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**Assignment No. 1**

## **Problem Statement:**

Reading and writing different types of datasets.

## **Objective:**

The aim of this assignment is to gain practical experience in reading and writing various datasets, including .txt, .csv, and .xml files from both local storage and the web. We will learn to load these datasets into memory, perform processing, and save them to a specified location.

## **Prerequisites:**

* A Python environment with libraries such as pandas, xml.etree.ElementTree, and requests (for web data access).
* Internet access for retrieving datasets from online sources.
* A text editor and a basic understanding of file operations in Python.

## **Theory:**

In this assignment, we focus on three prevalent data formats: .txt, .csv, and .xml. Each format has distinct characteristics and methods for manipulation in Python.

1. **Text Files (.txt)**:
   * Basic files consisting of plain text.
   * Reading and writing operations can be performed using Python's native file handling methods.
2. **CSV Files (.csv)**:
   * Text files that organize data in a tabular format using commas.
   * The pandas library offers robust functionalities for reading and writing CSV files efficiently.
3. **XML Files (.xml)**:
   * A flexible markup language that encodes documents in a machine-readable format.
   * We will utilize xml.etree.ElementTree to parse and manipulate XML data.

## **Algorithm:**

1. **Reading and Writing .txt files**:
   * Open the text file in read mode and read its contents.
   * Process the data as required (e.g., transform it to uppercase).
   * Write the processed content to a new text file.
2. **Reading and Writing .csv files**:
   * Load the CSV file into a DataFrame using pandas.
   * Perform any necessary data transformations or analyses.
   * Export the DataFrame to a new CSV file.
3. **Reading and Writing .xml files**:
   * Use the requests library to fetch XML data from a specified URL.
   * Parse the XML content with xml.etree.ElementTree.
   * Extract the relevant data and save it in a new XML file.

## **References:**

* [Python Official Documentation](https://docs.python.org/3/)
* Pandas Documentation
* Requests Documentation
* XML Parsing in Python

## **Conclusion:**

This assignment has equipped us with practical skills in reading and writing various dataset types using Python. We delved into processing .txt, .csv, and .xml files, deepening our understanding of file management and data processing techniques in Python. This knowledge serves as a strong foundation for further exploration in data analysis.