

Web scraping and HTML parsing with BeautifulSoup

Let's suppose you want to get some information from a website? what will you do? The first thing that may come in your mind is to copy and paste the information into your local media. But what if you want a large amount of data on a daily basis and as quickly as possible. In such situations, copy and paste will not work and that's where you'll need web scraping.

In this article, we will discuss how to perform web scraping using the requests library and beautifulsoup library in Python.

Requests Module

Requests library is used for making HTTP requests to a specific URL and returns the response. Python requests provide inbuilt functionalities for managing both the request and response.

Syntax

Reading from URL:

```
requests.get(url).text
```

Reading from Local HTML file:

```
open('filename.html').read()
```

BeautifulSoup Library (bs4)

BeautifulSoup is used extract information from the HTML and XML files. It provides a parse tree and the functions to navigate, search or modify this parse tree.

Beautiful Soup is a Python library used to pull the data out of HTML and XML files for web scraping purposes. It produces a parse tree from page source code that can be utilized to drag data hierarchically and more legibly.

BeautifulSoup()

bs4.BeautifulSoup(source, 'html.parser')

In [63]:

```
1 import bs4
2 import requests
3 import pandas as pd
4 url='https://www.politifact.com/factchecks'
5 source = requests.get(url).text
6 soup = bs4.BeautifulSoup(source, 'html.parser')
7 print(soup)
```

```
<!DOCTYPE html>

<html dir="ltr" lang="en-US">
<head>
<meta charset="utf-8"/>
<meta content="ie=edge" http-equiv="x-ua-compatible"/>
<meta content="width=device-width, initial-scale=1" name="viewport"/>
<title>Fact-checks | PolitiFact </title>
<meta content="PolitiFact is a fact-checking website that rates the accurac
y of claims by elected officials and others on its Truth-O-Meter." name="de
scription">
<meta content="PolitiFact" name="twitter:username">
<meta content="summary" name="twitter:card">
<meta content="PolitiFact" name="twitter:site"/>
<meta content="" name="twitter:url">
<meta content="" name="twitter:title"/>
<meta content="PolitiFact is a fact-checking website that rates the accurac
y of claims by elected officials and others on its Truth-O-Meter." name="tw
```

Functions used with BeautifulSoup

prettify() formatting HTML

Another great utility is the HTML visual formatter which prettifies HTML output.

Frequently, when web-scraping we want to either store or display HTML content somewhere for ingesting it with other tools or debugging.

The .prettify() method restructures HTML output to be more readable by humans: Example:

```
soup = bs4.BeautifulSoup(source,'html.parser')
```

data=soup.prettify()

```
In [61]: 1 import bs4
2 import requests
3 import pandas as pd
4 url='https://www.politifact.com/factchecks'
5 source = requests.get(url).text
6 soup = bs4.BeautifulSoup(source, 'html.parser')
7 data=soup.prettify()
8 print(data)
```

```
<!DOCTYPE html>
<html dir="ltr" lang="en-US">
  <head>
    <meta charset="utf-8"/>
    <meta content="ie=edge" http-equiv="x-ua-compatible"/>
    <meta content="width=device-width, initial-scale=1" name="viewport"/>
    <title>
      Fact-checks | PolitiFact
    </title>
    <meta content="PolitiFact is a fact-checking website that rates the accuracy of claims by elected officials and others on its Truth-O-Meter." name="description">
    <meta content="PolitiFact" name="twitter:username">
    <meta content="summary" name="twitter:card">
    <meta content="PolitiFact" name="twitter:site"/>
    <meta content="" name="twitter:url">
    <meta content="" name="twitter:title"/>
    <meta content="PolitiFact is a fact-checking website that rates the accuracy of claims by elected officials and others on its Truth-O-Meter." name="twitter:description">
```

find()

With the find() function, we are able to search for anything in our web page.

```
In [64]: 1 soup.find('a',class_='m-statement__name')
```

```
Out[64]: <a class="m-statement__name" href="/personalities/instagram-posts/" title="Instagram posts">
Instagram posts
</a>
```

get_text()

As you can see in the previous function we used get_text() to extract the text part of the newly found elements title.

```
In [65]: 1 soup.find('a',class_='m-statement__name').get_text()
```

```
Out[65]: '\nInstagram posts\n'
```

strip()

The strip() method returns a copy of the string with both leading and trailing characters removed (based on the string argument passed).

We use this function in order to remove the empty spaces we have in our title: This function can also be used in any other python usage, not just BeautifulSoup, but in my personal experience, it has come in handy so many times when operating on text elements and that is why I am putting it on this list.

```
In [66]: 1 soup.find('a',class_='m-statement__name').get_text().strip()
```

```
Out[66]: 'Instagram posts'
```

We will scrape the [politifact.com/factchecks](https://www.politifact.com/factchecks). You need to scrap following details from all articles.

Statement of news, Date of news, Source of news

```
In [56]: 1 import bs4
2 import requests
3 import pandas as pd
4 url='https://www.politifact.com/factchecks'
5 source = requests.get(url).text
6 soup = bs4.BeautifulSoup(source, 'html.parser')
7 data=soup.prettify()
8 print(data)
```

```
<!DOCTYPE html>
<html dir="ltr" lang="en-US">
<head>
  <meta charset="utf-8"/>
  <meta content="ie=edge" http-equiv="x-ua-compatible"/>
  <meta content="width=device-width, initial-scale=1" name="viewport"/>
  <title>
    Fact-checks | PolitiFact
  </title>
  <meta content="PolitiFact is a fact-checking website that rates the accuracy of claims by elected officials and others on its Truth-O-Meter." name="description">
  <meta content="PolitiFact" name="twitter:username">
  <meta content="summary" name="twitter:card">
  <meta content="PolitiFact" name="twitter:site"/>
  <meta content="" name="twitter:url">
  <meta content="" name="twitter:title"/>
  <meta content="PolitiFact is a fact-checking website that rates the accuracy of claims by elected officials and others on its Truth-O-Meter." na
```

find_all()

```
In [57]: 1 x=soup.find_all('li',{ 'class':"o-listicle__item"})
```

```
In [53]: 1 print(x)
```

```
[<li class="o-listicle__item">
<article class="m-statement m-statement--is-medium m-statement--false">
<div class="m-statement__author">
<div class="m-statement__avatar">
<div class="m-statement__image">
<div class="c-image" style="padding-top: 119.27710843373494%;">

<picture>

</picture>
</div>
</div>
</div>
<div class="m-statement__meta">
<a class="m-statement__name" href="/personalities/benny-johnson/" title="Be
nny Johnson">
```

```
In [54]: 1 print(len(x))
```

```
30
```

```
In [86]: 1 x[0].find('a',class_='m-statement__name').get_text().strip()
```

```
Out[86]: 'Benny Johnson'
```

```
In [56]: 1 x[0].find('div',class_='m-statement__desc').get_text()[11:23]
```

```
Out[56]: 'June 3, 2023'
```

```
In [58]: 1 x[0].find('div',class_='m-statement__quote').get_text().strip()
```

```
Out[58]: '"New tapes" of Nancy Pelosi show that the Jan. 6, 2021, attack on the U.S. C
apitol "was all planned."'
```

```
In [67]: 1 combined_data=[]
2 for i in x:
3     a=i.find('a',class_='m-statement__name').get_text().strip()
4     b=i.find('div',class_='m-statement__desc').get_text()[11:23]
5     c=i.find('div',class_='m-statement__quote').get_text().strip()
6     combined_data.append((a,b,c))
```

In [60]: 1 print(combined_data)

```
[('Benny Johnson', 'June 3, 2023', '"New tapes" of Nancy Pelosi show that the Jan. 6, 2021, attack on the U.S. Capitol "was all planned."'), ('Facebook posts', 'May 28, 2023', 'Photos show Target selling children’s clothing with satanic imagery.'), ('Facebook posts', 'June 2, 2023', 'Disney "acaba de publicar" que no puedes entrar a sus parques en Florida y California "sin que tus hijos reconozcan que no le pueden llamar a un niño él o ella."'), ('TikTok posts', 'June 1, 2023', 'Texas Attorney General Ken Paxton was “caught on tape saying he discarded 2.5 million mail-in ballots in Texas.”'), ('Facebook posts', 'June 3, 2023', 'Boiling tap water causes fluoride in the water to be “more toxic.”'), ('Pramila Jayapal', 'May 28, 2023', 'The average amount of assistance for the Supplemental Nutrition Assistance Program is $6 a day.'), ('Nikki Haley', 'June 4, 2023', 'Having "biological boys ... in their locker rooms" is a reason why “a third of our teenage girls seriously contemplated suicide last year.”'), ('Instagram posts', 'June 2, 2023', 'In a simulation, an AI-enabled drone operated by the U.S. Air Force killed its operators and “started taking out communication towers.”'), ('Ron DeSantis', 'May 25, 2023', 'Donald Trump "wanted to amnesty 2 million illegal aliens in 2018 when he was president."'), ('Charlie Kirk', 'June 1, 2023', '"Jamie Foxx left “paralyzed and blind” from blood clot in his brain” after a COVID-19 vaccine injection.'), ('Al Franken', 'May 17, 2023', '"Americans will get $1.1 B in rebates from health insurance companies this year cuz of a provision I wrote in the ACA."'), ('Facebook posts', 'June 29, 2023', 'The blue, pink, and white colors in the progress pride flag represent pedophiles'), ('Instagram posts', 'May 31, 2023', '"The European Union is now warning pregnant women not to get the COVID-19 vaccine due to the possibility of infertility and miscarriage."'), ('Instagram posts', 'May 17, 2023', 'Photos show “Elon Musk and his company are in the final stages of making a Robot Wife.”'), ('Kevin McCarthy', 'May 28, 2023', '"Every study has shown” that when work requirements are tied to federal safety-net programs, “it puts more people to work.”'), ('Facebook posts', 'May 24, 2023', 'The U.S. "takes 87% of all the prescription medications in the world."'), ('Instagram posts', 'May 22, 2023', 'Video shows boxes of books removed from a middle school library that were “banned by the DeSantis regime in Florida.”'), ('Facebook posts', 'May 22, 2023', 'La guanábana “es considerada como la quimioterapia natural”.'), ('Facebook posts', 'May 24, 2023', '30 tons of lost ammonium nitrate on a California-bound train suggest an orchestrated conspiracy.'), ('Instagram posts', 'May 17, 2023', 'Pop-Tarts and other foods “have antifreeze in them.”'), ('Derrick Van Orden', 'April 13, 2023', '"On exceptions to Wisconsin’s abortion ban"'), ('Instagram posts', 'May 28, 2023', 'Video shows officials in Maricopa County, Arizona, "illegally breaking into" voting machines.'), ('Ron DeSantis', 'May 24, 2023', '"“There’s not been a single book banned in the state of Florida.”'), ('Tweets', 'May 29, 2023', 'Chick-fil-A “just hired a VP of Diversity, Equity and Inclusion.”'), ('TikTok posts', 'May 30, 2023', 'Roseanne Barr made a video of a rainbow in a sprinkler questioning “what the heck is in our water supply.”'), ('Facebook posts', 'May 23, 2023', '"Arizona BANS Electronic Voting Machines.”'), ('Facebook posts', 'May 22, 2023', '"Si trabajaste en el año 2020 puede ser que te deban muchísimo dinero” a través de un “crédito que está activo hasta ahora.”'), ('Instagram posts', 'May 26, 2023', '"Miami-Dade County has banned” Amanda Gorman’s poem “from elementary schools.”'), ('Alex Epstein', 'May 5, 2023', 'A chart on Arctic sea ice provides evidence that Al Gore was wrong when he said in 2009 that the north polar ice cap would lose all of its ice “within the next five to seven years.”'), ('Facebook posts', 'May 27, 2023', '"Fight BREAKS as C.omer SHUTS UP Biden’s lawyer with BOMBSHELL.”')]
```

```
In [ ]: 1 df=pd.DataFrame(combined_data,columns=['Source', 'Date', 'Statement'])
```

```
In [ ]: 1 df
```

Print data from number of web pages-- politifacts

```
In [74]: 1 html_parsing_data=[]
2 no_of_articles=int(input("No of articles in multiple of 30: "))
3 no_of_pages=no_of_articles/30
4 base_url='https://www.politifact.com/factchecks'
5 page=""
6 for k in range(int(no_of_pages)):
7     url=base_url+page
8     source = requests.get(url).text
9     soup = bs4.BeautifulSoup(source, 'html.parser')
10    data=soup.prettify()
11    x=soup.find_all('li',{'class':"o-listicle__item"})
12    for i in x:
13        a=i.find('a',class_='m-statement__name').get_text().strip()
14        b=i.find('div',class_='m-statement__desc').get_text()[11:23]
15        c=i.find('div',class_='m-statement__quote').get_text().strip()
16        html_parsing_data.append((a,b,c))
17    page="/?page="+str(k+1)+"&"
```

No of articles in multiple of 30: 90

```
In [75]: 1 df=pd.DataFrame(html_parsing_data,columns=['Source', 'Date', 'Statement'])
```

```
In [76]: 1 df
```

```
Out[76]:
```

	Source	Date	Statement
0	Instagram posts	June 5, 2023	"Hundreds of thousands of innocent people died...
1	Facebook posts	June 5, 2023	"There is no war in Ukraine."
2	Facebook posts	June 5, 2023	Video shows Elon Musk and Jack Ma presenting "...
3	Bloggers	June 4, 2023	"Publix drops Ben and Jerry's 'for the good of o...
4	TikTok posts	June 3, 2023	"Cocaine, porn, evidence of child trafficking ...
...
85	Facebook posts	May 10, 2023	Electric vehicles are a "giant computer that c...
86	Facebook posts	May 25, 2023	"Adam Schiff just got served" with a \$16 milli...
87	Instagram posts	May 22, 2023	Says Bill Gates visited Jeffrey Epstein's Isla...
88	Facebook posts	May 25, 2023	"50 U.S. politicians who received satellite ph...
89	MAGA Inc	May 24, 2023	"Ron DeSantis voted against the wall."

90 rows x 3 columns

We will scrape the International Movies Database (IMDB) at imdb.com for top films released in year 2020 with the highest US box office.

I am organizing the final results as a dataframe with below elements:

name - title of the movie, year - release year of the movie, imdb - IMDB rating of the movie

Web Scraping from IMDB

```
In [1]: 1 import bs4
        2 import requests
        3 import pandas as pd
        4 url='https://www.imdb.com/search/title/?release_date=2020-01-01,2020-12-01'
        5 source=requests.get(url).text
        6 soup=bs4.BeautifulSoup(source,'html.parser')
        7 data=soup.prettify()
        8 print(data)
```

```
<!DOCTYPE html>
<html xmlns:fb="http://www.facebook.com/2008/fbml" xmlns:og="http://ogp.me/ns#">
<head>
  <meta charset="utf-8"/>
  <script type="text/javascript">
    var IMDbTimer={starttime: new Date().getTime(),pt:'java'};
  </script>
  <script>
    if (typeof uet == 'function') {
      uet("bb", "LoadTitle", {wb: 1});
    }
  </script>
  <script>
    (function(t){ (t.events = t.events || {})[ "csm_head_pre_title" ] = new Date().getTime(); })(IMDbTimer);
  </script>
  <title>
    Released between 2020-01-01 and 2020-12-01
  </title>
```



```
In [3]: 1 data1=soup.find_all('div',{'class':'lister-item-content'})
        2 print(data1)
```

```
<div class="lister-item-content">
<h3 class="lister-item-header">
<span class="lister-item-index unbold text-primary">1.</span>
<a href="/title/tt1502397/">Bad Boys for Life</a>
<span class="lister-item-year text-muted unbold">(2020)</span>
</h3>
<p class="text-muted">
<span class="certificate">A</span>
<span class="ghost">|</span>
<span class="runtime">124 min</span>
<span class="ghost">|</span>
<span class="genre">
Action, Comedy, Crime          </span>
</p>
<div class="ratings-bar">
<div class="inline-block ratings-imdb-rating" data-value="6.5" name="in">
<span class="global-sprite rating-star imdb-rating"></span>
<strong>6.5</strong>
</div>
```

```
In [4]: 1 print(len(data1))
```

50

```
In [5]: 1 data1[0].find('h3',class_='lister-item-header').get_text()
```

Out[5]: '\n1.\nBad Boys for Life\n(2020)\n'

```
In [6]: 1 data1[0].find('a').get_text()
```

Out[6]: 'Bad Boys for Life'

```
In [7]: 1 data1[0].find('span',class_='lister-item-year text-muted unbold').get_text()
```

Out[7]: '2020'

```
In [8]: 1 data1[0].find('div',class_='inline-block ratings-imdb-rating').get_text().
```

Out[8]: '6.5'

In [9]: 1 data1

```
Out[9]: [<div class="lister-item-content">
  <h3 class="lister-item-header">
    <span class="lister-item-index unbold text-primary">1.</span>
    <a href="/title/tt1502397/">Bad Boys for Life</a>
    <span class="lister-item-year text-muted unbold">(2020)</span>
  </h3>
  <p class="text-muted">
    <span class="certificate">A</span>
    <span class="ghost">|</span>
    <span class="runtime">124 min</span>
    <span class="ghost">|</span>
    <span class="genre">
      Action, Comedy, Crime
    </span>
  </p>
  <div class="ratings-bar">
    <div class="inline-block ratings-imdb-rating" data-value="6.5" name="ir">
      <span class="global-sprite rating-star imdb-rating"></span>
      <strong>6.5</strong>
    </div>
  </div>
```

```
In [10]: 1 import pandas as pd
2 movie_data=[]
3 l=len(data1)
4 for i in range(l):
5     p=data1[i].find('a').get_text()
6     try:
7         q=data1[i].find('div',class_='inline-block ratings-imdb-rating').g
8     except:
9         q=None
10    r=data1[i].find('span',class_='lister-item-year text-muted unbold').ge
11    movie_data.append((p,q,r))
```

In [11]: 1 print(movie_data)

```
[('Bad Boys for Life', '6.5', '2020'), ('A Quiet Place Part II', '7.2', '2020'), ('Sonic the Hedgehog', '6.5', '2020'), ('Birds of Prey and the Fantabulous Emancipation of One Harley Quinn', '6.1', '2020'), ('Dolittle', '5.6', '2020'), ('The Invisible Man', '7.1', 'I) (2020)'), ('The Call of the Wild', '6.7', '2020'), ('Onward', '7.4', 'I) (2020)'), ('The Croods: A New Age', '6.9', '2020'), ('Tenet', '7.3', '2020'), ('Kimetsu no Yaiba: Mugen Ressha-Hen', '8.2', '2020'), ('Fantasy Island', '4.9', '2020'), ('The New Mutants', '5.3', '2020'), ('Unhinged', '6.0', 'I) (2020)'), ('Underwater', '5.9', '2020'), ('Gretel & Hansel', '5.5', '2020'), ('Monster Hunter', '5.2', 'I) (2020)'), ('Honest Thief', '6.0', '2020'), ('The Way Back', '6.7', 'I) (2020)'), ('Bloodshot', '5.7', '2020'), ('The Hunt', '6.5', 'II) (2020)'), ('The Rhythm Section', '5.4', '2020'), ('One Planet: Save It', '9.6', '2020'), ('Top Miami Gun Vice', 'None', '2020'), ('After We Collided', '5.0', '2020'), ('Scoob!', '5.6', '2020'), ('Busanhaeng 2: Bando', '5.5', '2020'), ('The Serpent', '3.0', '2020'), ('Love and Monsters', '6.9', '2020'), ('Break the Silence: The Movie', '8.1', '2020'), ('Stan the Man', '6.5', '2020'), ('Star Trek: First Frontier', '5.5', '2020'), ('Timescape', 'None', 'I) (2020)'), ('Ava', '5.4', 'IV) (2020)'), ('Ba bai', '6.7', '2020'), ('Jiang Ziya', '6.5', '2020'), ('The Witches', '5.4', '2020'), ('Come Away', '5.7', '2020'), ('Wendy', '5.7', '2020'), ('Tulsa', '6.1', '2020'), ('Duo guan', '6.6', '2020'), ('Saving Mbango', '6.1', '2020'), ('Breaking Bread', '7.8', '2020'), ('Our Story', 'None', '2020'), ('Dariaz Jasenovca', '8.1', '2020'), ('The Way I See It', '8.3', '2020'), ('Tayo Royalty Toy Review', 'None', '2020 TV Movie'), ('Black Wall Street Burning', '6.8', '2020'), ('Limbo', 'None', 'VII) (2020)'), ('Aloha Surf Hotel', '5.2', '2020')]
```

In [12]: 1 df=pd.DataFrame(movie_data,columns=['Movie name', 'Rating', 'Year'])

In [13]: 1 print(df)

	Movie name	Rating	Year
0	Bad Boys for Life	6.5	2020
1	A Quiet Place Part II	7.2	2020
2	Sonic the Hedgehog	6.5	2020
3	Birds of Prey and the Fantabulous Emancipation...	6.1	2020
4	Dolittle	5.6	2020
5	The Invisible Man	7.1	I) (2020
6	The Call of the Wild	6.7	2020
7	Onward	7.4	I) (2020
8	The Croods: A New Age	6.9	2020
9	Tenet	7.3	2020
10	Kimetsu no Yaiba: Mugen Ressha-Hen	8.2	2020
11	Fantasy Island	4.9	2020
12	The New Mutants	5.3	2020
13	Unhinged	6.0	I) (2020
14	Underwater	5.9	2020
15	Gretel & Hansel	5.5	2020
16	Monster Hunter	5.2	I) (2020
17	Honest Thief	6.0	2020
18	The Way Back	6.7	I) (2020
19	Bloodshot	5.7	2020
20	The Hunt	6.5	II) (2020
21	The Rhythm Section	5.4	2020
22	One Planet: Save It	9.6	2020
23	Top Miami Gun Vice	None	2020
24	After We Collided	5.0	2020
25	Scoob!	5.6	2020
26	Busanhaeng 2: Bando	5.5	2020
27	The Serpent	3.0	2020
28	Love and Monsters	6.9	2020
29	Break the Silence: The Movie	8.1	2020
30	Stan the Man	6.5	2020
31	Star Trek: First Frontier	5.5	2020
32	Timescape	None	I) (2020
33	Ava	5.4	IV) (2020
34	Ba bai	6.7	2020
35	Jiang Ziya	6.5	2020
36	The Witches	5.4	2020
37	Come Away	5.7	2020
38	Wendy	5.7	2020
39	Tulsa	6.1	2020
40	Duo guan	6.6	2020
41	Saving Mbango	6.1	2020
42	Breaking Bread	7.8	2020
43	Our Story	None	2020
44	Dara iz Jasenovca	8.1	2020
45	The Way I See It	8.3	2020
46	Tayo Royalty Toy Review	None	2020 TV Movie
47	Black Wall Street Burning	6.8	2020
48	Limbo	None	VII) (2020
49	Aloha Surf Hotel	5.2	2020

Print data from number of web pages-- imdb.com

```
In [15]: 1 import pandas as pd
2 movie_data=[]
3 no_of_articles=int(input("No of movies in multiple of 50: "))
4 no_of_pages=no_of_articles/50
5 base_url='https://www.imdb.com/search/title/?release_date=2020-01-01,2020-'
6 page=""
7 for k in range(int(no_of_pages)):
8     url=base_url+page
9     source = requests.get(url).text
10    soup = bs4.BeautifulSoup(source, 'html.parser')
11    data1=soup.find_all('div',{'class':'lister-item-content'})
12    l=len(data1)
13    for i in range(l):
14        p=data1[i].find('a').get_text()
15        try:
16            q=data1[i].find('div',class_='inline-block ratings-imdb-rating')
17        except:
18            q=None
19        r=data1[i].find('span',class_='lister-item-year text-muted unbold')
20        movie_data.append((p,q,r))
21        page+"&start="+str(50+((50*k)+1))+"&ref_adv_nxt"
22 df1=pd.DataFrame(movie_data,columns=['Movie name', 'Rating', 'Year'])
```

No of movies in multiple of 50: 150

```
In [17]: 1 df1
```

Out[17]:

	Movie name	Rating	Year
0	Bad Boys for Life	6.5	2020
1	A Quiet Place Part II	7.2	2020
2	Sonic the Hedgehog	6.5	2020
3	Birds of Prey and the Fantabulous Emancipation...	6.1	2020
4	Dolittle	5.6	2020
...
145	Defending Jacob	7.8	2020
146	Freaky	6.3	2020
147	Host	6.5	II) (2020
148	Miss Scarlet & the Duke	7.7	2020–
149	Eurovision Song Contest: The Story of Fire Saga	6.5	2020

150 rows × 3 columns