ALTALUNE TECHNOLOGY

PYTHON

INTRODUCTION TO PYTHON

- Why Python
- Application areas of python
- Python implementations
- Cpython
- Jython
- Ironpython
- Pypy
- Python versions
- Installing python
- Python interpreter architecture
- Python byte code compiler
- Python virtual machine(pvm)

WRITING AND EXECUTING FIRST PYTHON PROGRAM

- Using interactive mode
- Using script mode
- General text editor and command window
- Idle editor and idle shell
- Understanding print() function
- How to compile python program explicitly

PYTHON LANGUAGE FUNDAMENTALS

- Character set
- Keywords
- Comments
- Variables
- Literals
- Operators
- Reading input from console
- Parsing string to int, float
- Python Conditional Statements
- If statement
- If else statement
- If elif statement
- If elif else statement
- Nested if statement

LOOPING STATEMENTS

- While loop
- For loop
- Nested loops

- Pass, break and continue keywords

STANDARD DATA TYPES

- Int, float, complex, bool, nonetype
- Str, list, tuple, range
- Dict, set, frozenset

STRING HANDLING

- What is string
- String representations
- Unicode string
- String functions, methods
- String indexing and slicing
- String formatting

PYTHON LIST

- Creating and accessing lists
- Indexing and slicing lists
- List methods
- Nested lists
- List comprehension

PYTHON TUPLE

- Creating tuple
- Accessing tuple
- Immutability of tuple

PYTHON SET

- How to create a set
- Iteration over sets
- Python set methods
- Python frozenset

PYTHON DICTIONARY

- Creating a dictionary
- Dictionary methods
- Accessing values from dictionary
- Updating dictionary
- Iterating dictionary
- Dictionary comprehension

PYTHON FUNCTIONS

- Defining a function
- Calling a function
- Types of functions
- Function arguments
    - Positional arguments, keyword arguments
    - Default arguments, non-default arguments

- Arbitrary arguments, keyword arbitrary arguments

- Function return statement
- Nested function
- Function as argument
- Function as return statement
- Decorator function
- Closure
- Map(), filter(), reduce(), any() functions
- Anonymous or lambda function

MODULES & PACKAGES

- Why modules
- Script v/s module
- Importing module
- Standard v/s third party modules
- Why packages
- Understanding pip utility

FILE I/O

- Introduction to file handling
- File modes
- Functions and methods related to file handling
- Understanding with block

OBJECT ORIENTED PROGRAMMING

- Procedural v/s object oriented programming
- OOP principles
- Defining a class & object creation
- Object attributes
- Inheritance
- Encapsulation
- Polymorphism

EXCEPTION HANDLING

- Difference between syntax errors and exceptions
- Keywords used in exception handling
- try, except, finally, raise, assert
- Types of except blocks

REGULAR EXPRESSIONS (REGEX)

- Need of regular expressions
- Re module
- Functions /methods related to regex
- Meta characters & special sequences

ALTALUNE TECHNOLOGY

GUI PROGRAMMING

- Introduction to tkinter programming
- Tkinter widgets
- Tk, label, Entry, Textbox, Button
- Frame, messagebox, filedialog etc
- Layout managers
- Event handling
- Displaying image

MULTI-THREADING PROGRAMMING

- Multi-processing v/s Multi-threading
- Need of threads
- Creating child threads
- Functions /methods related to threads
- Thread synchronization and locking

SQL

INTRODUCTION TO DATABASE

- Database Concepts
- What is Database Package?
- Understanding Data Storage
- Relational Database (RDBMS) Concept

SQL (STRUCTURED QUERY LANGUAGE)

- SQL operators
- SQL like
- SQL order by lSQL basics
- DML, DDL & DQL
- DDL: create, alter, drop
- SQL constraints:
- Not null, unique,
- Primary & foreign key, composite key
- Check, default
- DML: insert, update, delete and merge
- DQL : select
- Select distinct
- SQL where
- SQL aliases
- SQL views
- SQL joins
    - Inner join
    - Left (outer) join
    - Right (outer) join
    - Full (outer) join

- Mysql functions
  - String functions
    - Char_length
    - Concat
    - Lower
    - Reverse
    - Upper
  - Numeric functions
    - Max, min, sum
    - Avg, count, abs
  - Date functions
    - Curdate
    - Curtime
    - Now

PYTHON DATABASE CONNECTIVITY

- Creating database connection
- Understanding Cursor
- Executing queries
- Parameterized queries

PROJECT USING TKINTER AND DATABASE CONNECTIVITY