CS432 Spring 2018

Assignment 2

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Part 1:

1. Write a Python program that extracts 1000 unique links from Twitter. Omit links from the Twitter domain (twitter.com). You might want to take a look at:

Also note that you need to verify that the final target URI (i.e., the one that responds with a 200) is unique. You could have many different shortened URIs for www.cnn.com (t.co, bit.ly, goo.gl, etc.). For example:

To accomplish this task I have utilized two python programs, "GetTwitterURLs.py" and "ModifyURLs.py". "GetTwitterURLs.py" uses code found on https://stackoverflow.com/questions/42401931/extract-1000-uris-from-twitter-using-tweepy-and-python to extract urls from tweets, the code was modified to increase the number of urls extracted and to print them to a file "InitialURLList.txt". The max number of urls to be extracted was set to 100000000 and allowed to run overnight, after 8 hours roughly 180000 urls had been extracted. From there we run "ModifiedURLs.py" which finds and removes urls to twitter and issues a get request allowing redirection to each url. Any that return a satus_code that doesn't equal 200 was discarded, those with status_code equal to 200 are written to "ModifiedURLList.txt", a counter was added to only add 1000 urls to "ModifiedURLList.txt"

"GetTwitterURLs.py" code snippet:

```
count = 100000000 # moved outside of class definition to avoid getting reset

class StdOutListener(StreamListener):
    def on_data(self, data):

        decoded = json.loads(data)

        global count # get the count
        if count <= 0:
            import sys
            sys.exit()
        else:
            try:
                for url in decoded["entities"]["urls"]:
                    print(count, ':', "%s" % url["expanded_url"] + "\r\n")
                    print("%s" % url["expanded_url"], file=open("InitialURLList.txt", "a"))
                    count -= 1

            except KeyError:
                print(decoded.keys())

    def on_error(self, status):
        print(status)


if __name__ == '__main__':

    l = StdOutListener()
    auth = OAuthHandler(consumer_key, consumer_secret)
    auth.set_access_token(access_token, access_token_secret)
    stream = Stream(auth, l)

    stream.filter(track=['Olympics', 'Football', 'WorldCup', 'Soccer', 'Sports'])
```

“ModifiedURLs.py” code snippet:

```
tString = "https://twitter.com"
inCount = 1
with open(inputFile, "r") as ins:
   urlInput = []
   for line in ins:
       if line[:19].lower() != tString:
           urlInput.append(line)
           #print("Reading input: ", inCount)
           #inCount += 1
                                                .
                                                .
                                                .
for url in urlList:
   print("checking urls for status code and expanded url", urlCounter)
   urlCounter += 1
   try:
       r = requests.get(url, verify=False, allow_redirects=True)
       if int(r.status_code) == 200:
           urlListExpanded.append(r.url)
           goodUrlCounter += 1
           print("url added to list, Status Code: ", r.status_code, "total urls added: ",
goodUrlCounter)
           print("\t", r.url)
       else:
           badUrlCounter += 1
           print("url not added to list, Status Code: ", r.status_code, "total rejected urls:
", badUrlCounter)
   except:
       genericErrorInfo()
       badUrlCounter += 1
       print("Error Occurred, URL not Added to List total rejected urls: ", badUrlCounter)
       continue
   urlListExpanded = list(set(urlListExpanded))
   if len(urlListExpanded) == 1000:
       break
```

Part 2:

2. Download the TimeMaps for each of the target URIs. We'll use the ODU Memento Aggregator, so for example:

URI-T = http://memgator.cs.odu.edu/timemap/json/http://www.cs.odu.edu/

Create a histogram* of URIs vs. number of Mementos (as computed from the TimeMaps). For example, 100 URIs with 0 Mementos, 300 URIs with 1 Memento, 400 URIs with 2 Mementos, etc. The x-axis will have the number of mementos, and the y-axis will have the frequency of occurence.

To accomplish this task I used "GetJSONFindMementos.py" and R, the R code can be found in "Temp.txt". "GetJSONFindMementos.py" opens the file "ModifiedURLList.txt" and for each url and prepends the URI-T listed above to each url and retrieves the json information for each url memento. Any that returns a status_code not equal to 200 is considered to have no mementos. The total number of each unique value of mementos is stored and output to the screen.

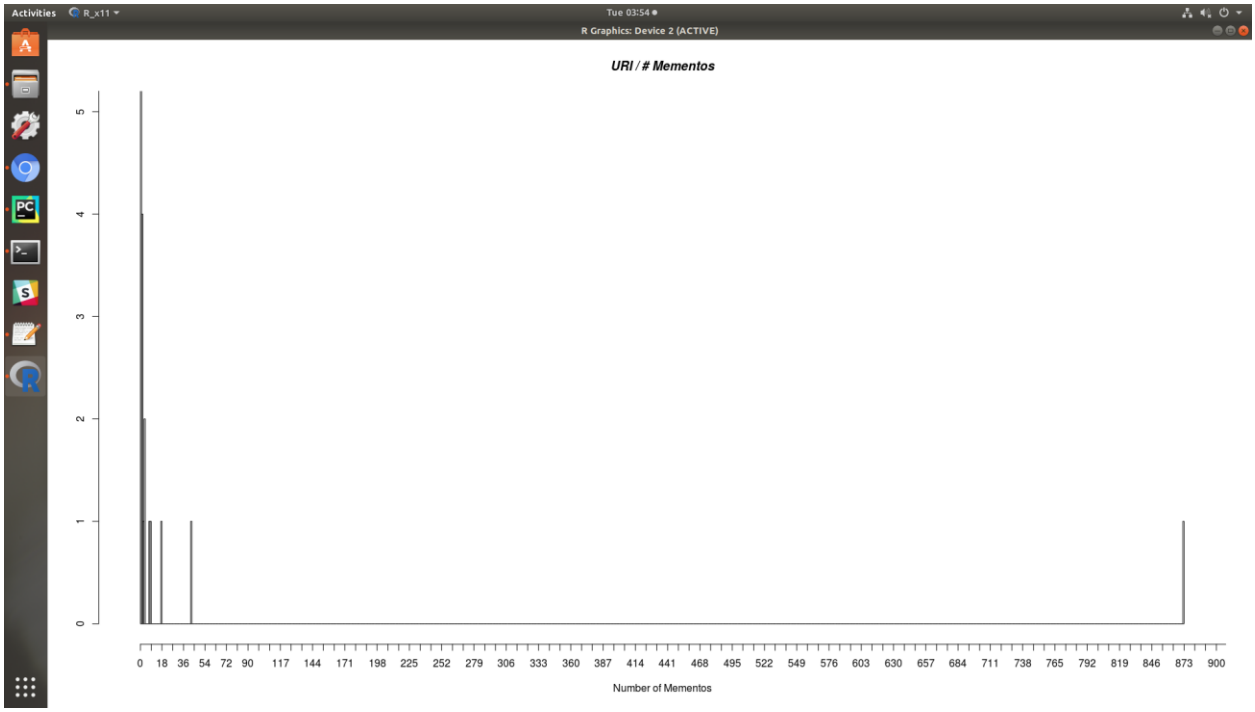
"GetJSONFindMementos.py" code snippet:

```
for url in urlInput:

    mem = requests.get(urlHead+url)
    if mem.status_code != 200:
        memList.append(0)
        print(urlCounter, ": ", mem.status_code)
        urlCounter += 1

    else:
        jsonFileName = "URL #" + str(urlCounter) + ".json"
        jResponse = json.loads(mem.text)
        jsonList.append(jResponse)
        print(jResponse, file=open(jsonFileName, "w+"))
        print(urlCounter, ": ", mem.status_code, "\n", jResponse)
        urlCounter += 1


for jEntry in jsonList:
    memList.append(len(jEntry['mementos']['list']))
```


Activities
R_x11
Tue 03:54
R Graphics: Device 2 (ACTIVE)
URI / # Mementos
0
1
2
3
4
5
0 18 36 54 72 90 117 144 171 198 225 252 279 306 333 360 387 414 441 468 495 522 549 576 603 630 657 684 711 738 765 792 819 846 873 900
Number of Mementos

Part 3: