

# A Classy Spider

WEB SCRAPING IN PYTHON



**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

# We'll Weave the Web Together

WEB SCRAPING IN PYTHON

# A Request for Service

WEB SCRAPING IN PYTHON



**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 )
```

# End Request

WEB SCRAPING IN PYTHON

# Move Your Bloomin' Parse

WEB SCRAPING IN PYTHON



**Thomas Laetsch**  
Data Scientist, NYU

# Once 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 ):
        # 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 = "dcs 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 ):
        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!
```



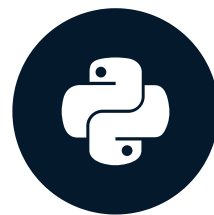


# Johnny Parsin'

WEB SCRAPING IN PYTHON

# Capstone

## WEB SCRAPING IN PYTHON



**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

```
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
```

# It's time to Weave

WEB SCRAPING IN PYTHON

# Stop Scratching and Start Scraping!

WEB SCRAPING IN PYTHON



**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

# EOT

WEB SCRAPING IN PYTHON