**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