CSL4030 Data Engineering
Lab - 8 Assignment
October 4th, 2023

Note: Refrain from using pre-written code or solutions from the internet, including AI language models (like LLMs), to compose your queries. Ensure that your submissions are your own work, and avoid copying or sharing code with your classmates. The evaluation process will include a plagiarism check.

Note: Ensure you respect LinkedIn's terms of service and do not scrape profiles without proper consent.

This assignment will test your web scraping skills, data extraction, and JSON handling in Python.

Write all the queries in a Word/pdf file and the output screen. Late submissions are allowed. However, your obtained marks will be reduced by half as a penalty.

Question 1: Solve the following:

1. Convert the following JavaScript array to JSON.
   var names= [“james”, “jake”];

2. Convert the following JavaScript object to JSON
   var power={voltage: 250,current: 12}

3. The following JSON string consists of‘[{“sensor”: “sensor1”, “temperature”: 22, “humidity”: 80}]’ Is it An array
   a. An object
   b. An Array inside an object
   c. An object inside an array

4. The JSON string consists of: ‘[{“sensor”: “sensor1″,” temperature”: 24, “humidity”: 69},{“sensor”: sensor2, “temperature”: 22, “humidity”: 65}]’ Is it?:
   a. Valid
   b. Invalid

Question 2: To encode a LinkedIn profile page (text + profile pic) into a JSON file using Python, you'll need to perform web scraping to extract the required information from the page and then create a JSON file to store that data. Here's an assignment question related to this task:

Creating a Python program that scrapes information from a LinkedIn profile page and encodes it into a JSON file. Your program should extract the following information:

Profile Picture URL: The URL of the LinkedIn profile picture.
Name: The name of the LinkedIn user.
Connections: The number of connections the user has.
Summary: The summary or about section of the user's profile.
Education: A list of the user's educational background, including institution names, degrees, and graduation dates.
Skills: A list of skills mentioned on the profile.

After extracting this information, create a JSON file and structure it to represent the LinkedIn profile page data. Your program should be designed to take the URL of a LinkedIn profile page as input and output a JSON file with the extracted data.

Bonus Points: Implement error handling for cases where the profile page structure changes or if the page is private. Also, consider encoding the extracted data in a well-structured JSON format.