

Data-X Spring 2019: Homework 7

Webscraping

In this homework, you will do some exercises with web-scraping.

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Fun with Webscraping & Text manipulation

1. Statistics in Presidential Debates

Your first task is to scrape Presidential Debates from the Commission of Presidential Debates website: <https://www.debates.org/voter-education/debate-transcripts/>
(<https://www.debates.org/voter-education/debate-transcripts/>)

To do this, you are not allowed to manually look up the URLs that you need, instead you have to scrape them. The root url to be scraped is the one listed above, namely:

<https://www.debates.org/voter-education/debate-transcripts/> (<https://www.debates.org/voter-education/debate-transcripts/>)

1. By using `requests` and `BeautifulSoup` find all the links / URLs on the website that links to transcriptions of **First Presidential Debates** from the years [1988, 1984, 1976, 1960]. In total you should find 4 links / URLs that fulfill this criteria. **Print the urls.**
2. When you have a list of the URLs your task is to create a Data Frame with some statistics (see example of output below):
 - A. Scrape the title of each link and use that as the column name in your Data Frame.
 - B. Count how long the transcript of the debate is (as in the number of characters in transcription string). Feel free to include `\n` characters in your count, but remove any breakline characters, i.e. `\n`. You will get credit if your count is +/- 10% from our result.
 - C. Count how many times the word **war** was used in the different debates. Note that you have to convert the text in a smart way (to not count the word **warranty** for example, but counting **war**, **war!**, **war**, or **War** etc.
 - D. Also scrape the most common used word in the debate, and write how many times it was used. Note that you have to use the same strategy as in C in order to do this.

Print your final output result.

Tips:

In order to solve the questions above, it can be useful to work with Regular Expressions and explore methods on strings like `.strip()`, `.replace()`, `.find()`, `.count()`, `.lower()` etc. Both are very powerful tools to do string processing in Python. To count common words for example I used a `Counter` object and a Regular expression pattern for only words, see example:

```
from collections import Counter
import re
```

```
counts = Counter(re.findall(r"[\w']+", text.lower()))
```

Read more about Regular Expressions here: <https://docs.python.org/3/howto/regex.html>
(<https://docs.python.org/3/howto/regex.html>)

Example output of all of the answers to Question 1.2:

September 25, 1988: The First Bush-Dukakis Presidential Debate	
Debate char length	87488
war_count	1
most_common_w	the
most_common_w_count	1

In [198]:

```
# your code here
from IPython.core.display import display, HTML
display(HTML("<style>.container { width:90% !important; }</style>"))
```

In [199]:

```
import numpy as np
import pandas as pd
import re
from collections import Counter
```

In [200]:

```
import requests
import bs4 as bs
```

In [201]:

```
source = requests.get("https://www.debates.org/voter-education/debate-trans
```

In [202]:

```
content = bs.BeautifulSoup(source.content , features='html.parser')
```

In [203]:

```
print(content)
```

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//E
N">

<html>
<head>
<meta content="en-us" http-equiv="Content-Language"/>
<meta content="text/html; charset=utf-8" http-equiv="Content-Ty
pe"/>
<title>CPD: Debate Transcripts</title>
<link href="/wp-content/themes/debates2019/css/reset.css" rel
="stylesheet" type="text/css"/>
<link href="/wp-content/themes/debates2019/css/jc-main.css" me
dia="screen,projection" rel="stylesheet" type="text/css"/>
<link href="/wp-content/themes/debates2019/css/fonts.css" medi
a="screen,projection" rel="stylesheet" type="text/css"/>
<!--[if gte IE 5]>
    <link href="/wp-content/themes/debates2019/css/jc-iema
in.css" rel="stylesheet" type="text/css" media="screen,project
ion" />
```

In [204]:

```

all_links = content.find_all('a')
all_first_debate = []
for i in all_links:
    bodies = i.text
    if 'First' in bodies and 'Presidential' in bodies and 'Debate' in bodies:
        all_first_debate.append(i)
all_first_debate

```

Out[204]:

```

[<a href="/voter-education/debate-transcripts/september-26-2016-debate-transcript/">September 26, 2016: The First Clinton-Trump Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/october-3-2012-debate-transcript/" title="October 3, 2012 Debate Transcript">October 3, 2012: The First Obama-Romney Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/2008-debate-transcript/" title="September 26, 2008 Debate Transcript">September 26, 2008: The First McCain-Obama Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/september-30-2004-debate-transcript/" title="September 30, 2004 Debate Transcript">September 30, 2004: The First Bush-Kerry Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/october-3-2000-transcript/" title="October 3, 2000 Transcript">October 3, 2000: The First Gore-Bush Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/october-6-1996-debate-transcript/" title="October 6, 1996 Debate Transcript">October 6, 1996: The First Clinton-Dole Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/september-25-1988-debate-transcript/" title="September 25, 1988 Debate Transcript">September 25, 1988: The First Bush-Dukakis Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/october-7-1984-debate-transcript/" title="October 7, 1984 Debate Transcript">October 7, 1984: The First Reagan-Mondale Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/september-23-1976-debate-transcript/" title="September 23, 1976 Debate Transcript">September 23, 1976: The First Carter-Ford Presidential Debate</a>,
 <a href="/voter-education/debate-transcripts/september-26-1960-debate-transcript/" title="September 26, 1960 Debate Transcript">September 26, 1960: The First Kennedy-Nixon Presidential Debate</a>]

```

In [205]:

```
final_links = []
for i in all_first_debate:
    bodies = i.text
    if '1988' in bodies or '1984' in bodies or '1976' in bodies or '1960'
        final_links.append(i)
final_links
```

Out[205]:

```
[<a href="/voter-education/debate-transcripts/september-25-1988-debate-transcript/" title="September 25, 1988 Debate Transcript">September 25, 1988: The First Bush-Dukakis Presidential Debate</a>,
  <a href="/voter-education/debate-transcripts/october-7-1984-debate-transcript/" title="October 7, 1984 Debate Transcript">October 7, 1984: The First Reagan-Mondale Presidential Debate</a>,
  <a href="/voter-education/debate-transcripts/september-23-1976-debate-transcript/" title="September 23, 1976 Debate Transcript">September 23, 1976: The First Carter-Ford Presidential Debate</a>,
  <a href="/voter-education/debate-transcripts/september-26-1960-debate-transcript/" title="September 26, 1960 Debate Transcript">September 26, 1960: The First Kennedy-Nixon Presidential Debate</a>]
```

In [206]:

```
for i in range(0,len(final_links)):
    final_links[i] = "https://www.debates.org" + final_links[i].get('href')
final_links
```

Out[206]:

```
['https://www.debates.org/voter-education/debate-transcripts/september-25-1988-debate-transcript/',
 'https://www.debates.org/voter-education/debate-transcripts/october-7-1984-debate-transcript/',
 'https://www.debates.org/voter-education/debate-transcripts/september-23-1976-debate-transcript/',
 'https://www.debates.org/voter-education/debate-transcripts/september-26-1960-debate-transcript/']
```

In [207]:

```

titles = []
debate_content = []
for i in final_links:
    debate_source = requests.get(i)
    debate_content.append(bs.BeautifulSoup(debate_source.content, features='
for i in debate_content:
    titles.append(i.title.text)
titles

```

Out[207]:

```

['CPD: September 25, 1988 Debate Transcript',
 'CPD: October 7, 1984 Debate Transcript',
 'CPD: September 23, 1976 Debate Transcript',
 'CPD: September 26, 1960 Debate Transcript']

```

In [208]:

```

dataframe = pd.DataFrame(columns = titles)
dataframe

```

Out[208]:

CPD: September 25, 1988 Debate Transcript	CPD: October 7, 1984 Debate Transcript	CPD: September 23, 1976 Debate Transcript	CPD: September 26, 1960 Debate Transcript
---	--	---	---

In [219]:

```

letter_count = []
index = 0
count = 0
for i in debate_content:
    for j in i.find_all('p'):
        count = count + len(j.text) - j.text.count('\n')
        letter_count.append(count)
        count = 0
letter_count

```

Out[219]:

```

[87529, 86549, 80776, 60978]

```

In [220]:

```

words = []
war_count = []
most_occurring_word = []
count_of_most_occurring_word = []
for i in debate_content:
    word = []
    for j in i.find_all('p'):
        word = word + (re.sub('\n', '', re.sub(r'^\w\s', '', j.text.lower())))
    war_count.append(word.count('war'))
    words.append(word)

#most_occurring_word.append([word for word, word_count in Counter(wc

```

In [221]:

```
for i in words:
    most_occurring_word.append([item for item in Counter(i).most_common(1)][
```

In [222]:

```
most_occurring_word
```

Out[222]:

```
['the', 'the', 'the', 'the']
```

In [223]:

```
for i in words:
    count_of_most_occurring_word.append([item for item in Counter(i).most_co
```

In [224]:

```
count_of_most_occurring_word
```

Out[224]:

```
[800, 868, 857, 780]
```

In [225]:

```
dataframe.loc["Number of characters"] = letter_count
dataframe.loc['Count of Word War'] = war_count
dataframe.loc["Most occuring Woard"] = most_occurring_word
dataframe.loc["Count of most occuring words"] = count_of_most_occurring_word
```

In [226]:

```
dataframe
```

Out[226]:

	CPD: September 25, 1988 Debate Transcript	CPD: October 7, 1984 Debate Transcript	CPD: September 23, 1976 Debate Transcript	CPD: September 26, 1960 Debate Transcript
Number of characters	87529	86549	80776	60978
Count of Word War	7	2	7	3
Most occurring Woard	the	the	the	the
Count of most occurring words	800	868	857	780

2. Download and read in specific line from many data sets

Scrape the first 27 data sets from this URL <http://people.sc.fsu.edu/~jburkardt/datasets/regression/> (<http://people.sc.fsu.edu/~jburkardt/datasets/regression/>) (i.e. x01.txt - x27.txt). Then, save the 5th line in each data set, this should be the name of the data set author (get rid of the # symbol, the white spaces and the comma at the end).

Count how many times (with a Python function) each author is the reference for one of the 27 data sets. Showcase your results, sorted, with the most common author name first and how many times he appeared in data sets. Use a Pandas DataFrame to show your results, see example. **Print your final output result.**

Example output of the answer for Question 2:

Counts	
Authors	
Helmut Spaeth	
	3
	2

In [287]:

```
# your code here
list_of_authors = []
list_invisual = []
final_names = []
for i in range(1,28):
    text_file = requests.get("http://people.sc.fsu.edu/~jburkardt/datasets/
    soup = bs.BeautifulSoup(text_file.content , features='html.parser')
    count = 0
    for word in str(soup).split('# '):
        count+=1
        if count == 4:
            list_of_authors.append(word)
list_of_authors
for i in list_of_authors:
    temp = i.split('\n')
    for j in temp:
        final_names.append(j)
```


In [288]:

final_names

Out[288]:

```
[ ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' R J Freund and P D Minton, ',
  ' ',
  ' D G Kleinbaum and L L Kupper, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' D G Kleinbaum and L L Kupper, ',
  ' ',
  ' K A Brownlee, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' S Chatterjee and B Price, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' R J Freund and P D Minton, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' Helmut Spaeth, ',
  ' ',
  ' S Chatterjee, B Price, ',
  ' ',
  ' S Chatterjee, B Price, ',
  ' ',
  ' S Chatterjee, B Price, ',
  ' ',
  ' S C Narula, J F Wellington, ',
  ' ',
  ' S C Narula, J F Wellington, ',
  ' ']
```

In [290]:

```
dictio = {}
for i in final_names:
    if i in dictio:
        pass
    else:
        dictio[i] = final_names.count(i)
del dictio['']
dictio
```

Out[290]:

```
{' Helmut Spaeth,': 16,
 ' R J Freund and P D Minton,': 2,
 ' D G Kleinbaum and L L Kupper,': 2,
 ' K A Brownlee,': 1,
 ' S Chatterjee and B Price,': 1,
 ' S Chatterjee, B Price,': 3,
 ' S C Narula, J F Wellington,': 2}
```

In [291]:

```
data_writers = pd.DataFrame.from_dict(dictio,orient='index',columns=['Count
```

In [292]:

data_writers

Out[292]:

	Count
Helmut Spaeth,	16
R J Freund and P D Minton,	2
D G Kleinbaum and L L Kupper,	2
K A Brownlee,	1
S Chatterjee and B Price,	1
S Chatterjee, B Price,	3
S C Narula, J F Wellington,	2

In []: