LAKSHMAN_JAVA_IT_SCHOOL

PYTHON

1. LANGUAGE FUNDAMENTALS

- Introduction
- Features of Python
- Limitations of Python
- Flavors of Python
- Python Versions
- Identifiers
- Reserved Words
- DATA TYPES
- Base Conversions
- Slicing of Strings
- TYPE CASTING
- Fundamental Data Types vs Immutability
- Escape Characters
- Constants

2. OPERATORS

- Arithmetic Operators
- Relational Operators OR Comparison Operators
- Equality Operators
- Logical Operators
- Bitwise Oeprators
- Shift Operators
- Assignment operators
- Ternary Operator OR Conditional Operator
- Special operators
- Operator Precedence
- Mathematical Functions (math Module)
- Command Line Arguments
- Output Statements

3. FLOW CONTROL

- Conditional Statements
- Iterative Statements
- Transfer Statements
- Loops with else Block
- del Statement
- Difference between del and None

4. STRING DATA TYPE

- What is String?
- How to define multi-line String Literals?
- How to Access Characters of a String?
- Behaviour of Slice Operator
- Slice Operator Case Study
- Mathematical Operators for String
- len() in-built Function
- Checking Membership
- Comparison of Strings
- Removing Spaces from the String
- Finding Substrings
- Counting substring in the given String
- Replacing a String with another String
- Splitting of Strings
- Joining of Strings
- Changing Case of a String
- Checking Starting and Ending Part of the String
- To Check Type of Characters Present in a String
- Formatting the Strings
- Important Programs regarding String Concept
- Formatting the Strings

5. LIST DATA STRUCTURE

- Creation of List Objects
- Accessing Elements of List
- List vs Mutability
- Traversing the Elements of List
- Important Functions of List
- Using Mathematical Operators for List Objects
- Comparing List Objects
- Membership Operators
- clear() Function

- Nested Lists
- Nested List as Matrix
- List Comprehensions

6. TUPLE DATA STRUCTURE

- Tuple Creation
- Accessing Elements of Tuple
- Tuple vs Immutability
- Mathematical Operators for Tuple
- Important Functions of Tuple
- Tuple Packing and Unpacking
- Tuple Comprehension
- Differences between List and Tuple

7. SET DATA STRUCTURE

- Creation of Set Objects
- Important Functions of Set
- Mathematical Operations on the Set
- Membership Operators: (in, not in)
- Set Comprehension

8. DICTIONARY DATA STRUCTURE

- How to Create Dictionary?
- How to Access Data from the Dictionary?
- How to Update Dictionaries?
- How to Delete Elements from Dictionary?
- Important Functions of Dictionary
- Dictionary Comprehension

9. FUNCTIONS

- Built in Functions
- User Defined Functions
- Parameters
- Return Statement
- Returning Multiple Values from a Function
- Types of Arguments
- Case Study
- Types of Variables

- global Keyword
- Recursive Functions
- Anonymous Functions
- Normal Function
- Lambda Function
- filter() Function
- ap() Function
- reduce() Function
- Everything is an Object
- Function Aliasing
- Nested Functions

10. MODULES

- Renaming a Module at the time of import (Module Aliasing)
- from ... import
- Various Possibilties of import
- Member Aliasing
- Reloading a Module
- Finding Members of Module by using dir() Function
- The Special Variable __name__
- Working with math Module
- Working with random Module

11. PACKAGES

12. 100 PATTERN PROGRAMS

13. OOP's Part – 1

- What is Class?
- How to define a Class?
- What is Object?
- What is Reference Variable?
- Self Variable
- Constructor Concept
- Differences between Methods and Constructors
- Types of Variables
- Where we can declare Instance Variables
- How to Access Instance Variables
- How to delete Instance Variable from the Object
- Static Variables

- Instance Variable vs Static Variable
- Various Places to declare Static Variables
- How to access Static Variables
- Where we can modify the Value of Static Variable
- How to Delete Static Variables of a Class
- Local Variables
- Types of Methods
- Setter and Getter Methods
- Passing Members of One Class to Another Class
- Inner Classes
- Garbage Collection
- How to enable and disable Garbage Collector in our Program
- Destructors
- How to find the Number of References of an Object

14. OOP's Part – 2

- Inheritance
- IS-A vs HAS-A Relationship
- Composition vs Aggregation
- Types of Inheritance
- Method Resolution Order (MRO)
- Head Element vs Tail Terminology
- How to find Merge?
- Finding mro(P) by using C3 Algorithm
- super() Method
- How to Call Method of a Particular Super Class?
- Various Important Points about super()

15. OOP's Part – 3

- Polymorphism
- Duck Typing Philosophy of Python
- Overloading
- Overriding

16. OOP's Part – 4

- Abstract Method
- Abstract class
- Interface
- Concreate Class vs Abstract Class vs Inteface

- Public,Private and Protected Members
- __str__() Method
- Difference between str() and repr() Functions
- Small Banking Application

17. Exception Handling

- Syntax Errors
- Runtime Errors
- What is Exception
- Default Exception Handing in Python
- Python's Exception Hierarchy
- Customized Exception Handling by using try-except
- Control Flow in try-except
- How to Print Exception Information
- try with Multiple except Blocks
- Single except Block that can handle Multiple Exceptions
- Default except Block
- finally Block
- Control Flow in try-except-finally
- Nested try-except-finally Blocks
- Control Flow in nested try-except-finally
- else Block with try-except-finally
- Various possible Combinations of try-except-else-finally
- Types of Exceptions
- How to Define and Raise Customized Exceptions

18. File Handling

- Types of Files
- Opening a File
- Closing a File
- Various Properties of File Object
- Writing Data to Text Files
- Reading Character Data from Text Files
- The with Statement
- The seek() and tell() Methods
- How to check a particular File exists OR not
- Handling Binary Data
- Handling CSV Files
- Writing Data to CSV File
- Reading Data from CSV File

- Zipping and Unzipping Files
- To Create Zip File
- Working with Directories
- Running Other Programs from Python Program
- How to get Information about a File
- Pickling and Unpickling of Objects

19. Multi Threading

- Multi Tasking
- The ways of Creating Thread in Python
- Setting and Getting Name of a Thread
- Thread Identification Number (ident)
- enumerate() Function
- isAlive() Method
- join() Method
- Daemon Threads
- Default Nature
- Synchronization
- Synchronization By using Lock Concept
- Problem with Simple Lock
- Demo Program for Synchronization by using RLock
- Difference between Lock and RLock
- Synchronization by using Semaphore
- Bounded Semaphore
- Difference between Lock and Semaphore
- Inter Thread Communication
- Inter Thread Communication by using Event Objects
- Methods of Event Class
- Inter Thread Communication by using Condition Object
- Methods of Condition
- Case Study
- Inter Tread Communication by using Queue
- Important Methods of Queue
- Types of Queues
- Good Programming Practices with usage of Locks

20. Python Database Programming

- Storage Areas
- File Systems
- Databases

- Python Database Programming
- Working with Oracle Database
- Installing cx_Oracle
- How to Test Installation
- Working with MySQL Database
- Commonly used Commands in MySQL
- Driver/Connector Information
- How to Check Installation

21. Regular Expressions & Web Scraping

- Character Classes
- Pre defined Character Classes
- Qunatifiers
- Important Functions of Remodule
- Web Scraping by using Regular Expressions

22. Decorator Functions

- Decorator Chaining

23. Generator Functions

- Advantages of Generator Functions
- Generators vs Normal Collections wrt Performance
- Generators vs Normal Collections wrt Memory Utilization

24. Assertions

- Debugging Python Program by using assert Keyword
- Types of assert Statements
- Exception Handling vs Assertions

25. Python Logging

- Logging Levels
- How to implement Logging
- How to configure Log File in over writing Mode
- How to Format Log Messages
- How to add Timestamp in the Log Messages
- How to Change Date and Time Format
- How to write Python Program Exceptions to the Log File

- Problems with Root Logger
- Need of Our Own Customized Logger
- Advanced logging Module Features: Logger
- Logger with Configuration File
- Creation of Custom Logger
- How to Create seperate Log File based on Caller
- Advantages of Customized Logger