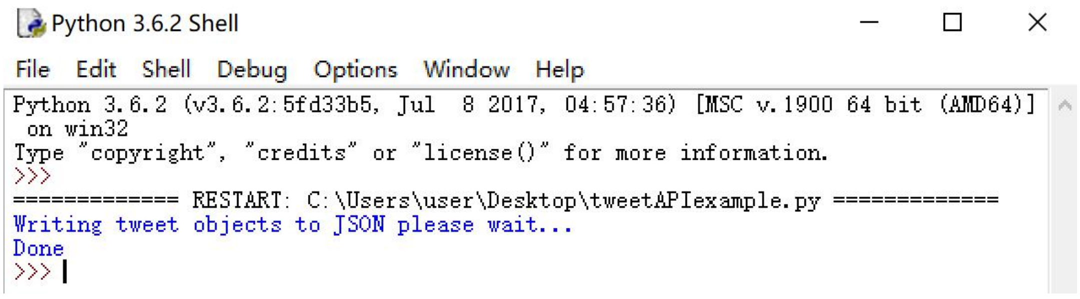
EC601
Jiaming Yu (U72316560)
Project2
Phase 1 due 9/27 code + report
Phase 2 due 10/5
*Considering the requirement that the keys should not be public, I just show the code before I entered API key, API secret key, access token, access secret token.*
*Please enter your own Twitter API keys to run these python files.*

**Phase 1(a) Twitter APIs**
(1)Twitter API – Apply for Access. After applied for a developer account, derive the API key, API secret key, access token, access secret token.
(2) **Test program to retrieving tweets:**
(i)Using tweepy to derive tweet.json file containing someone's tweets.
Under cmd, run:
pip install tweepy
Then enter key, secret key, access token, access secret token to code:

```
#!/usr/bin/env python
# encoding: utf-8
#Author - Prateek Mehta



import tweepy #https://github.com/tweepy/tweepy
import json



#Twitter API credentials
consumer_key = "Enter the consumer_key"
consumer_secret = "Enter the consumer_secret"
access_key = "Enter the access_key"
access_secret = "Enter the access_secret"

def get_all_tweets(screen_name):

    #Twitter only allows access to a users most recent 3240 tweets with this method

    #authorize twitter, initialize tweepy
    auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
    auth.set_access_token(access_key, access_secret)
    api = tweepy.API(auth)

    #initialize a list to hold all the tweepy Tweets
    alltweets = []
    #make initial request for most recent tweets (200 is the maximum allowed count)
    new_tweets = api.user_timeline(screen_name = screen_name,count=10)

    #save most recent tweets
    alltweets.extend(new_tweets)

    #save the id of the oldest tweet less one
    oldest = alltweets[-1].id - 1

    #keep grabbing tweets until there are no tweets left to grab
    while len(new_tweets) > 0:

        #all subsiquent requests use the max_id param to prevent duplicates
        new_tweets = api.user_timeline(screen_name = screen_name,count=10,max_id=oldest)

        #save most recent tweets
        alltweets.extend(new_tweets)

        #update the id of the oldest tweet less one
        oldest = alltweets[-1].id - 1
        if(len(alltweets) > 15):
            break
        print ("...%s tweets downloaded so far" % (len(alltweets)))

    #write tweet objects to JSON
    file = open('tweet.json', 'w')
    print ("Writing tweet objects to JSON please wait...")
    for status in alltweets:
        json.dump(status._json,file,sort_keys = True,indent = 4)

    #close the file
    print ("Done")
    file.close()

if __name__ == '__main__':
    #pass in the username of the account you want to download
    get_all_tweets("@Ibra_official") //who’s tweets you want to record
```

Since the keys should not be public, I just show the code before I entered API key, API secret key, access token, access secret token.

After entering these keys, we can change the content of get_all_tweets(“@”) to get some one else’s tweets. In this example **tweetAPIexample.py**, we got “@Ibra_official” ‘s tweets and saved them to the file named “tweet.json”.



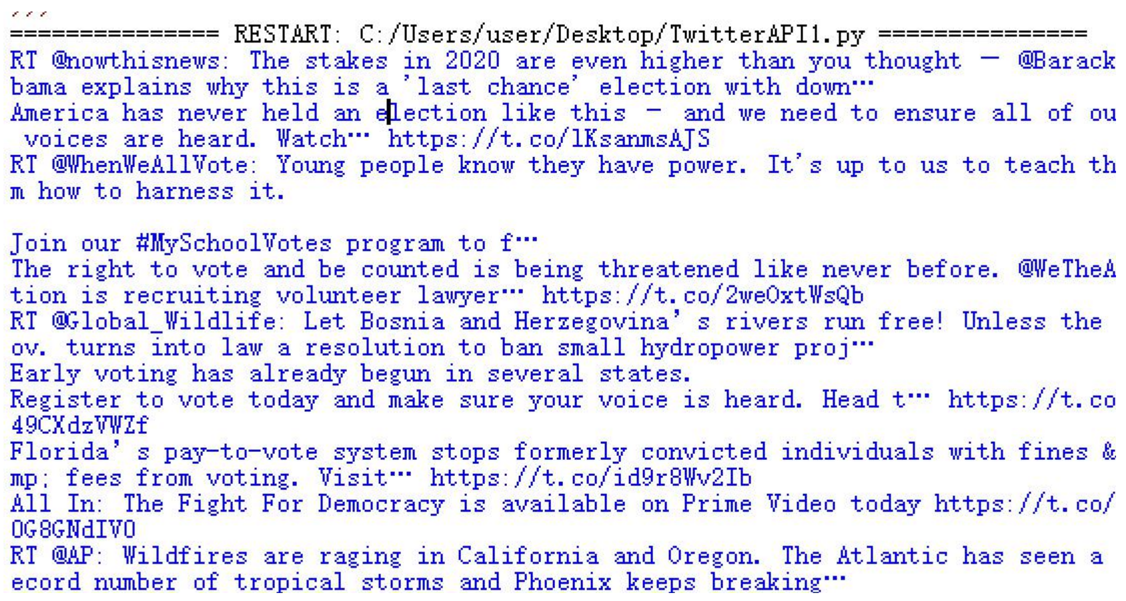
```
Python 3.6.2 (v3.6.2:5fd33b5, Jul  8 2017, 04:57:36) [MSC v.1900 64 bit (AMD64)]
 on win32
Type "copyright", "credits" or "license()" for more information.
>>>
============= RESTART: C:\Users\user\Desktop\tweetAPIexample.py =============
Writing tweet objects to JSON please wait...
Done
>>> 
```

Another simple example code to retrieve tweets and directly print them instead of saving them to tweet.json:

```
mport tweepy

import sys
non_bmp_map = dict.fromkeys(range(0x10000, sys.maxunicode + 1), 0xfffd)

consumer_key = "Enter the consumer_key"
consumer_secret = "Enter the consumer_secret"
access_key = "Enter the access_key"
access_secret = "Enter the access_secret"

auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_key, access_secret)

api = tweepy.API(auth)

public_tweets = api.user_timeline('LeoDiCaprio') //who’s tweets you want to record

i = 1
for tweet in public_tweets:
    print (tweet.text.translate(non_bmp_map))
    i = i + 1
    if i == 10:                              //show 10 tweets
        break
```

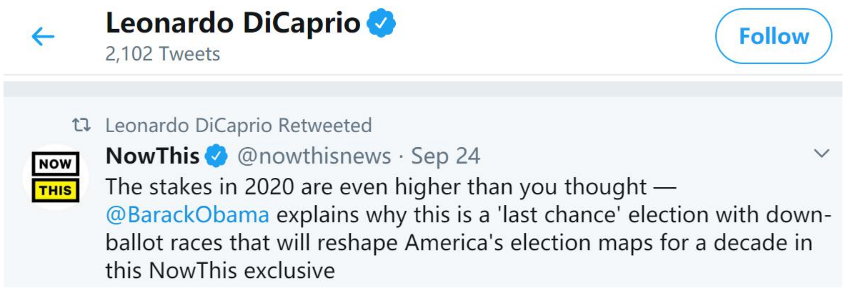
Enter the keys, and run this **TwitterAPIprint.py** file

**Attention:** *It is important to use non_bmp_map since emoji may cause error (UnicodeEncodeError: 'UCS-2' codec can't encode characters in position 12-12: Non-BMP character not supported in Tk) when printing the tweet.text.*



```
=============== RESTART: C:/Users/user/Desktop/TwitterAPI1.py ===============
RT @nowthisnews: The stakes in 2020 are even higher than you thought — @Barack
bama explains why this is a 'last chance' election with down…
America has never held an election like this - and we need to ensure all of ou
 voices are heard. Watch… https://t.co/1KsanmsAJS
RT @WhenWeAllVote: Young people know they have power. It's up to us to teach th
m how to harness it.

Join our #MySchoolVotes program to f…
The right to vote and be counted is being threatened like never before. @WeTheA
tion is recruiting volunteer lawyer… https://t.co/2weOxtWsQb
RT @Global_Wildlife: Let Bosnia and Herzegovina' s rivers run free! Unless the
ov. turns into law a resolution to ban small hydropower proj…
Early voting has already begun in several states.
Register to vote today and make sure your voice is heard. Head t… https://t.co
49CXdzVWZf
Florida' s pay-to-vote system stops formerly convicted individuals with fines &
mp; fees from voting. Visit… https://t.co/id9r8Wv2Ib
All In: The Fight For Democracy is available on Prime Video today https://t.co/
0G8GNdIV0
RT @AP: Wildfires are raging in California and Oregon. The Atlantic has seen a
ecord number of tropical storms and Phoenix keeps breaking…
```

We derived the tweets from LeoDiCaprio as shown below.



Leonardo DiCaprio
2,102 Tweets

Follow

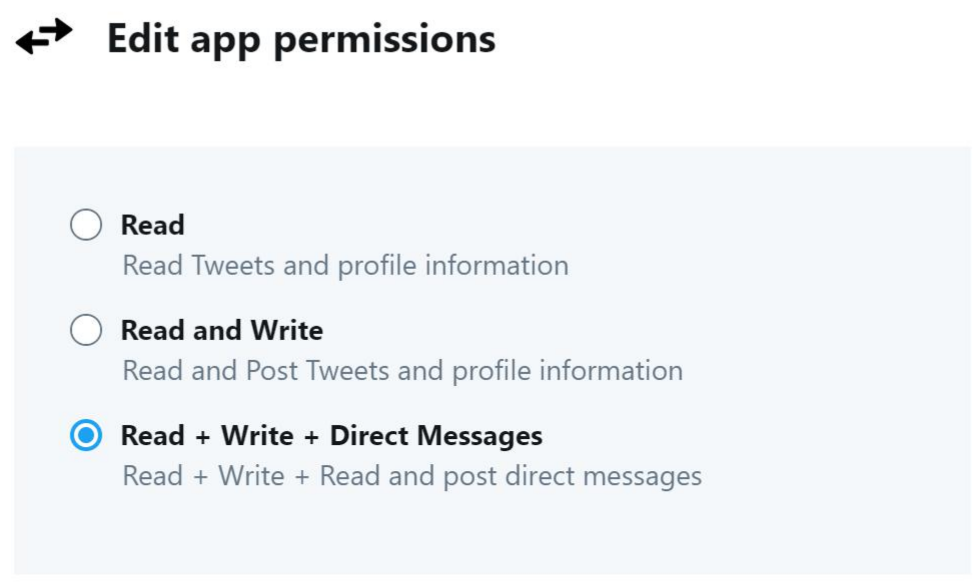
Leonardo DiCaprio Retweeted

NowThis @nowthisnews · Sep 24

The stakes in 2020 are even higher than you thought — @BarackObama explains why this is a 'last chance' election with down-ballot races that will reshape America's election maps for a decade in this NowThis exclusive

**(3) Send tweets using Twitter API**

Remember to set "Read+Write+Direct Messages" under settings in Developer Portal and keys need to be regenerated again to activate this setting.



Edit app permissions

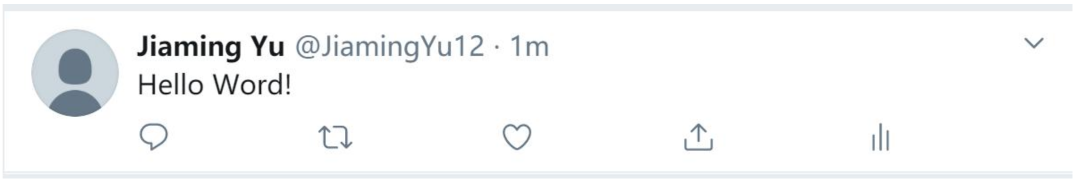
Read
Read Tweets and profile information

Read and Write
Read and Post Tweets and profile information

[✓ Read + Write + Direct Messages]
Read + Write + Read and post direct messages

Run the code **TwitterAPIsend.py** after entering keys:

```
import tweepy
import sys
non_bmp_map = dict.fromkeys(range(0x10000, sys.maxunicode + 1), 0xfffd)

consumer_key = "Enter the consumer_key"
consumer_secret = "Enter the consumer_secret"
access_key = "Enter the access_key"
access_secret = "Enter the access_secret"

auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_key, access_secret)

api = tweepy.API(auth)

api.update_status('Hello Word!')

public_tweets = api.home_timeline()

for tweet in public_tweets:
    print (tweet.text.translate(non_bmp_map))
```


Jiaming Yu @JiamingYu12 · 1m

Hello Word!

```
============== RESTART: C:\Users\user\Desktop\TwitterAPIsend.py ==============
Hello Word!
>>> 
```

As shown above, I tweets “Hello World” using Twitter API and retrieve this tweets and print it using tweepy.

**(3) Test program to search using Twitter API:**

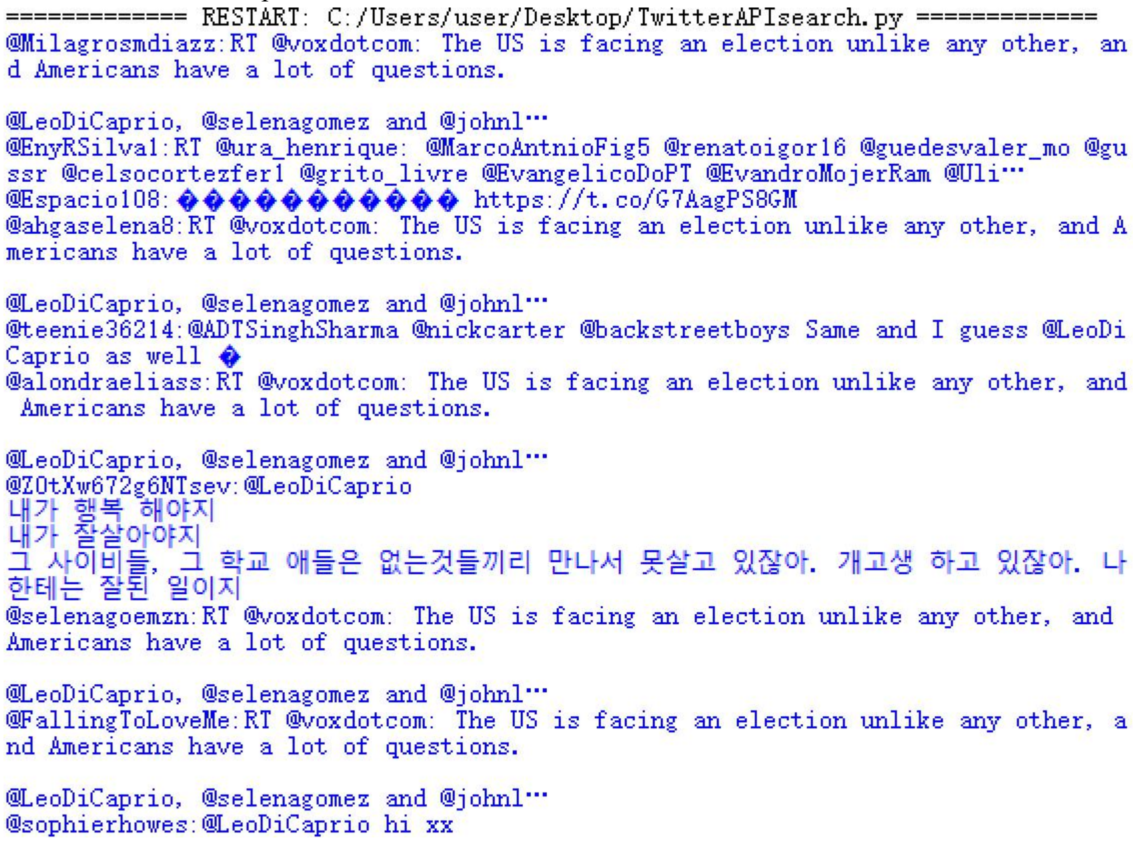
Entering keys and choose to search key word 'LeoDiCaprio’ for 10 items, Run **TwitterAPIsearch.py**:

```
import tweepy

import sys
non_bmp_map = dict.fromkeys(range(0x10000, sys.maxunicode + 1), 0xfffd)

consumer_key = "Enter the consumer_key"
consumer_secret = "Enter the consumer_secret"
access_key = "Enter the access_key"
access_secret = "Enter the access_secret"

auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_key, access_secret)
```

```
api = tweepy.API(auth)

for tweet in tweepy.Cursor(api.search,q='LeoDiCaprio').items(10): //key word
        print ('@' + tweet.user.screen_name+':'+tweet.text.translate(non_bmp_map))
```

**Attention:** *It is important to use non_bmp_map since emoji may cause error (UnicodeEncodeError: 'UCS-2' codec can't encode characters in position 12-12: Non-BMP character not supported in Tk) when printing the tweet.text.*

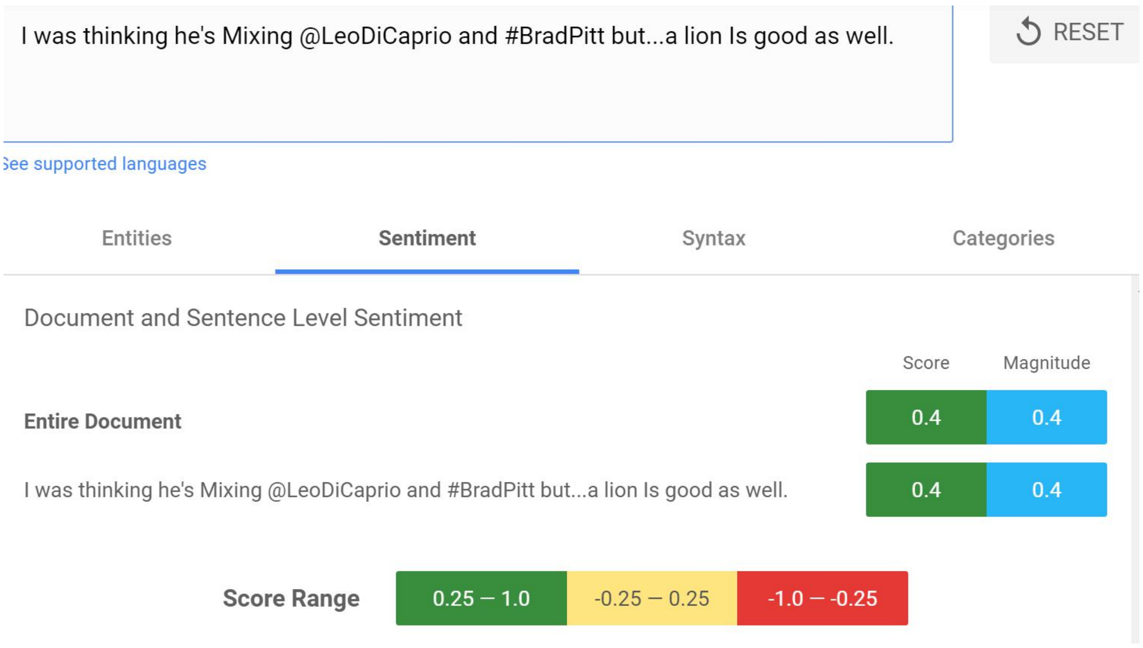
Then we derive the output:



```
============= RESTART: C:/Users/user/Desktop/TwitterAPIsearch.py =============
@Milagrosmdiazz:RT @voxdotcom: The US is facing an election unlike any other, an
d Americans have a lot of questions.

@LeoDiCaprio, @selenagomez and @johnl…
@EnyRSilva1:RT @ura_henrique: @MarcoAntnioFig5 @renatoigor16 @guedesvaler_mo @gu
ssr @celsocortezfer1 @grito_livre @EvangelicoDoPT @EvandroMojerRam @Uli…
@Espacio108:������������ https://t.co/G7AagPS8GM
@ahgaselena8:RT @voxdotcom: The US is facing an election unlike any other, and A
mericans have a lot of questions.

@LeoDiCaprio, @selenagomez and @johnl…
@teenie36214:@ADTSinghSharma @nickcarter @backstreetboys Same and I guess @LeoDi
Caprio as well �
@alondraeliass:RT @voxdotcom: The US is facing an election unlike any other, and
 Americans have a lot of questions.

@LeoDiCaprio, @selenagomez and @johnl…
@Z0tXw672g6NTsev:@LeoDiCaprio
내가 행복 해야지
내가 잘살아야지
그 사이비들, 그 학교 애들은 없는것들끼리 만나서 못살고 있잖아. 개고생 하고 있잖아. 나
한테는 잘된 일이지
@selenagoemzn:RT @voxdotcom: The US is facing an election unlike any other, and
Americans have a lot of questions.

@LeoDiCaprio, @selenagomez and @johnl…
@FallingToLoveMe:RT @voxdotcom: The US is facing an election unlike any other, a
nd Americans have a lot of questions.

@LeoDiCaprio, @selenagomez and @johnl…
@sophierhowes:@LeoDiCaprio hi xx
```

Phase 2(b) Google NLP

Try the API using tweets derived from TwitterAPIsearch.py:

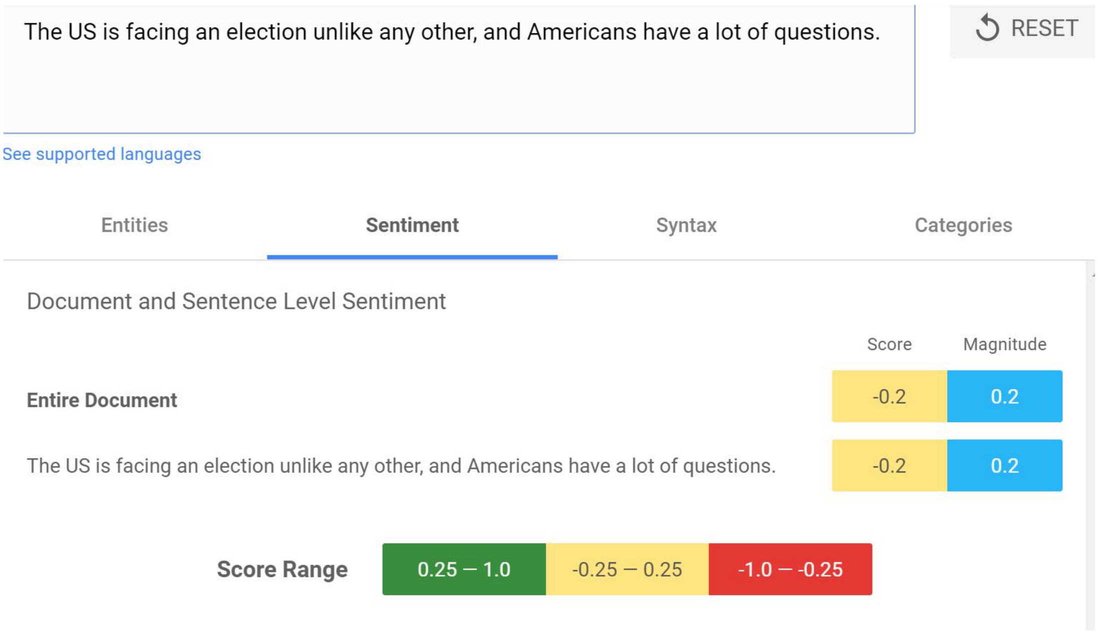


I was thinking he's Mixing @LeoDiCaprio and #BradPitt but...a lion Is good as well.

Document and Sentence Level Sentiment

| | Score | Magnitude |
|---|---|---|
| **Entire Document** | 0.4 | 0.4 |
| I was thinking he's Mixing @LeoDiCaprio and #BradPitt but...a lion Is good as well. | 0.4 | 0.4 |

| Score Range | 0.25 — 1.0 | -0.25 — 0.25 | -1.0 — -0.25 |
|---|---|---|---|



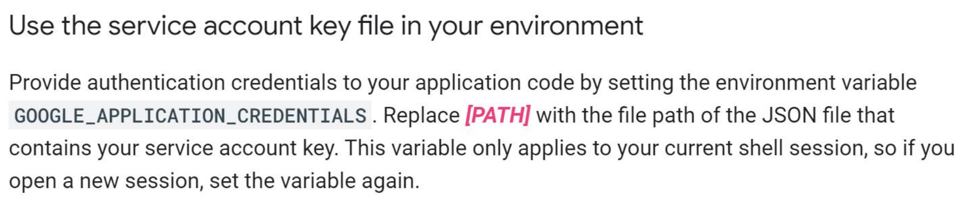
The US is facing an election unlike any other, and Americans have a lot of questions.

Document and Sentence Level Sentiment

| | Score | Magnitude |
|---|---|---|
| **Entire Document** | -0.2 | 0.2 |
| The US is facing an election unlike any other, and Americans have a lot of questions. | -0.2 | 0.2 |

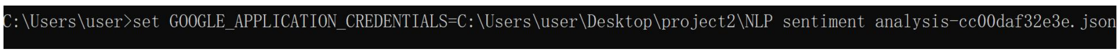
| Score Range | 0.25 — 1.0 | -0.25 — 0.25 | -1.0 — -0.25 |
|---|---|---|---|

Google Natural Language API requires adding .json file to the path and hold the same cmd shell when running python files.



Use the service account key file in your environment

Provide authentication credentials to your application code by setting the environment variable `GOOGLE_APPLICATION_CREDENTIALS`. Replace *[PATH]* with the file path of the JSON file that contains your service account key. This variable only applies to your current shell session, so if you open a new session, set the variable again.

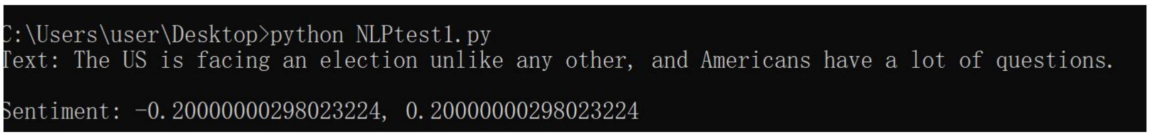


```
C:\Users\user>set GOOGLE_APPLICATION_CREDENTIALS=C:\Users\user\Desktop\project2\NLP sentiment analysis-cc00daf32e3e.json
```

Then run **python NLPtest1.py** under cmd

The code for NLPtest1.py is

```
# Imports the Google Cloud client library
from google.cloud import language
from google.cloud.language import enums
from google.cloud.language import types

# Instantiates a client
client = language.LanguageServiceClient()

# The text to analyze
with open('Tweets.txt', 'r') as review_file:
    text = review_file.read()
#text = u'Hello, world!'
document = types.Document(
    content=text,
    type=enums.Document.Type.PLAIN_TEXT)

# Detects the sentiment of the text
sentiment = client.analyze_sentiment(document=document).document_sentiment

print('Text: {}'.format(text))
print('Sentiment: {}, {}'.format(sentiment.score, sentiment.magnitude))
```



```
:\Users\user\Desktop>python NLPtest1.py
ext: The US is facing an election unlike any other, and Americans have a lot of questions.

entiment: -0.20000000298023224, 0.20000000298023224
```

As the result shows, it can analyze the text in Tweets.txt and give back the sentiment.