Advanced Python programming

3 day training course







Course contents

This course will cover the following topics. Those marked with (*) will be covered if time allows.

Working with sets
- Sets versus lists
- Examples of set use

Dictionaries
- Key/value pairs
- Retrieving items
- Looping over items

Functions
- Defining functions
- Passing arguments
- Optional arguments
- Modular programming

Comprehensions
- List comprehensions
- Generators

Scraping websites
- Understanding HTML
- The REQUESTS module
- Using BeautifulSoup

Working with CSV files
- Reading and writing CSV files
- Dictionaries using the CSV module

Working with Excel
- Using OPENPYXL
- Workbooks, worksheets and cells
- Python for Excel or VBA?

Working with JSON
- The JSON module
- Loading and dumping data

Working with databases
- The PYODBC module
- Connections and cursors

Pandas
- Dataframes and series
- Reading/writing dataframes
- Filtering, sorting and renaming
- Dataframe calculations

NUMPY (*)
- Shapes, ranks and data types
- Slicing arrays
- Array operations

Matplotlib
- Getting data for charting
- Implicit vs explict references
- Figures, axes and subplots
- Formatting matplotlib charts

Power BI and Python (*)
- Getting Python data
- Python visuals using dataframes

Introduction to classes
- An example class
- Designing properties / attributes
- Designing methods

Coding classes
- Simple classes
- Instantiating objects

Attributes
- Instance attributes
- Setting attributes on the fly
- Class attributes

Methods
- Instance methods
- Different ways to instantiate
- Class methods

Read/write properties
- Getting and setting values
- Private underscored variables
- Action propeties

Inheritance (*)
- Designing for inheritance
- Inheriting classes
- Overloading
- Using "super"

Dunder methods
- Doc strings
- String represenations of objects

Understanding existing classes
- Viewing definitions
- Everything is a class

A case study (*)
- Aim of the program
- Choosing the objects
- Properties or methods?
- Implementing your classes