CREATE A SPOTIFY PLAYLIST BASED ON LOCATION

SI 507 intermediate programming

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GitHub repo:

https://github.com/elenoreD/SI_507_Intermediate_programming

Demo video:

https://drive.google.com/file/d/1bKOcnP0-lY3YX85sP0FmV_m2DIKbj8pB/view?usp=sharing

Project code

The project has 2 major functions: a) Create a playlist for user's Spotify account based on location by scraping website and accessing Spotify API; b) Visually present the artist/tracks result by Flask app.

The 4 authentication information needed for using Spotify API and how to be acquired are as below:

- GET_TOKENS: https://developer.spotify.com/console/get-artist-albums/
- POST_TOKENS: https://developer.spotify.com/console/post-playlist-tracks/
- USER_IDS = https://www.spotify.com/us/account/overview/
- COUNTRYS = 'US'

It should be noticed that a) Tokens could be expired, but they can be applied for unlimited times. The program will have notification when they expired; b) By default, the search results are limited in United States.

Packages needed: requests, Flask, sqlite3, pandas, Beautifulsoup

Data sources

1. Webpage origin: https://www.ranker.com/list/chicago-bands-and-musical-artists-from-here/reference

It a webpage about artists in different locations. I start search by changing the 'location' part in the URL, and then I scrape the page to get artist name, rankings, artist picture link and the artist description. I will use cache by creating a unique key for each URL of a location. The records amount could be different by locations, since some city have more artists, and some don't. I will only scrape the first page of the result. For example, Chicago has 50 artists while Ann Arbor has 21 results. This doesn't matter, I will add everything of the first result page to my database later.

Usually, an artist could have information like name, genre, nationality, description and so on. The records retrieved will be a dictionary. Below is an example of the first element of some keys in the dictionary:

```
(base) ElenoreMacBook-Air:final_project Elenore$ python3 spot_test.py
artist name: The Stooges
artist rank: 1
artist pic link: https://imgix.ranker.com/node_img/61/1209129/original/the-stoo
ges-recording-artists-and-groups-photo-1?w=125&h=125&fit=crop&crop=faces&q=60&f
m=pjpg
artist description: The Stooges, also known as Iggy and the Stooges, were an Am
erican rock band formed in Ann Arbor, Michigan in 1967 by singer Iggy Pop, guit
arist Ron Asheton, drummer Scott Asheton, and bassist ...more
```

2. API origin: https://api.spotify.com

It's the Spotify API. I need to change the endpoint for different request (playlist, artist etc). I mainly use the API to 1) get artist ID by artist name I collected from web page 2) get artist top tracks by artist ID 3) post request to create an empty playlist 4) post request to add the top tracks to the empty playlist. Below is the example of the artist ID of the first Ann Arbor artists:

```
(base) ElenoreMacBook-Air:final_project Elenore$ python3 spot_test.py
4BFMTELQyWJU1SwqcXMBm3 ['spotify:track:79MMMdYL00iwKVHBSAUkLY', 'spotify:track:
00sydAz6PeOxYzwG1dRIPi', 'spotify:track:3NpnrlBcEwRIgBs8tUrhyb', 'spotify:track
:74CcP6fDBFdH8Xjo2F6Nb4', 'spotify:track:4bscUDqkO6soLEFXMr22ji']
```

3. evidence of using cache

```
if baseurl in CACHE_DICT:
    print('using caching')
    return CACHE_DICT[baseurl]
else:
    print('feching')
    api_return = make_request(baseurl, headers, error_message)
    CACHE_DICT[baseurl] = api_return
    save_cache(CACHE_DICT)
    return CACHE_DICT[baseurl]
```

```
(base) ElenoreMacBook-Air:SI_507_Intermediate_programming Elenore$ python3 spotify.py
input location chicago
using caching
using caching
using caching
using caching
using caching
using caching
using caching
using caching
using caching
using caching
using caching
```

Database

```
create_RankArtist_sql = '''
    CREATE TABLE IF NOT EXISTS "Artist" (
        "Name" TEXT NOT NULL,
        "Rank" INTEGER NOT NULL,
        "Picture" TEXT NOT NULL,
        "Description" TEXT,
        "Location" TEXT NOT NULL
    )
'''

create_ArtistInfo_sql = '''
    CREATE TABLE IF NOT EXISTS 'ArtistIDInfo'(
        'Id' INTEGER PRIMARY KEY AUTOINCREMENT,
        'ArtistID' TEXT NOT NULL,
        'ArtistName' TEXT NOT NULL,
        'Genre' TEXT NOT NULL,
        'Followers' INTEGER
    )
'''

create_TrackInfo_sql = '''
    CREATE TABLE IF NOT EXISTS 'TrackInfo'(
        'Id' INTEGER PRIMARY KEY AUTOINCREMENT,
        'ArtistID' TEXT NOT NULL,
        'TrackID' TEXT NOT NULL,
        'TrackName' TEXT NOT NULL,
        'AlbumName' TEXT NOT NULL,
        'Duration' TEXT NOT NULL,
        'AlbumPicture' TEXT NOT NULL
    )
'''
```

Table: Artist   New Re

	Name	Rank	Picture	Description	Location
	Filter		Filter	Filter	Filter
1	Grateful Dead	1	https://imgix.ra...	The Grateful De...	san-francisco
2	Journey	2	https://imgix.ra...	Journey is an A...	san-francisco
3	Jerry Garcia	3	https://imgix.ra...	Jerome John "J...	san-francisco
4	Faith No More	4	https://imgix.ra...	Faith No More is...	san-francisco
5	Santana	5	https://imgix.ra...	Santana is a Lat...	san-francisco
6	Jefferson Air...	6	https://imgix.ra...	Jefferson Airpla...	san-francisco
7	Dead Kenned...	7	https://imgix.ra...	Dead Kennedys ...	san-francisco
8	Sly & the Fa...	8	https://imgix.ra...	Sly and the Fam...	san-francisco
9	Steve Miller ...	9	https://imgix.ra...	The Steve Miller...	san-francisco
10	Counting Cro...	10	https://imgix.ra...	Counting Crows...	san-francisco
11	Train	11	https://imgix.ra...	Train is an Amer...	san-francisco
12	Lindsey Buck...	12	https://imgix.ra...	Lindsey Adams ...	san-francisco
13	Huey Lewis ...	13	https://imgix.ra...	Huey Lewis and ...	san-francisco
14	NOFX	14	https://imgix.ra...	NOFX is an Ame...	san-francisco
15	Testament	15	https://imgix.ra...	Testament is an...	san-francisco
16	Phil Lesh and...	16	https://imgix.ra...	Phil Lesh and Fri...	san-francisco
17	4 Non Blondes	17	https://imgix.ra...	4 Non Blondes ...	san-francisco
18	Third Eye Blind	18	https://imgix.ra...	Third Eye Blind i...	san-francisco
19	Huey Lewis	19	https://imgix.ra...	Hugh Anthony ...	san-francisco
20	Moby Grape	20	https://imgix.ra...	Moby Grape is a...	san-francisco
21	Devendra Ba...	21	https://imgix.ra...	Devendra Obi B...	san-francisco

Artist is linked with ArtistIDInfo by ArtistName, ArtistIDInfo is linked with TrackInfo by ArtistID.

Interaction and Presentation Options

In command line, user can get an automatically generated playlist by simply type the location they interested. An example can be shown below:

Next part is conducted by Flask and Plotly package. User can interact with the app by typing, clicking radio buttons, choosing dropdown list and checkbox as below:

1. Users can check the artist/track results of certain city by inputting a location.
2. Users can choose to sort the results by either artist follower amount or track duration length.
3. The ascending or descending order could also be specified.
4. The search results can be filtered by music genre.
5. Except the general information, users can check the rank of artist's popularity based on their followers from a bar chart.

Are you ready to make a roadtrip mix tape?

Location You are interested `chicago`

Sort by:
- ◉ Artist Followers
- ○ Track Duration

Sort direction:
- ◉ High to Low
- ○ Low to High

Filter by genre:
`Pop ▼`

☑ Want check who is the most popular artist?

`Get Tracks Results`

Here is your roadtrip mix tape!!

Top Track Picture	Top Track Name	Artist Name	Artist is from	Artist Description	Artist Picture	Artist Followers	Artist Genre	Top Track's Album	Track's Duration
	Centuries	Fall Out Boy	chicago	Fall Out Boy is an American rock band formed in Wilmette, Illinois, a suburb of Chicago, in 2001. The band consists of lead vocalist and rhythm guitarist Patrick Stump, bassist Pete Wentz, lead ...more		7822754	emo modern rock pop punk	American Beauty/American Psycho	3.80607612
	Dance, Dance	Fall Out Boy	chicago	Fall Out Boy is an American rock band formed in Wilmette, Illinois, a suburb of Chicago, in 2001. The band consists of lead vocalist and rhythm guitarist Patrick Stump, bassist Pete Wentz, lead ...more		7822754	emo modern rock pop punk	From Under The Cork Tree	3.0044934220000004
	Immortals	Fall Out Boy	chicago	Fall Out Boy is an American rock band formed in Wilmette, Illinois, a suburb of Chicago, in 2001. The band consists of lead vocalist and rhythm guitarist Patrick Stump, bassist Pete Wentz, lead ...more		7822754	emo modern rock pop punk	American Beauty/American Psycho	3.1564964620000002
	My Songs Know What You Did In The Dark (Light Em Up)	Fall Out Boy	chicago	Fall Out Boy is an American rock band formed in Wilmette, Illinois, a suburb of Chicago, in 2001. The band consists of lead vocalist and rhythm guitarist Patrick Stump, bassist Pete Wentz, lead ...more		7822754	emo modern rock pop punk	Save Rock And Roll	3.1138289420000005

Artist ranking by the number of followers on spotify