CS7NS1 ASSIGNMENT
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Flask REST(Flask-RESTful, 0.3.6) is a framework to build a restful style program. Considering the requirement that a rest service for submitting code to GitHub(GitHub, 2018) and finish some statistical work. I will use the flask(Flask, 1.0) and GitHub API v3 to finish my job.
The first step is to find as more as possible documentation from the GitHub website and how to call the API from the remote server. A typical useful link from GitHub is https://developer.github.com/v3/search/#search-repositories.

For the first task, I find out API from (https://developer.github.com/v3/search/#search-commits). I use subprocess.check_output() to call this API and joint the necessary parameters because of the uselessness of requests method for an API with a header (Accept:application/vnd.github.cloak-preview) the API link is shown as below "GET https://api.github.com/search/commits?q=author:"+: ower+"&per_page=1000" to guarantee enough results called back and store the result in a dictionary format with a key as user's name and value as the results.

With regard to question two, the task asks to return the projects that are members of the original submitted set. Because I can get all the commit record from an API by using "GET api.github.com/repos/:ower/:repo/commits?since=date". Based on the result from that API to calculate the length of records, and return the length.

To question three, I can list all the repositories of one user by calling "GET api.github.com/users/:username/repos" and then call"GET /repos/:owner/:repo/languages" to get the bytes of code written in that language.

For question four of weekly commit status, I get the API from "https://developer.github.com/v3/repos/statistics/ ", which give me the usage to get our commit activity from the API "GET /repos/:owner/:repo/stats/commit_activity". The method of datetime.datetime.fromtimestamp(t).strftime('%Y-%m-%d %H:%M:%S') allows us to format the time and get the data in the year of 2018. Another method "GET repos/:owner/:repo/stats/participation" can only return the total number of weekly commits without timestamp which I don't want to use any more.

As far as for question five, from all repositories, I can get all the commit record within in 2018 first and sum them up. Then the sum is divided by the total number of repositories as the yearly commit rate.

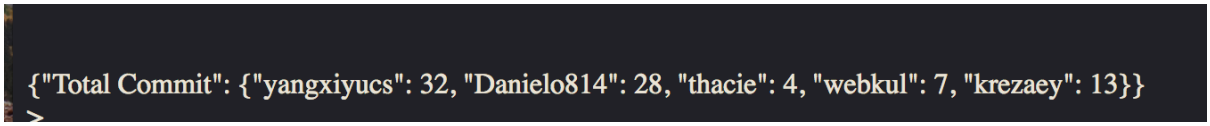
As for question six, it is easy to get all the collaborators by calling "GET /repos/:owner/:repo/collaborators". But what we want is the record in 2018. I have to filter the date since 2018-01-01, and call "GET /repos/:owner/:repo/collaborators" to sum up all contributors. Because one person could commit several times in commits record, I need to minus the repeated contributors from

Regarding the email task, we can use the extension package of flask_mail to realize this kind of function. I define the mail's server and port and several parameters according to the

flask_mail documentation. The body of the message can be defined in the Message initial method or add a template in its attribute within html.body.
I add the routeing method of @app(‘’,[‘GET’]) in order to map the route address into website pages. The HTML generated by the template is based on Jinja2(Jinja2, 2.10). I can cite variables using tags like{{}} and write the function using tags like {% %}.

All the test data is randomly chosen search results from GitHub. The user’s name and repo’s name is as below.
user name: yangxiyucs
repo name: New Repo
user name: Danielo814
repository name: Simple_Flask
user name: thacie
repo name: cool weather
user name: webkul
repo name: coolhue
user name: krezaey
repo name:musick

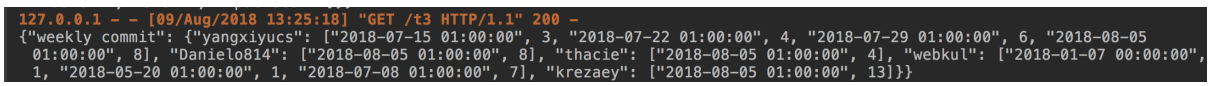
results for task1:



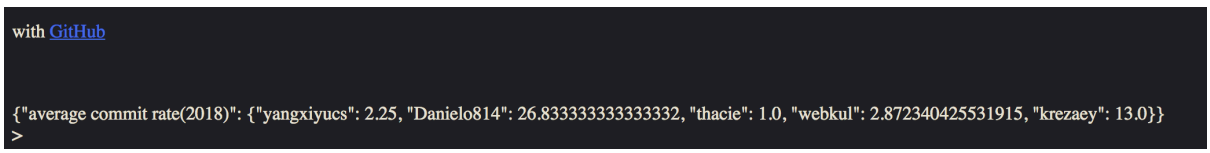
results for task2:

results for task3:

results for task4:



results for task5:



results for task6:

Results for email:

Reference

1. (Flask-RESTful, 0.3.6) https://flask-restful.readthedocs.io/en/latest/
2. (GitHub, 2018) https://zh.wikipedia.org/zh-hans/GitHub
3. (Jinja2, 2.10) http://jinja.pocoo.org/docs/2.10/
4. (Flask, 1.0) http://flask.pocoo.org/docs/1.0/