

SI507 Final Project Submission Document

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Project Code

Link to Demo Video: https://youtu.be/_6TG3k5vLB4

Link to GitHub repo: https://github.com/hongyv0627/Final_Project.git

The README file can be checked in the GitHub Repository. The text is also provided below.

Special Instructions for running my code:

Before running the code, you need to apply API keys for Google Places API as well as Yelp Fusion API, put them in a python file named secrets.py as variables, and name the variables as GOOGLE_API_KEY and YELP_API_KEY respectively. In order to help SI507 Professors and GSIs easier to check my code, I will upload the secrets.py along with my final project submission pdf file when I submit the Final Project Submission assignment in Canvas.

A brief description of how to interact with my program:

The program is designated to check the google ratings and yelp ratings of a specific fast food brand's restaurants in a specific city. Users can enter their interested fast food brand name and enter their interested city name. The program will return most of (but not all) the restaurants' google rating and yelp rating of the brand in that city. The ratings data will be displayed in different kinds of plots, including histograms and scatter plots, and users can choose which plot do they want to look at.

Required Python packages for your program to successfully run: BeautifulSoup, requests, secrets, time, sqlite3, plotly.

Data sources

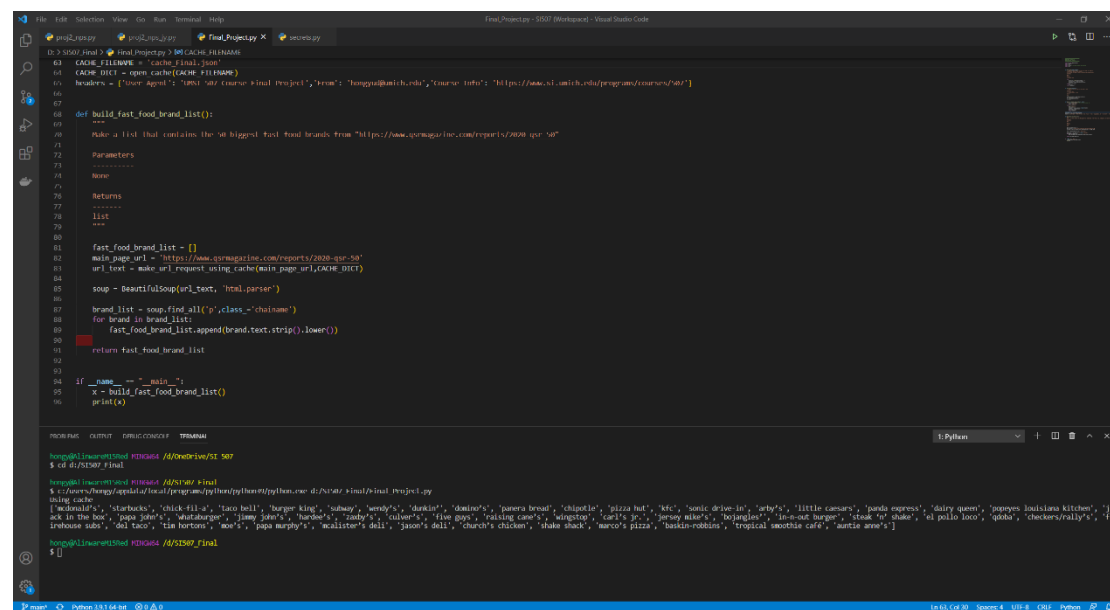
I use two APIs and one website for collecting data sources.

The first website is QSR50 ranking:

<https://www.qsrmagazine.com/reports/2020-qsr-50>

This ranking lists the 50 biggest fast-food brands in United States in 2020. I use web scraping to access the data, and also caching is used. In practice, users will only be allowed to search one of the 50 brands for their Google and Yelp ratings.

Summary of Data as well as evidence of caching:

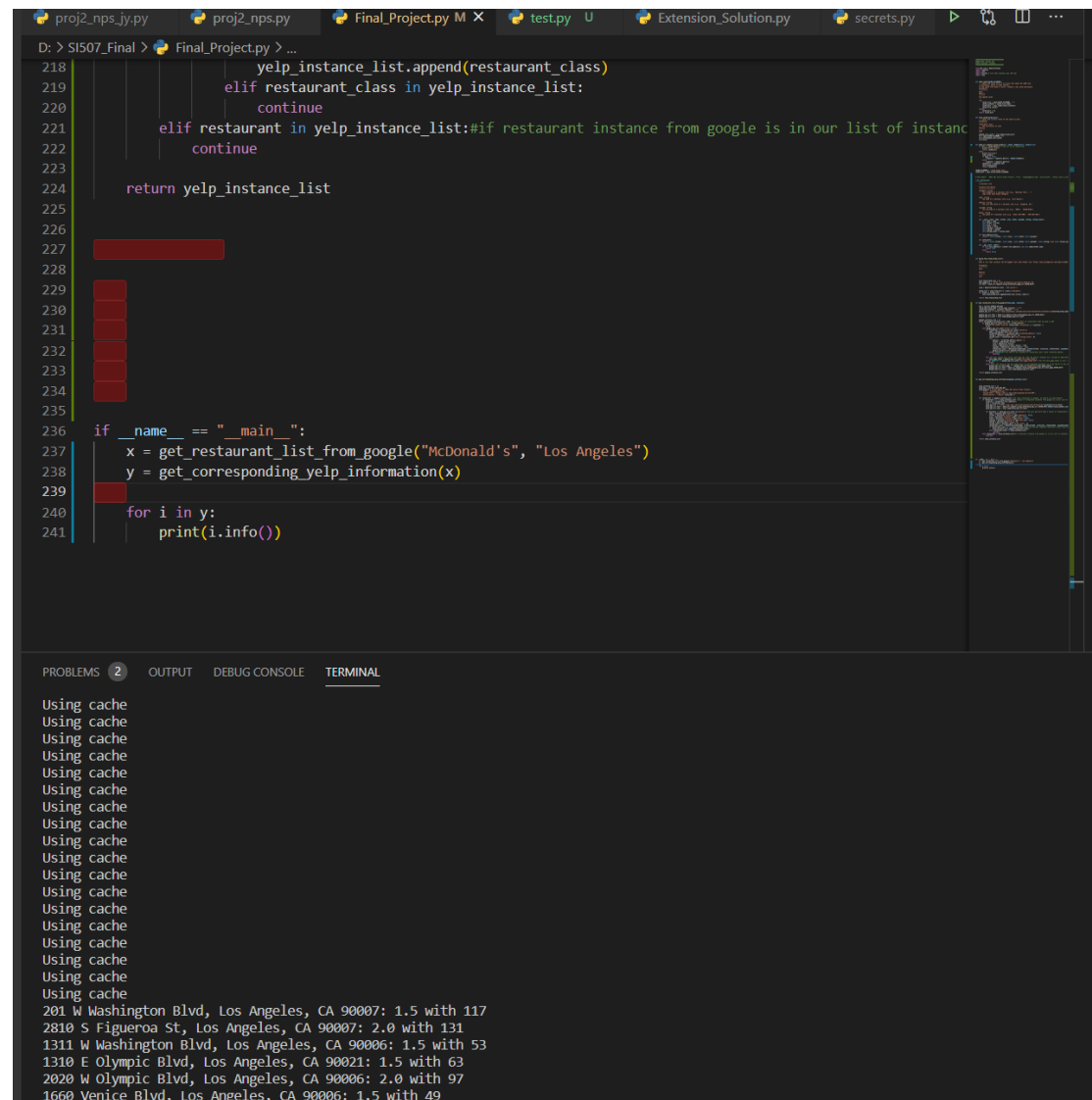


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File Edit Selection View Go Run Terminal Help
FinalProject.py 5007 (Workspace) - Visual Studio Code

D:\5007_Final> cd FinalProject> dir CACHE_HIDDEN
63 CACHE_FILENAME = 'cache_final.json'
64 CACHE_PATH = os.path.join(CACHE_FILENAME)
65 headers = {'User-Agent': 'BEST 500 course final project', 'Host': 'qsrmagazine.com', 'Referer': 'https://www.cs.utich.edu/programs/courses/5007'}
66
67 def build_fast_food_brand_list():
68     """
69     Make a list that contains the 50 biggest fast food brands from "https://www.qsrmagazine.com/reports/2020-qsr-50"
70
71     Parameters:
72     None
73
74     Returns:
75     list
76     """
77
78     fast_food_brand_list = []
79
80     main_page_url = 'https://www.qsrmagazine.com/reports/2020-qsr-50'
81     url_text = make_url_request_using_cache(main_page_url, CACHE_DICT)
82
83     soup = BeautifulSoup(url_text, 'html.parser')
84
85     brand_list = soup.find_all('p', class_='chainname')
86     for brand in brand_list:
87         fast_food_brand_list.append(brand.text.strip().lower())
88
89     return fast_food_brand_list
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92 if __name__ == '__main__':
93     x = build_fast_food_brand_list()
94     print(x)
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number of reviews. In practice, when I pass the information of the 60 records from Google Places API as input into the Yelp Fusion API, Yelp returns 191 records. This is usual because usually the search engine will use fuzzy search and the returned data will only partly satisfy our input information, which means we need to filter and match the restaurants afterwards to ensure that only the restaurants with both google ratings and yelp ratings provided can be left.

Below is the screenshot of caching: x is the function we get restaurants object from Google Places API, and y is the function we get restaurants object from Yelp Fusion API.



```
proj2_nps_jy.py  proj2_nps.py  Final_Project.py M X  test.py U  Extension_Solution.py  secrets.py  ...
D: > SI507_Final > Final_Project.py > ...
218         yelp_instance_list.append(restaurant_class)
219     elif restaurant_class in yelp_instance_list:
220         continue
221     elif restaurant in yelp_instance_list: #if restaurant instance from google is in our list of instance
222         continue
223
224     return yelp_instance_list
225
226
227
228
229
230
231
232
233
234
235
236 if __name__ == "__main__":
237     x = get_restaurant_list_from_google("McDonald's", "Los Angeles")
238     y = get_corresponding_yelp_information(x)
239
240     for i in y:
241         print(i.info())

PROBLEMS 2  OUTPUT  DEBUG CONSOLE  TERMINAL
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201 W Washington Blvd, Los Angeles, CA 90007: 1.5 with 117
2810 S Figueroa St, Los Angeles, CA 90007: 2.0 with 131
1311 W Washington Blvd, Los Angeles, CA 90006: 1.5 with 53
1310 E Olympic Blvd, Los Angeles, CA 90021: 1.5 with 63
2020 W Olympic Blvd, Los Angeles, CA 90006: 2.0 with 97
1660 Venice Blvd, Los Angeles, CA 90006: 1.5 with 49
```

Database

As I said before, I use the restaurant's name and address that I get from Google Places API as my search term of Yelp Fusion API. Therefore, name and address will be the foreign key that links our two table. Primary key is just an auto-incremented ID, which has no relationship to our foreign key. In the program, I use two functions `create_new_table` and `insert_new_value` to create two tables, with each tables having the restaurants' name and address information as well as its Google/Yelp ratings and Google/Yelp review count, respectively.

Below is the screen shot of Google table and Yelp table:

Google Table:

| | ID | Name | Street | City | State | Zipcode | Google_rating | Google_review_count |
|----|----|------------|------------------------|-------------|-------|---------|---------------|---------------------|
| | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 |
| 1 | 1 | McDonald's | 201 W Washington Blvd | Los Angeles | CA | 90007 | 2.7 | 5295 |
| 2 | 2 | McDonald's | 690 Alameda St | Los Angeles | CA | 90021 | 3.7 | 2082 |
| 3 | 3 | McDonald's | 2810 S Figueroa St | Los Angeles | CA | 90007 | 3.9 | 2459 |
| 4 | 4 | McDonald's | 1311 W Washington Blvd | Los Angeles | CA | 90006 | 3.7 | 1480 |
| 5 | 5 | McDonald's | 1763 W Century Blvd | Los Angeles | CA | 90047 | 3.6 | 1025 |
| 6 | 6 | McDonald's | 2020 W Olympic Blvd | Los Angeles | CA | 90006 | 3.6 | 1862 |
| 7 | 7 | McDonald's | 1845 S La Cienega Blvd | Los Angeles | CA | 90035 | 3.6 | 1349 |
| 8 | 8 | McDonald's | 5223 W Century Blvd | Los Angeles | CA | 90045 | 3.7 | 1798 |
| 9 | 9 | McDonald's | 1310 E Olympic Blvd | Los Angeles | CA | 90021 | 3.6 | 1985 |
| 10 | 10 | McDonald's | 6904 La Tijera Blvd | Los Angeles | CA | 90045 | 3.9 | 1158 |
| 11 | 11 | McDonald's | 4166 Melrose Ave | Los Angeles | CA | 90029 | 3.8 | 2243 |
| 12 | 12 | McDonald's | 3124 N San Fernando Rd | Los Angeles | CA | 90065 | 3.6 | 1465 |
| 13 | 13 | McDonald's | 11300 National Blvd | Los Angeles | CA | 90064 | 3.8 | 1042 |
| 14 | 14 | McDonald's | 1716 Marengo St | Los Angeles | CA | 90033 | 3.9 | 2260 |
| 15 | 15 | McDonald's | 1210 S Soto St | Los Angeles | CA | 90023 | 3.8 | 1111 |
| 16 | 16 | McDonald's | 10011 S Avalon Blvd | Los Angeles | CA | 90003 | 3.8 | 1861 |
| 17 | 17 | McDonald's | 1160 Rosecrans Ave | Los Angeles | CA | 90059 | 3.8 | 1341 |
| 18 | 18 | McDonald's | 5930 W Pico Blvd | Los Angeles | CA | 90035 | 4 | 890 |
| 19 | 19 | McDonald's | 1007 N Western Ave | Los Angeles | CA | 90029 | 3.7 | 1657 |
| 20 | 20 | McDonald's | 3602 South La Brea Ave | Los Angeles | CA | 90016 | 3.7 | 1098 |
| 21 | 21 | McDonald's | 3501 S La Cienega Blvd | Los Angeles | CA | 90016 | 3.6 | 1311 |
| 22 | 22 | McDonald's | 5450 Sunset Blvd | Los Angeles | CA | 90027 | 3.7 | 1607 |
| 23 | 23 | McDonald's | 1625 Wilshire Blvd | Los Angeles | CA | 90017 | 3.7 | 2193 |
| 24 | 24 | McDonald's | 341 S Vermont Ave | Los Angeles | CA | 90020 | 3.7 | 2477 |

Yelp Table:

| | ID | Name | Street | City | State | Zipcode | Yelp_rating | Yelp_review_count |
|----|----|------------|-----------------------------------|-------------|-------|---------|-------------|-------------------|
| | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 | 过滤 |
| 1 | 1 | McDonald's | 201 W Washington Blvd | Los Angeles | CA | 90007 | 1.5 | 117 |
| 2 | 2 | McDonald's | 2810 S Figueroa St | Los Angeles | CA | 90007 | 2.0 | 131 |
| 3 | 3 | McDonald's | 1311 W Washington Blvd | Los Angeles | CA | 90006 | 1.5 | 53 |
| 4 | 4 | McDonald's | 1310 E Olympic Blvd | Los Angeles | CA | 90021 | 1.5 | 63 |
| 5 | 5 | McDonald's | 2020 W Olympic Blvd | Los Angeles | CA | 90006 | 2.0 | 97 |
| 6 | 6 | McDonald's | 1660 Venice Blvd | Los Angeles | CA | 90006 | 1.5 | 49 |
| 7 | 7 | McDonald's | 4011 S Central | Los Angeles | CA | 90011 | 1.0 | 43 |
| 8 | 8 | McDonald's | 1625 Wilshire Blvd | Los Angeles | CA | 90017 | 2.0 | 120 |
| 9 | 9 | McDonald's | 690 Alameda St | Los Angeles | CA | 90021 | 2.0 | 99 |
| 10 | 10 | McDonald's | 4000 S Figueroa St | Los Angeles | CA | 90037 | 1.5 | 50 |
| 11 | 11 | McDonald's | 1071 Martin Luther King Jr Blvd | Los Angeles | CA | 90037 | 1.5 | 66 |
| 12 | 12 | McDonald's | 1800 S Western Ave | Los Angeles | CA | 90006 | 1.5 | 85 |
| 13 | 13 | McDonald's | 405 N Alvarado St | Los Angeles | CA | 90026 | 2.0 | 83 |
| 14 | 14 | McDonald's | 1210 S Soto St | Los Angeles | CA | 90023 | 1.5 | 33 |
| 15 | 15 | McDonald's | 341 S Vermont Ave | Los Angeles | CA | 90020 | 1.5 | 171 |
| 16 | 16 | McDonald's | 1118 Slauson Ave | Los Angeles | CA | 90011 | 1.5 | 92 |
| 17 | 17 | McDonald's | 695 S Western Ave | Los Angeles | CA | 90005 | 2.0 | 200 |
| 18 | 18 | McDonald's | 3737 Soto St | Vernon | CA | 90058 | 2.5 | 31 |
| 19 | 19 | McDonald's | 2215 W Martin Luther King Jr Blvd | Los Angeles | CA | 90008 | 1.5 | 47 |
| 20 | 20 | McDonald's | 988 W Slauson Ave | Los Angeles | CA | 90044 | 1.5 | 36 |
| 21 | 21 | McDonald's | 1763 W Century Blvd | Los Angeles | CA | 90047 | 2.0 | 37 |
| 22 | 22 | McDonald's | 1406 W Manchester Ave | Los Angeles | CA | 90047 | 1.5 | 37 |
| 23 | 23 | McDonald's | 2900 Imperial Hwy | Inglewood | CA | 90303 | 1.5 | 77 |
| 24 | 24 | McDonald's | 501 W Imperial Hwy | Los Angeles | CA | 90044 | 1.5 | 98 |

Then, I use the foreign keys (name, street, zip code) to match the restaurants and create a list of tuples that contains all the information we need. Finally, I use list and tuple indexing to extract the information and store in a dictionary of lists. Therefore, this dictionary of lists is our final data source, which we will use to generate our plots. Detailed explanation of this part will be provided in Demo video.

Interaction and Presentation Options

When the project is finished, users can input their interested fast food brand name and their interested city name. However, their brand name will be restricted to 50 biggest fast-food brands. After they input brand name, such as McDonald's, and city name, such as Los Angeles, the project will use google places API to help them find decades of McDonald's (maximum 100) in Los Angeles Area, with each McDonalds' rating and number of reviews being provided. Then, using Yelp Fusion API, each McDonald that we get from Google Places API will get their corresponding Yelp rating and number of reviews. In the program, the program will tell the users how many relevant results it found on Google how many relevant results it found on Yelp, as well as how many results left after matching. Note that the number of match results might be smaller than all of those two individual results. This is because the restaurant that we choose to examine is based on the results from google, and when we pass a specific restaurant's information that we get from Google Places API as input into Yelp Fusion API, it is possible that all of the results that we get from Yelp is not the information of that restaurant. In this case this restaurant will be dropped from our data source after matching.

After getting data, users can choose different datasets to plot different kinds of plots. There are 8 option of plots for them to choose to examine, which are:

1. Distribution of Google Rating
2. Distribution of Yelp Rating
3. Distribution of Weighted Rating
4. Scatter plot of Google Rating versus its Rating Numbers
5. Scatter plot of Yelp Rating versus its Rating Numbers
6. Scatter plot of Google and Yelp's Weighted Rating versus its total Rating Numbers
7. Scatter plot of Google Rating versus its Yelp Rating
8. Scatter plot of Google Rating number versus its Yelp Rating Numbers

Users can type the number and they will get corresponding plots.