SECTION 1: INTRODUCTION

➢ What’s python?
➢ Why do people use python?
➢ Some quotable quotes
➢ A python history lesson
➢ Advocacy news
➢ What’s python good for?
➢ What’s python not good for?
➢ The compulsory features list
➢ Python portability
➢ On apples and oranges
➢ Summary: why python?

SECTION 2: USING THE INTERPRETER AND TEXT EDITOR

➢ Introduction to Sublime & Pycharm
➢ Config Pycharm for Python Project
➢ How Python Runs Programs
➢ How You Run Programs
➢ Configuration Details
➢ Module Files: A First Look
➢ The Idle Interface
➢ Other Python Ides
➢ Time To Start Coding
➢ Lab Session 1

SECTION 3: TYPES AND OPERATORS

➢ A First Pass
➢ The ‘Big Picture’
➢ Numbers
➢ Dynamic Typing Interlude
➢ Strings
➢ Lists
➢ Dictionaries
➢ Tuples
➢ General Object Properties
➢ Mutable vs Immutable
SECTION 4: BASIC STATEMENTS

- Introduction to Reserved Keywords
- General Syntax Concepts
- Expressions
- Print
- If Selections
- Python Syntax Rules
- Documentation Sources Interlude
- Truth Tests
- While Loops
- Break, Continue, Pass, And The Loop Else
- For Loops
- Comprehensions And Iterations
- Loop Coding Techniques
- Comprehensive Loop Examples
- Basic Coding Gotchas
- Preview: Program Unit Statements
- Lab Session 3

SECTION 5: FUNCTIONS

- Function Basics
- Scope Rules In Functions
- More On “Global” (And “Nonlocal”)
- More On “Return”
- More On Argument Passing
- Special Argument Matching Modes
- Odds And Ends
- Generator Expressions And Functions
- Function Design Concepts
- Functions Are Objects: Indirect Calls
- Function Gotchas
- Optional Case Study: Set Functions
- Lab Session 4

SECTION 6: MODULES

- Module Basics
- Module Files Are A Namespace
- Name Qualification
- Import Variants
- Reloading Modules
SECTION 7: GETTING STARED WITH DOCKER

- Oop: The Big Picture
- Class Basics
- A More Realistic Example
- Using The Class Statement
- Using Class Methods
- Customization Via Inheritance
- Specializing Inherited Methods
- Operator Overloading In Classes
- Namespace Rules: The Whole Story
- Oop Examples: Inheritance And Composition
- Classes And Methods Are Objects
- Odds And Ends
- New Style Classes
- Class Gotchas
- Optional Case Study: A Set Class
- Summary: Oop In Python
- Lab Session 6

SECTION 8: EXCEPTIONS

- Exception Basics
- First Examples
- Exception Idioms
- Exception Catching Modes
- Class Exceptions
- Exception Gotchas
- Lab Session 7

SECTION 9: BUILT-IN TOOLS OVERVIEW

- The Secret Handshake
- Debugging Options
- Inspecting Name-Spaces
Dynamic Coding Tools
Timing And Profiling Python Programs
File Types And Packaging Options
Development Tools For Larger Projects
Summary: Python Tool-Set Layers
Lab Session 7 Continued

SECTION 10: SYSTEM INTERFACES

System Modules Overview
Running Shell Commands
Arguments, Streams, Shell Variables
File Tools
Directory Tools
Forking Processes
Thread Modules And Queues
The Subprocess And Multiprocessing Modules
Ipc Tools: Pipes, Sockets, Signals
Fork Versis Spawnv
Larger Examples
Lab Session 8

SECTION 11 : GUI PROGRAMMING

Python Gui Options
Introduction of Tkinter
The Tkinter ‘Hello World’ Program
Adding Buttons, Frames, And Callbacks
Getting Input From A User
Assorted Tkinter Details
Building Guis By Subclassing Frames
Reusing Guis By Subclassing And Attaching
Advanced Widgets: Images, Grids, And More
Designing UI using QT4 Designer
Introduction to PySide2
Converting UI into Application Using PySide
Larger Examples
Tkinter Odds And Ends
Lab Session 8 Continued

SECTION 12: DATABASES AND PERSISTENCE

Databases and Persistence
Object Persistence: Shelves
Storing Class Instances
Pickling Objects Without Shelves
Using Simple Dbm Files
Shelve Gotchas
Zodb Object-Oriented Database
Python Sql Database Api
Persistence Odds And Ends
Lab Session 9

SECTION 13: TEXT PROCESSING

String Objects: Review
Splitting And Joining Strings
Regular Expressions
Parsing Languages
Regular Expressions
Lab Session 10

SECTION 14: INTERNET SCRIPTING

Using Sockets In Python
The Ftp Module
Email Processing
Other Client-Side Tools
Building Web Sites With Python
Writing Server-Side Cgi Scripts
Jython: Python For Java Systems
Active Scripting And Com
Other Internet-Related Tools
Lab Session 10

SECTION 15: ADVANCED TOPICS

Unicode Text And Binary Data
Managed Attributes
Decorators
Metaclasses
Context Managers
Python 3.X Changes
Lab Session 13

LABORATORY EXERCISES

Lab 1: Using The Interpreter
Lab 2: Types And Operators
Lab 3: Basic Statements
Lab 4: Functions
Lab 5: Modules
Lab 6: Classes
Lab 7: Exceptions And Built-In Tools
Lab 8: System Interfaces And Gui
Lab 9: Persistence
Lab 10: Text Processing And The Internet
Lab 11: Decorators And Metaclasses

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