Advanced Python 3.9

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Pre-requisites: Strong knowledge on basics of python and OOPS.

Lab setup: Visual Studio Code IDE and Python 3.9 with open internet connection.

- **Lamdas, Generators and Iterators**
- **Decorators**
  - What is decorator
  - Writing custom decorators

- **Python Debugging and Profiling**

- **Python Multithreading**
- Parallelization in Python - Threading vs Async vs Multiprocessing
  - What is multi threading
  - Creating threads in python
  - Lock and unlock
  - Concurrent Execution

  - Multi processing
    - Value,Array
    - Queue
    - Server Manager
    - Pool (Using multi-cores
  - async and await

- Object Oriented Programming and Design patterns with Python
  - Python patterns and Anti-patterns
  - API Development
  - Modularization
  - Optimization
  - Uni code with Encoding and Decoding

- Data Persistence
  - Working with Serialization and Deserialization
  - Working with CSV , JSON and XML
- IO handling
  - Working with file system
  - Context manager role in IO

- Selenium Python

- Python Unit test (TDD/BDD)
  - What is Functional Testing
  - Performance Testing
  - Testing functions in python
  - Testing class methods with unit testing
  - Testing exceptions
  - Mocking http calls and testing

  - SQL ALCHEMY

- **Memory management and Memory leaks**

- Python Pickle
  - What is Pickle module
  - Working with Pickle module

- System Programming
  - Exploring sys module
  - Working with pipes
  - Working with core level threads,
  - Working with forks

- API Development:
  - Working with Flask REST API with swagger UI
  - Working with Django REST API
  - Server side REST Services with Web UIs
- Optimization techniques in Python
- Python Binding - Calling C or C++
- Building high performance applications using Python

- Data science
  - Introduction to numpy
  - Pandas
  - Scipy
  - matplotlib

- <mark>Building high performance applications using Python'</mark>