

## Advanced Python

**Length:** 3 Days

**Pre-requisites:** Students should have taken an introductory Python course or have six months of Python programming experience.

**Summary:** The course covers a handful of various Python advanced topics including high level data structures, network programming, writing GUI's in Python, and CGI programming.

**Upon completion of this course, students will be able to:**

- Write Network Programs in Python
- Write CGI programs in Python
- Write GUI programs in Python
- Differentiate between the proper use of Python collection classes
- Use advanced Data Structures
- Become proficient in the use of bit variables
- Use Python List comprehensions
- Use Python generators
- Use the most popular Python modules
- Create and execute processes

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## COURSE CONTENT

### WHAT YOU SHOULD ALREADY KNOW ABOUT PYTHON

- Introduction
- Language Evolution
- Python Reserved Words and Other Rules
- Documentation
- The string Class
- Variables
- DataTypes
- Boolean and Numeric Types
- Strings
- Lists and Tuples
- Sets

- Sequences
- Looping Through Sequences
- Dictionaries
- Bit Variables
- Modules
- Reading Files
- Some File Tests

## DATA STRUCTURES

- range
- List Comprehensions
- Nested List Comprehensions
- Dictionary Comprehensions
- Dictionaries with Compound Values
- Processing Lists in Parallel
- Functions
- Default Parameters
- Variable Arguments
- A Dictionary of Dictionaries
- Specialized Sorts
- The del Statement
- Time Functionality
- Using Generators

## WRITING GUIs IN PYTHON

- Introduction
- Components and Events
- An Example GUI
- The root Component
- Adding a Button
- Entry Widgets
- Text Widgets
- Checkbuttons
- Radiobuttons
- Listboxes
- Frames
- Menus
- Binding Events to Widgets

## PYTHON AND CGI SCRIPTS

- Introduction
- HTML
- HTML Forms
- A Guestbook Application
- What Can Go Wrong!
- HTML Tables
- The CGI Script
- Rendering of the Script

## THE OS MODULE

- The Environment
- Launching Commands
- Creating a Process
- Directory Commands
- Other Process Methods
- File Information (Metadata)
- Miscellaneous os Calls
- Walking Through Directories

## NETWORK PROGRAMMING

- Introduction
- A Daytime Server
- Clients and Servers
- The Client Program
- The Server Program
- Recap
- An Evaluation Client and Server
- The Server Portion
- A Threaded Server

## WHAT YOU MIGHT NOT ALREADY KNOW

- What is an Iterable?
- Creating Your Own Iterators
- Generators
- The Functions any and all
- Thread Fundamentals
- Synchronization
- Formatting Records
- Signals
- The Python Debugger (2.x)
- The with Statement
- Data Compression