

Python ToC - Oracle

Objectives:

To enhance the skill set of prospective audience in python, the following objectives are set:

1. To gain insight into and practical exposure to fundamental and advanced python features
2. To understand fundamental design patterns in python
3. To gain practical exposure to some of the day-to-day applications using python

Audience:

Professionals willing to explore python

(This program will be medium paced)

Pre-requisites:

1. Computer programming knowledge (not mandatory)

PS: Participants who are new to python can get an overview through any of the convenient YouTube channels/videos such as the following:

<https://www.youtube.com/watch?v=rfscVS0vtbw&t=9980s>

<https://www.youtube.com/watch?v=YYXdXT2l-Gg&list=PL-osiE80TeTskrapNbzxhwoFUiLCjGgY7>

Duration:

5 working days (40 Hours)

Schedule:

Day	Morning	Afternoon
1	Python fundamentals	Python fundamentals
2	Advanced features in python	Advanced features in python - OOP
3	Useful design patterns in python	Working with databases and persistence
4	Network programming	Web application development using flask
5	Testing in python, Regex	Data analysis in python

PS: Ideally each half day session consists of concept discussion, live demonstration, and guided practical hand-on sessions. Though sessions might be dynamically adjusted to suit the learning requirements of the participants in the specific batch. Relevant portions will be given as study assignments to participants.

Deliverables:

1. Training on the topics mentioned in the table of contents
2. Reference material in the form of ebooks, slides and website links
3. Recording of the live demonstration (to be hosted by the client)
4. Github repository of all worked out examples and practice sessions
5. Learning support for participants for about a week.

Table of Contents

1. Python fundamentals
 - a. Computer programming essentials
 - b. Datatypes in python
 - c. Branching and Looping
 - d. User defined functions and modules
 - e. File IO
 - i. Working with JSON (json)
 - ii. Working with csv (csv)
 - f. Lab session
2. Advanced Features in Python
 - a. Special modules and functions in python(introduction):
 - i. datetime
 - ii. itertools
 - iii. functools
 - iv. collections
 - v. operator
 - b. System control in python using OS, shutil and subprocess modules
 - c. Lambda functions
 - d. Comprehensions
 - e. Exception handling
 - f. Lab session
3. Advanced Features in Python – OOP
 - a. Overview of OOP: Class, Object, Inheritance and Polymorphism
 - b. Operator overloading
 - c. Developing custom exceptions
 - d. Lab session
4. Useful Design Patterns in Python
 - a. Generators and iterators
 - b. Factory Method
 - c. Decorator
 - d. Lab session
5. Testing in python
 - a. Unittest module
 - b. Lab session
6. Regular Expressions and Working with Common File Types
 - a. The re Module
 - b. Metacharacters for building regular expressions
 - c. Lab sessions
7. Data analysis using python
 - a. Pandas
 - b. Matplotlib
 - c. Lab session

8. Working with databases/persistence in python
 - a. Pickle and shelve modules in python
 - b. SQL databases
 - c. Lab session
9. Network programming
 - a. The socket module
 - b. Creating a server and client
 - c. Developing network applications
 - d. Lab session
10. Web application development using python-flask
 - a. Download and installation
 - b. Basic workflow
 - c. Flask routes and dynamic routing
 - d. Lab session

Bonus: Virtual Environments in Python

Hardware requirement:

1. Laptop with Linux/windows and internet connectivity

Software requirement:

1. Python 3.x for Windows/Mac (www.python.org)
2. Atom IDE or Visual Studio Code
3. Anaconda suite latest version (Jupyter Notebook)

PS: webex/zoom/gotomeeting or like with a client account is suggested to record the live examples

APPENDIX:

Details of Lab sessions

Lab #1	Developing a python code for word jumble game
Lab #2	Extract the physical address from network interface data (ipconfig -all)
Lab #3	Develop a employee class with tax calculation methods
Lab #4	Use of decorators in python programming
Lab #5	CRUD operations on SQL databases
Lab #6	Setting up flask to serve web pages
Lab #7	Developing unit test for python design components
Lab #8	Exploratory data analysis of financial data with visualization (guided practice)
Lab #9	Python program to develop a simple chat engine using sockets
Lab #10	Python program to extract all the email IDs from a text report

PS: These lab experiments are subject to change.