Introduction to Python 2.x

Course Summary

Description

This course leads the student from the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with binary data and using the extensive functionality of Python modules. Extra emphasis is placed on features unique to Python, such as tuples, array slices and output formatting. This is a hands-on programming class. All concepts are reinforced by informal practice during the lecture followed by graduated lab exercises.

Python Programming is a practical introduction to a working programming language, not an academic overview of syntax and grammar. Students will immediately be able to use Python to complete tasks in the real world.

Course Objectives

After completing this course, students will be able to

- Create working Python scripts following best practices
- Use python data types appropriately
- Read and write files with both text and binary data
- Search and replace text with regular expressions
- Get familiar with the standard library and its work-saving modules
- Know when to use collections such as lists, dictionaries, and sets
- Understand Pythonic features such as comprehensions and iterators
- Write robust code using exception handling

Topics

- Running Python Scripts
- Getting Started
- Flow Control
- Sequence Data
- Defining Functions
- Working with Files
- Dictionaries and Sets
- Errors and Exception Handling
- Using Modules
- Regular Expressions
- Highlights of the Standard Library
- Introduction to Python Classes

Audience

This course is appropriate for advanced users, System Administrators and Web Site Administrators who want to use Python to support their server installations, as well as anyone else who wants to automate or simplify common tasks with the use of Python scripts.

Prerequisites

Students should already have a working, user-level knowledge of Unix/Linux, Mac, or Windows. While not required, basic skills with at least one other programming language will be helpful.

Duration

Four days

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Course Summary

I. An Overview of Python
- A. What is Pyt
- B. Brief history of Python
- C. How to get Python

II. The Python Environment
- A. Running Scripts
- B. Interactive python
- C. Getting help
- D. Editors and IDEs

III. Getting Started
- A. Variable types
- B. String data and operators
- C. Numeric data and operators
- D. Simple input and output
- E. Command line arguments

IV. Flow Control
- A. Indenting and how it works
- B. The if statement
- C. Relational and Boolean operators
- D. The while loop
- E. Break and continue

V. Sequences
- A. Simple lists
- B. Tuples
- C. Accessing elements
- D. Slicing up lists
- E. Iterating through lists
- F. List properties and functions
- G. The xrange() function

VI. Working with files
- A. Opening and closing files
- B. Exception handling
- C. Reading from files
- D. Writing to files
- E. Non-delimited data

VII. Dictionaries and Sets
- A. Creating dictionaries
- B. Working with dictionaries
- C. Creating sets
- D. Using sets
- E. Unicode

VIII.Functions
- A. Variable scope
- B. Parameters
- C. Global variables
- D. Return values

IX. Sorting
- A. The sorted() function
- B. Alternate keys
- C. Lambda functions
- D. Sorting dictionaries

X. Errors and Exceptions
- A. Basic exceptions
- B. try-except-else-finally
- C. Multiple exceptions
- D. Standard exception hierarchy

XI. Using Modules
- A. About modules
- B. Using the import statement
- C. Module search path
- D. Creating modules
- E. Packages

XII. Regular Expressions
- A. The re module
- B. Matching
- C. Substitution
- D. Subexpressions
- E. Compilation flags
- F. Replacing text
- G. Splitting strings

XIII.Using the Standard Library
- A. The sys module
- B. Launching external programs
- C. Paths and files
- D. Dates and times
- E. Importing modules

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Course Summary (cont'd)

XIV. An Introduction To Python Classes

A. About o-o programming
B. Defining classes
C. Constructors
D. Instance methods
E. Instance data
F. Class methods and data
G. Destructors

XV. Special Chapter: Putting Python To Work

A. This chapter, taught only in the 5-day version of the course, contains advanced tasks for the students to try; we encourage students to bring in and work on their real-life projects as well.