

Lab 4: Using APIs in Python

Student: Kyler Halat-Shafer

UserID: uxt5qb

Problem 0

```
In [16]: # To download dotenv, you need to download node.js and then pip install pyth

import numpy as np
import pandas as pd
import requests
import json
import os
import dotenv
import sys
sys.tracebacklimit = 0 # turn off the error tracebacks
```

Problem 1

To receive the Client ID, Secret Key, and Access Token, you needed to sign up for genuis. To do so you needed to provide URLs associated with the app, by using the collab url provided in the lab assignment I was able to create a profile. From there the tokens became available and I was able to store them, first in a text file. Once I had them in a text file, I saved them as a .env. BEWARE by saving the .env on your desktop it will not appear. You'll have to figure out the path to your desktop and then trust that by /.env you will locate it.

```
In [2]: root = 'https://api.genius.com'
```

```
In [3]: end_point = '/search'
```

```
In [4]: useragent = 'Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537
```

Problem 2

After moving the contents and putting them into a .env file, then going through the process of having the proper software on my computer to use the package dotenv and finding what to import to load the .env file I was able to create variables for each of them. To correctly parse the token the name to the left of the = in the .env needs to be one word, if it is more you will get an error message. I printed my keys and did an alternative way to ensure that they were there. I have # out the printing so they do not appear in my notebook.

```
In [5]: from dotenv import load_dotenv
load_dotenv()

my_id = os.getenv("Client_ID")
my_secret_key = os.getenv("Secret_Key")
Bearer = os.getenv("Bearer")
Client_Access = os.getenv("Access-Token")

#print(f'My Client ID is: {my_id}.')
#print(f'My secret key is: {my_secret_key}.')
#print(f'Bearer is: {Bearer}.')
#print(f'My access key is: {Client_Access}.')
```

```
In [6]: #df = pd.read_csv(".env", header = None)
```

```
In [7]: #df
```

Problem 3

Below is the format that I saw on the website to understand the Bearer and access token to build out the headers and parameters.

GET /some-endpoint HTTP/1.1

User-Agent: CompuServe Classic/1.22

Accept: application/json

Host: api.genius.com

Authorization: Bearer ACCESS_TOKEN

```
In [8]: r = requests.get(root + end_point,
                        headers = {'User-agent':useragent,
                                'Authorization': 'Bearer' + ' ' + Bearer},
                        params = {'q':'Bob Dylan', 'ACCESS_TOKEN':Client_Access})
r
```

```
Out[8]: <Response [200]>
```

```
In [28]: myjson = json.loads(r.text)
myjson['response']['hits'][0]
```

```
Out[28]: {'highlights': [],
  'index': 'song',
  'type': 'song',
  'result': {'annotation_count': 126,
    'api_path': '/songs/5393247',
    'artist_names': 'Bob Dylan',
    'full_title': 'Murder Most Foul by\x0Bob\x0Dylan',
    'header_image_thumbnail_url': 'https://images.genius.com/7fbaf838ffdf99315408faa29cb566ac.300x300x1.jpg',
    'header_image_url': 'https://images.genius.com/7fbaf838ffdf99315408faa29cb566ac.1000x1000x1.jpg',
    'id': 5393247,
    'lyrics_owner_id': 3360167,
    'lyrics_state': 'complete',
    'path': '/Bob-dylan-murder-most-foul-lyrics',
    'pyongs_count': 36,
    'relationships_index_url': 'https://genius.com/Bob-dylan-murder-most-foul-sample',
    'release_date_components': {'year': 2020, 'month': 3, 'day': 27},
    'release_date_for_display': 'March 27, 2020',
    'song_art_image_thumbnail_url': 'https://images.genius.com/7fbaf838ffdf99315408faa29cb566ac.300x300x1.jpg',
    'song_art_image_url': 'https://images.genius.com/7fbaf838ffdf99315408faa29cb566ac.1000x1000x1.jpg',
    'stats': {'unreviewed_annotations': 39, 'hot': False, 'pageviews': 482512}
  },
  'title': 'Murder Most Foul',
  'title_with_featured': 'Murder Most Foul',
  'url': 'https://genius.com/Bob-dylan-murder-most-foul-lyrics',
  'featured_artists': [],
  'primary_artist': {'api_path': '/artists/181',
    'header_image_url': 'https://images.genius.com/facc753d420efc53bbe1e0b63a72d70b.960x719x1.jpg',
    'id': 181,
    'image_url': 'https://images.genius.com/22306423b6ad8777d1ed5b33ad8b0d0b.1000x1000x1.jpg',
    'is_meme_verified': False,
    'is_verified': False,
    'name': 'Bob Dylan',
    'url': 'https://genius.com/artists/Bob-dylan'}}}
```

Problem 4

By expanding on problem 3 you can go into the songs after retrieving the artist id for Bob Dylan. From there you can sort by popularity in the request, which will output the top 20 songs if you list per page as 20 and the page numbers as 1. Then I went into the json file to find the particular area where the song name lives. From there I wrote a list comprehension to get a list of just the names of the top 20 songs. Once I had the list comprehension completed, I made a dataframe using pandas.

```
In [10]: root = 'https://api.genius.com'
end_point2 = '/artists/181/songs'

r2 = requests.get(root + end_point2,
                  headers = {'User-agent':useragent,
                             'Authorization': 'Bearer' + ' ' + Bearer},
                  params = {'id' : 181,
                             'sort': 'popularity',
                             'per_page': 20,
                             'page': 1,
                             'ACCESS_TOKEN' :Client_Access})

r2
```

```
Out[10]: <Response [200]>
```

```
In [55]: myjson2 = json.loads(r2.text)
print(myjson2['response']['songs'][0]['title'])
print(myjson2['response']['songs'][1]['title'])
print(myjson2['response']['songs'][2]['title'])
print(myjson2['response']['songs'][3]['title'])
```

```
We Are the World
Blowin' in the Wind
Murder Most Foul
Make You Feel My Love
```

```
In [56]: top_20 = [x ['title'] for x in myjson2['response']['songs']]
top_20
```

```
Out[56]: ['We Are the World',  
          'Blowin' in the Wind',  
          'Murder Most Foul',  
          'Make You Feel My Love',  
          'The Times They Are A-Changin'',  
          'All Along the Watchtower',  
          'Knockin' on Heaven's Door',  
          'Like a Rolling Stone',  
          'Don't Think Twice, It's All Right',  
          'All Along the Watchtower',  
          'Make You Feel My Love',  
          'Hurricane',  
          'Mr. Tambourine Man',  
          'A Hard Rain's A-Gonna Fall',  
          'Wagon Wheel',  
          'Subterranean Homesick Blues',  
          'Desolation Row',  
          'Tangled Up in Blue',  
          'Masters of War',  
          'Knockin' on Heaven's Door']
```

```
In [64]: # The output in a list comprehension goes first, then what it will be repeated  
# and then down again to songs  
  
top_20_df = pd.DataFrame([x ['title'] for x in myjson2['response']['songs']])  
top_20_df.columns = ['Songs']  
top_20_df
```

Out [64]:

Songs

0	We Are the World
1	Blowin' in the Wind
2	Murder Most Foul
3	Make You Feel My Love
4	The Times They Are A-Changin'
5	All Along the Watchtower
6	Knockin' on Heaven's Door
7	Like a Rolling Stone
8	Don't Think Twice, It's All Right
9	All Along the Watchtower
10	Make You Feel My Love
11	Hurricane
12	Mr. Tambourine Man
13	A Hard Rain's A-Gonna Fall
14	Wagon Wheel
15	Subterranean Homesick Blues
16	Desolation Row
17	Tangled Up in Blue
18	Masters of War
19	Knockin' on Heaven's Door

Problem 5

By reading the documentation on GitHub, each piece of what to look for became clear once lyricgenius was downloaded on my local machine.

```
In [12]: # Done in the command line: pip install lyricsgenius
import lyricsgenius
token = Client_Access
genius = lyricsgenius.Genius(token)
```

```
In [13]: artist = genius.search_artist("Bob Dylan", max_songs=3, sort="title")
print(artist.songs)
```

Searching for songs by Bob Dylan...

Song 1: "10,000 Men"

Song 2: "2 X 2"

Song 3: "32-20 Blues"

Reached user-specified song limit (3).

Done. Found 3 songs.

[Song(id, artist, ...), Song(id, artist, ...), Song(id, artist, ...)]

In [14]: `song = artist.song("Tangled Up in Blue")`

Searching for "Tangled Up in Blue" by Bob Dylan...

Done.

In [15]: `print(song.lyrics)`

Tangled Up in Blue Lyrics[Verse 1]
Early one morning the sun was shining
I was laying in bed
Wondering if she'd changed at all
If her hair was still red
Her folks they said our lives together
Sure was going to be rough
They never did like Mama's homemade dress
Papa's bankbook wasn't big enough
And I was standing on the side of the road
Rain falling on my shoes
Heading out for the East Coast
Lord knows I've paid some dues
Getting through
Tangled up in blue

[Verse 2]
She was married when we first met
Soon to be divorced
I helped her out of a jam, I guess
But I used a little too much force
We drove that car as far as we could
Abandoned it out west
Split up on a dark sad night
Both agreeing it was best
She turned around to look at me
As I was walking away
I heard her say over my shoulder
"We'll meet again someday
On the avenue"
Tangled up in blue

[Verse 3]
I had a job in the great north woods
Working as a cook for a spell
But I never did like it all that much
And one day the ax just fell
So I drifted down to New Orleans

Where I lucky was to be employed
Working for a while on a fishing boat
Right outside of Delacroix
But all the while I was alone
The past was close behind
I seen a lot of women
But she never escaped my mind
And I just grew
Tangled up in blue
[Verse 4]
She was working in a topless place
And I stopped in for a beer
I just kept looking at the side of her face
In the spotlight, so clear
And later on, when the crowd thinned out
I was just about to do the same
She was standing there, in back of my chair
Said, "Tell me, don't I know your name?"
I muttered something underneath my breath
She studied the lines on my face
I must admit, I felt a little uneasy
When she bent down to tie the laces
Of my shoe
Tangled up in blue

[Verse 5]
She lit a burner on the stove
And offered me a pipe
"I thought you'd never say hello," she said
"You look like the silent type"
Then she opened up a book of poems
And handed it to me
Written by an Italian poet
From the thirteenth century
And every one of them words rang true
And glowed like burning coal
Pouring off of every page
Like it was written in my soul
From me to you
Tangled up in blue

[Verse 6]
I lived with them on Montague Street
In a basement down the stairs
There was music in the cafes at night
And revolution in the air
Then he started into dealing with slaves
And something inside of him died
She had to sell everything she owned
And froze up inside
And when it finally, the bottom fell out
I became withdrawn
The only thing I knew how to do
Was to keep on keeping on

Like a bird that flew
Tangled up in blue

[Verse 7]

So now I'm going back again
I got to get to her somehow
All the people we used to know
They're an illusion to me now
Some are mathematicians
Some are carpenter's wives
Don't know how it all got started
I don't know what they're doing with their lives
But me, I'm still on the road
A-heading for another joint
We always did feel the same
We just saw it from a different point
Of view
Tangled up in blue