

[CMSC 455] Assignment #1: Interacting with Real-World APIs

Due: End of Day, September 12th, 2024

The goal of this assignment is to gain experience reading REST API documentation and writing client code to interact with non-trivial, industrial APIs. The context will be GitHub's REST APIs (<https://docs.github.com/en/free-pro-team@latest/rest>). Your task is to write REST client code in Python that when executed:

1. All of your API calls use authentication with a *personal access token*. You will need to generate the token from your personal account and use it to make API requests. More information on GitHub authentication can be found here: <https://docs.github.com/en/rest/authentication/authenticating-to-the-rest-api>
2. Your code lists the names of 10 public GitHub repositories in descending order of total number of stars, since the repository creation. Alongside each repository name your code prints out the total number of stars (e.g., `ansible/ansible, 50,751`)
3. For each of the 10 repositories, retrieve the text of a single recent issue that is labeled as "bug". Print the text of the issue. If there are no issue labeled as bug in the repo, print "none".
4. Note #1: You shouldn't submit (or commit to the repo) your GitHub personal access token. One way to manage this in Python is using a `.env` file: <https://pypi.org/project/python-dotenv/>. Points won't be taken off if you submit the personal access token, but we prefer if you do not.
5. Note #2: You can use GraphQL instead of regular REST API calls if you prefer, but there are no bonus points for this.
6. Note #3: Also, beware that GitHub may throttle you application if it begins to make too many calls in a period of time, returning status code 403. The best thing to do is to write code that waits for 10 minutes if you get this status code and then tries again.
7. Note #4: Your code may take some time to run. Make sure you allow enough time to complete the run.

Your output should look exactly like this (but with different repos and issues):

```
-----
ansible/ansible, 50751
Bug Issue:
[BUG] Issue with module XYZ
...
-----
tensorflow/tensorflow, 41428
Bug Issue:
none
-----
...
```

<output for the other repositories>

...

Submit: Submission is via GitHub. To accept the assignment, visit <https://classroom.github.com/a/p9shKKbI> and create your personal repository. We will grade your submissions directly on GitHub. There will be no submissions on Canvas.