



Advanced Python Programming

Duration: 5 Days

Skill Level: Intermediate and Beyond

Audience: Experienced Python programmers who wish to focus on Enterprise development.

Hands-On Format: This hands-on class is approximately 40/60 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

Module 1 -- Python refresher

Data types : Numbers, Strings

Data types : Lists, Tuples, Dictionary, Set

Sequences

Mapping types

Program structure

Files and console I/O

Conditionals

Loops

Built-ins

Module 2 -- OS Services

The OS module

Environment variables

Launching external commands

Walking directory trees

Paths, directories, and filenames

Working with file systems

Dates and times

Module 3 -- File Handling

The open function

Input from Text Files

Output to Text Files

Using pickle and shelve to store complex data in files

Module 4 -- Exceptions

Handling Exceptions

Using try statement with except clause

Handling multiple Exceptions

Module 5 -- Pythonic Programming

The Zen of Python

Common idioms

Lambda functions

List comprehensions

Generator expressions

String formatting

Module 6 -- Modules and packages

Initialization code

Namespaces

Executing modules as scripts

Documentation

Packages and name resolution

Naming conventions

Using imports



Module 7 -- Classes

Defining classes
Instance methods and data
Properties
Initializers
Class and static methods/data
Inheritance

Module 8 -- Metaprogramming

Implicit properties
globals() and locals()
Working with attributes
The inspect module
Decorators
Monkey patching

Module 9 – More Python features

Python Iterator

RegEx

Closure

Generator

Properties

Module 10 – Programmer tools

Analyzing programs
Using pylint
Testing code
Using unittest
Debugging
Profiling and benchmarking

Module 11 -- Network Programming

Sockets
Clients
Servers
Application protocols
Forking servers
Binary data

Module 12 -- Database access (MySQL, Oracle, Microsoft SQL Server, PostgreSQL)

The DB API
Available Interfaces
Connecting to a server
Creating and executing a cursor
Fetching data
Parameterized statements
Metadata
Transaction control
Other DBMS modules

Module 13 – Multithreading Concepts

When to use threads?
The Global Interpreter Lock
The threading module
Simple threading
Sharing variables
The queue module
Debugging threaded programs
Multiprocessing
Other alternatives

Module 14 – XML and JSON

Working with XML

DOM and Sax

Introducing ElementTree and xml

Parsing XML

Navigating the document

Creating a new XML document

JSON

Parsing JSON into Python

Converting Python into JSON

Module 15 -- Extending Python

About non-Python modules

Overview of a C extension

Writing C by hand

Using SWIG

Loading modules with ctypes

Module 16 – Python Web Development

Introduction to Django

Django MVC-MVT Pattern

Setting up Django

Creating Project

Project Structure

Setting up the Project

Database Support in Django

Django-Apps Life Cycle

Django – Admin Interface

Django – Creating Views

Django – URL Mapping

Django – Form Processing

Web Development with Pyramid

Web Development with Flask