WEB SCRAPING WITH PYTHON

A Classy Spider

Thomas Laetsch
Data Scientist, NYU

Your Spider

```
import scrapy
from scrapy.crawler import CrawlerProcess

class SpiderClassName(scrapy.Spider):
    name = "spider_name"
    # the code for your spider
    ...

process = CrawlerProcess()

process.crawl(SpiderClassName)

process.start()
```

Your Spider

- Required imports

```
import scrapy
from scrapy.crawler import CrawlerProcess
```

- The part we will focus on: the actual spider

```
class SpiderClassName(scrapy.Spider):
    name = "spider_name"
    # the code for your spider
    ...
```

- Running the spider

```
# initiate a CrawlerProcess
process = CrawlerProcess()

# tell the process which spider to use
process.crawl(YourSpider)

# start the crawling process
process.start()
```

Weaving the Web

```
class DCspider( scrapy.Spider ):

    name = 'dc_spider'

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):
        # simple example: write out the html
        html_file = 'DC_courses.html'
        with open( html_file, 'wb' ) as fout:
            fout.write( response.body )
```

- Need to have a function called `start_requests`
- Need to have at least one parser function to handle the HTML code

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We'll Weave the Web Together

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A Request for Service

Thomas Laetsch
Data Scientist, NYU

Spider Recall

```
import scrapy
from scrapy.crawler import CrawlerProcess

class SpiderClassName(scrapy.Spider):
    name = "spider_name"
    # the code for your spider
    ...

process = CrawlerProcess()

process.crawl(SpiderClassName)

process.start()
```

Spider Recall

```
class DCspider( scrapy.Spider ):
    name = "dc_spider"

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):
        # simple example: write out the html
        html_file = 'DC_courses.html'
        with open( html_file, 'wb' ) as fout:
            fout.write( response.body )
```

The Skinny on start_requests

```
def start_requests( self ):

    urls = ['https://www.datacamp.com/courses/all']

    for url in urls:
        yield scrapy.Request( url = url, callback = self.parse )
```

```
def start_requests( self ):
    url = 'https://www.datacamp.com/courses/all'
    yield scrapy.Request( url = url, callback = self.parse )
```

- `scrapy.Request` here will fill in a response variable for us
- The `url` argument tells us which site to scrape
- The `callback` argument tells us where to send the response variable for processing

Zoom Out

```
class DCspider( scrapy.Spider ):
    name = "dc_spider"

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):
        # simple example: write out the html
        html_file = 'DC_courses.html'
        with open( html_file, 'wb' ) as fout:
            fout.write( response.body )
```

WEB SCRAPING WITH PYTHON

End Request

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Move Your Bloomin' Parse

Thomas Laetsch
Data Scientist, NYU

Once Again

```python
class DCspider( scrapy.Spider ):
    name = "dcspider"

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):
        # simple example: write out the html
        html_file = 'DC_courses.html'
        with open( html_file, 'wb' ) as fout:
            fout.write( response.body )
```

You Already Know!

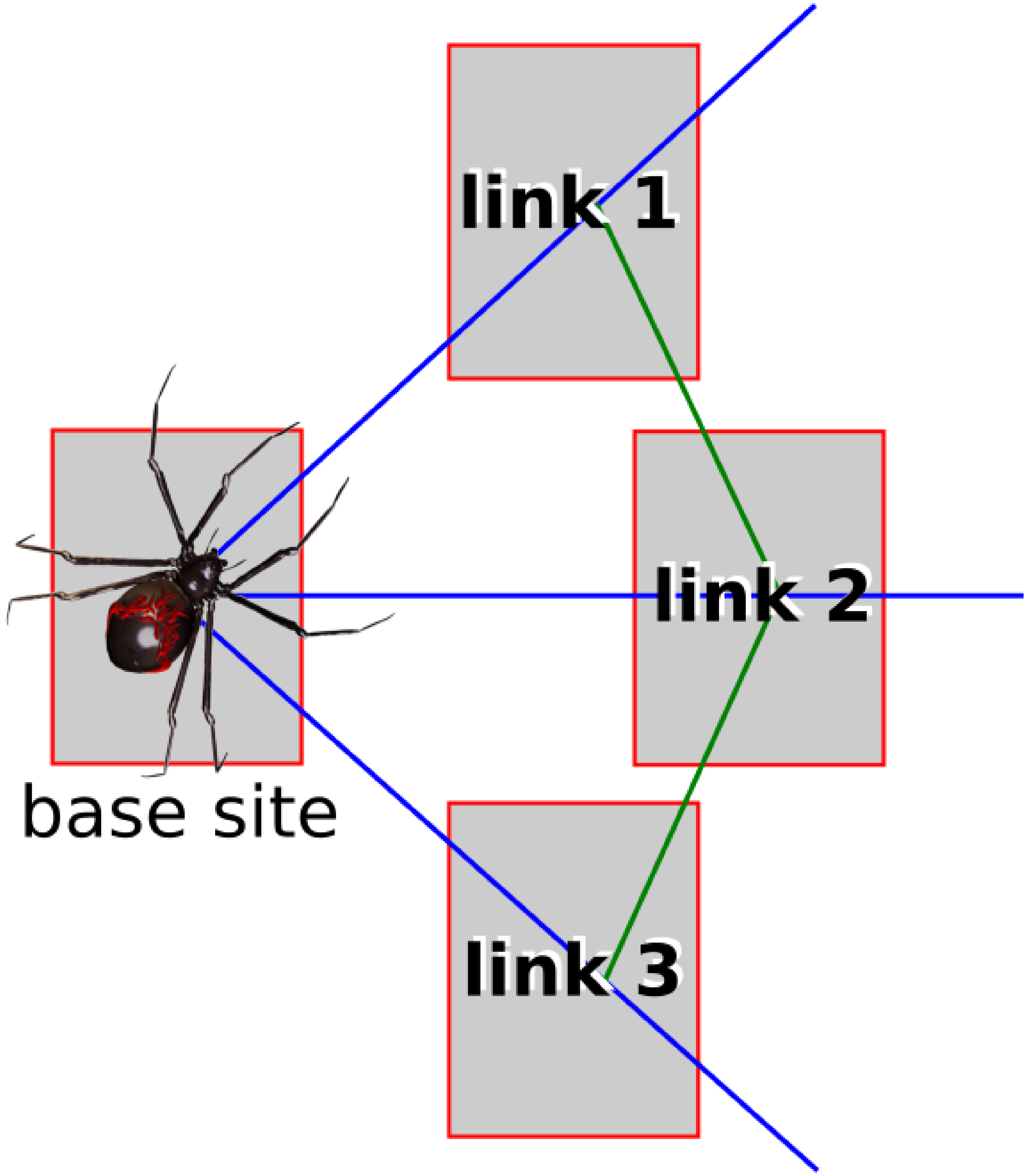
```
def parse( self, response ):

    # input parsing code with response that you already know!

    # output to a file, or...

    # crawl the web!
```

DataCamp Course Links: Save to File

```
class DCspider( scrapy.Spider ):
    name = "dcspider"

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):

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

        filepath = 'DC_links.csv'
        with open( filepath, 'w' ) as f:
            f.writelines( [link + '/n' for link in links] )
```

DataCamp Course Links: Parse Again

```
class DCspider( scrapy.Spider ):
    name = "dcspider"

    def start_requests( self ):
        urls = [ 'https://www.datacamp.com/courses/all' ]
        for url in urls:
            yield scrapy.Request( url = url, callback = self.parse )

    def parse( self, response ):

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

        for link in links:
            yield response.follow( url = link, callback = self.parse2 )

    def parse2( self, response ):
        # parse the course sites here!
```


link 1
link 2
link 3
base site

WEB SCRAPING WITH PYTHON

Johnny Parsin'

WEB SCRAPING WITH PYTHON

Capstone

Thomas Laetsch
Data Scientist, NYU

Inspecting Elements

```
import scrapy
from scrapy.crawler import CrawlerProcess

class DC_Chapter_Spider(scrapy.Spider):

    name = "dc_chapter_spider"

    def start_requests( self ):
        url = 'https://www.datacamp.com/courses/all'
        yield scrapy.Request( url = url,
                              callback = self.parse_front )

    def parse_front( self, response ):
        ## Code to parse the front courses page

    def parse_pages( self, response ):
        ## Code to parse course pages
        ## Fill in dc_dict here

dc_dict = dict()

process = CrawlerProcess()
process.crawl(DC_Chapter_Spider)
process.start()
```

Parsing the Front Page

```
    def parse_front( self, response ):

        # Narrow in on the course blocks
        course_blocks = response.css( 'div.course-block' )

        # Direct to the course links
        course_links = course_blocks.xpath( './a/@href' )

        # Extract the links (as a list of strings)
        links_to_follow = course_links.extract()

        # Follow the links to the next parser
        for url in links_to_follow:
            yield response.follow( url = url,
                                   callback = self.parse_pages )
```

Parsing the Course Pages

```python
def parse_pages( self, response ):

    # Direct to the course title text
    crs_title = response.xpath('//h1[contains(@class,"title")]/text()')

    # Extract and clean the course title text
    crs_title_ext = crs_title.extract_first().strip()

    # Direct to the chapter titles text
    ch_titles = response.css( 'h4.chapter__title::text' )

    # Extract and clean the chapter titles text
    ch_titles_ext = [t.strip() for t in ch_titles.extract()]

    # Store this in our dictionary
    dc_dict[ crs_title_ext ] = ch_titles_ext
```

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It's time to Weave

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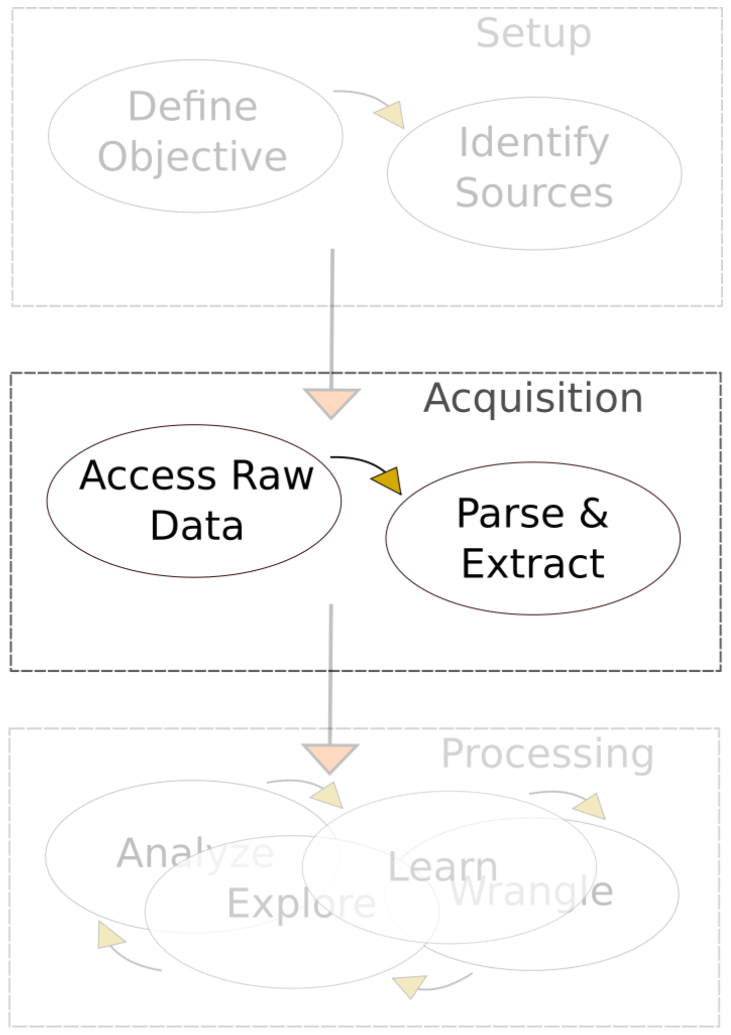
Stop Scratching and Start Scraping!

Thomas Laetsch
Data Scientist, NYU

Feeding the Machine



Scraping Skills

- **Objective**: Scrape a website computationally
- **How**? We decide to use `scrapy`
- **How**? We need to work with:
  - `Selector` and `Response` objects
  - Maybe even create a Spider
- **How**? We need to learn XPath or CSS Locator notation
- **How**? Understand the structure of HTML

What'd'ya Know?

- Structure of HTML
- XPath and CSS Locator notation
- How to use `Selector` and `Response` objects in `scrapy`
- How to set up a spider
- How to scrape the web

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EOT