Data Automation Mentoring Program

ANI_503b | Blended | Custom | Expert
Course Duration: 9 weeks

The Data Automation Mentoring is designed for non-programmers who want to create programs in Python to help them automate some of their mundane daily tasks related to gathering and analyzing data. By using hands-on, lab-based programming exercises and a mix of live sessions and programming assignments, it provides an opportunity to the student to define and develop a Python program based on a practical and relevant use case. [Live Session: 1/2 day every week], [One-on-One Mentoring: 1 hour each week], [Self-Study: Python program development, approximately 6 hours average each week]

Intended Audience

This workshop is intended for anyone (non-programmers) who wants to build knowledge and skills related to leveraging data tools to be more productive.

Objectives

After completing this course, the student will be able to:

- Analyze a problem and design step-by-step ways to automate the task at hand
- Learn how to manage data in different forms of data structures to load and manipulate data
- How to use key control structures to manage the process flow
- Implement solutions based on string manipulation, regular expression processing and loops
- Implement a data processing exercise using control and data structures including file operations
- Implement text file and Excel file handling for Input/Output processing
- Learn how to automate data collection through APIs
- Python is used as the programming language for all exercises and lab-work

Outline

1. Fundamentals of PYTHON 1
1.1 Create and run a program
1.2 int, str, float, print()
1.3 Import - os, sys
Exercise: Program Development Assignment

2. Fundamentals of PYTHON 2
2.1 File operations
2.2 for, if/elif/else, lists, sys.argv
2.3 try, except
Exercise: Program Development Assignment

3. OPENPYXL
3.1 pip install, while
3.2 xlsx - open, create, read, write, save
3.3 chart, sys.argv, tkinter
Exercise: Program Development Assignment

4. PANDAS
4.1 pandas dataframe
4.2 load dataframe, output to xlsx
4.3 add, drop, columns, rows, analysis
Exercise: Program Development Assignment

5. Participant USE CASE - PART 1
5.1 Designing simple, maintainable scripts
5.2 Writing pseudo-code, functions, logical steps
5.3 Package installation, functions
Exercise: Program Development Assignment

6. Participant USE CASE - PART 2
6.1 Types of inputs
6.2 File-based, URL-based, API-based, SQL-based
6.3 Example of invoking an API
Exercise: Program Development Assignment

7. Participant USE CASE - PART 3
7.1 Analysis using python and/or pandas
7.2 Package specific implementations
7.3 Pros and Cons of approaches
Exercise: Program Development Assignment

8. Participant USE CASE - PART 4
8.1 Output the analysis from the USE CASE
8.2 Output format
8.3 Output visualizations
Exercise: Program Development Assignment

9. Participant USE CASE - Final Completion
9.1 Participant USE CASE submission
9.2 Participant USE CASE presentation
9.3 Participant USE CASE demonstration
9.4 Feedback and Wrap-up