300 points. Individual Work Only. Due April 21, 2023 before midnight.

1. Objective

Designing and using web services using Python and REST APIs.

2. Description

Follow the tutorial on “Python and REST APIs: Interacting with Web Services” (link provided in the Resources section) and learn how to implement and use web services. In the section “REST and Python: Tools of the Trade” pick one framework among Flask, Django REST, and FastAPI (you don’t have to try all three).

3. Graduate Students Only (Bonus for Undergraduates)

Describe the various steps involved when you enter a URL in the browser (eg., https://www.cnn.com). Make sure to include all the different services that will be used to fetch the page.

4. Working Environment

You can develop and test the client and server programs on any machine that you have access to. You may be required to demonstrate the working program to the instructor to get full credits for this assignment.

5. Feedback Questions (answer to these questions has no impact on your grade)

1) Was this homework too difficult, or too easy?
2) Was the assignment fun or challenging?
3) Was there something that was unclear?
4) Was the homework too long for the given amount of time?
5) What did you learn from this homework?

6. Presentation Instructions

Please include the following items in your presentation:

- Overview of webservices
- Overview of REST architecture
- Relationship between webservices and REST APIs
- Summary of the tutorial examples
- Overview of the framework you choose to build REST APIs in Python
- Where and how you would use REST APIs in the Chat program that you developed earlier homework.
- Comment on any security related issues with REST APIs

7. Submission Instructions

List ALL the references you used in this homework as well as test cases used to test your programs. This includes any classes that you used that you did not write and any help you received from any other sources. Use appropriate class name and include comments to indicate various operations performed by the program. Your program must have the following header information within comments:

```
/*
        Name:
        Section: CS 491 or CS 591
        Homework #:
*/
```

Create a github repository (say, Spring2023_CS691_HW5) and upload your source files to the github repository. Make sure that you have created a **private repository/project** (click on visibility to be private). Add pvbangalore@ua.edu as a collaborator to this project.

Create a tar/zip file (only tar and zip are accepted, all other file formats will not be considered) of the homework1 directory using the following filename format: <crimsonId>-cs491-hw5.tar or <crimsonId>-cs591-hw5.zip. Upload the tar/zip file that includes the source code and instructions for executing the programs and a separate Word/PDF document for the typed solution to short answer questions and the feedback questions. In the comment section of the homework submission, include the link to your github repository for this homework.

8. Late Submissions

Submissions must be made on the due date before the beginning of the class. Any submissions received after the due date will receive a score of 0 for this homework.

9. Resources

Python and REST APIs: Interacting with Web Services - https://realpython.com/api-integration-in-python/