

```
response.xpath( '//div/span[@class="bio"]' )
```

• css method works like a Selector

```
response.css( 'div > span.bio' )
```

Chaining works like a Selector

```
response.xpath('//div').css('span.bio')
```

Data extraction works like a Selector

```
response.xpath('//div').css('span.bio').extract()
response.xpath('//div').css('span.bio').extract_first()
```



What We Don't Know

• The response keeps track of the URL within the response url variable.

```
response.url
>>> 'http://www.DataCamp.com/courses/all'
```

• The response lets us "follow" a new link with the follow() method

```
# next_url is the string path of the next url we want to scrape
response.follow( next_url )
```

We'll learn more about follow later.

In Response

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Scraping For Reals

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DataCamp Site

https://www.datacamp.com/courses/all



What's the Div, Yo?

```
# response loaded with HTML from https://www.datacamp.com/courses/all

course_divs = response.css('div.course-block')

print( len(course_divs) )
>>> 185
```



Inspecting course-block

```
first_div = course_divs[0]
children = first_div.xpath('./*')
print( len(children) )
>>> 3
```

The first child

```
first_div = course_divs[0]
children = first_div.xpath('./*')

first_child = children[0]
print( first_child.extract() )
```

>>>

The second child

```
first_div = course_divs[0]
children = first_div.xpath('./*')

second_child = children[1]
print( second_child.extract() )
```

>>> <div class=... />

The forgotten child

```
first_div = course_divs[0]
children = first_div.xpath('./*')

third_child = children[2]
print( third_child.extract() )
>>> <span class=... />
```

Listful

In one CSS Locator

```
links = response.css('div.course-block > a::attr(href)').extract()
```

Stepwise

```
# step 1: course blocks
course_divs = response.css('div.course-block')
# step 2: hyperlink elements
hrefs = course_divs.xpath('./a/@href')
# step 3: extract the links
links = hrefs.extract()
```

Get Schooled

```
for l in links:
    print( l )
>>> /courses/free-introduction-to-r
>>> /courses/data-table-data-manipulation-r-tutorial
>>> /courses/dplyr-data-manipulation-r-tutorial
>>> /courses/ggvis-data-visualization-r-tutorial
>>> /courses/reporting-with-r-markdown
>>> /courses/intermediate-r
```

Links Achieved

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