



Python Advanced

About this course

Having mastered the core concepts of Python from our beginners Python course, students will perform more advanced Python programming with a focus on enterprise development. Students will use Python to interact with databases and GUI's and perform Network Programming. This is a practical hands on course, designed to teach students practical programming for the real business application.

Duration: 4 days

Participants: Min 5, Max 15, Optimal 12

Learning outcomes

Upon completion of this course participants will be able to:

- Process text using regular expressions
- Leverage OS services
- Perform basic graphics programming
- Create modules
- Test and debug applications
- Take advantage of Python's object-oriented features
- Interact with network services i.e. FTP & SMTP
- Query databases and Process XML data

Who should attend

This course is suitable to those that have already taken our beginners Python programme. Students should be able to: (i) write simple Python Scripts using basic data types (ii) programme structures and the standard Python Library

Course syllabus

Module 1: Recap of Beginners Python

This module will focus on a revision of: Data types, Sequences, Mapping types, Program structure, Files and console I/O, Conditionals, Loops and Bulletins

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: Plythonic Programming

- The Zen of Python
- Common idioms
- Lambda functions
- List comprehensions
- Generator expressions
- String formatting

Module 4: Modules and Packages

- Initialization code
- Namespaces
- Executing modules as scripts
- Documentation
- Packages and name resolution
- Naming conventions
- Using imports

Module 5: Classes

- Defining classes
- Instance methods and data
- Initializers
- Class methods and Static methods
- Inheritance and Multiple inheritance
- Pseudo-private variable

Module 6: Meta Programming

- Implicit properties
- globals() and locals()
- Attributes
- The inspect module
- Decorators
- Monkey patching

Module 7: Programmer Tools

- Analyzing programs
- Using pylint and unittest
- Testing and Debugging
- Profiling

Module 8: Distributing Modules

- Distribution concepts
- setuptools
- creating setup.py



- building & running installers

Module 9: Database Access

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

Module 10: GUI Programming

- The mainwindow object
- Widgets
- Colors and fonts and GUI layout
- Event handling

Module 11: Network Programming

- Sockets, Clients and Servers
- Application protocols
- Forking servers and Threaded servers
- Binary data
- The struct module

Module 12: Threads

- Why use threads?
- Python threads modules
- The threading and queue module
- The python thread manager
- Debugging threaded programs

Module 13: XML and JSON

- Working with XML, DOM and SAX
- Introducing ElementTree
- Parsing XML
- Navigating the document
- Creating a new XML document
- JSON
- Parsing JSON into Python
- Converting Python into JSON

Module 14: Extending Python

- About non-Python modules
- Overview of a C extension
- Creating functions
- Registering functions
- Initialization code
- Loading the module

Module 15: Using the sh module

- The sh namespace
- Running a simple command
- Keyword arguments
- Running commands in the background
- Piping and redirection
- Working with STDIN
- Exit codes
- Advanced features